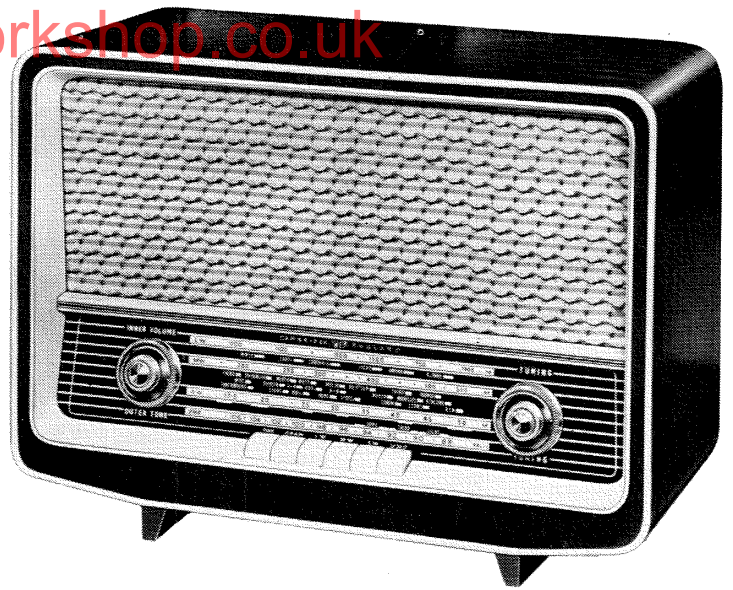


# SERVICE SHEET FOR



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## V.H.F. 211



### CIRCUIT ANALYSIS A.M.

		Mains Consumption	55 Watts	Unsmoothed H.T. 285 Volts							
		Power Output	4½ Watts	Smoothed H.T. 255 Volts							
	Valve	Mullard	Ea	Ia	Es	Is	Ea <sup>Osc.</sup>	Ia	Ek	Ik	
V1	Frequency Changer ...	ECH81	250	2.3	65	4.8	73	3.7	—	10.8	
V2	I.F. Amplifier ...	EF89	250	7.2	78	3.3	—	—	—	10.5	
V3	Det. and A.F. Amplifier ...	EABC80	120	P.C.	—	—	—	—	1.5	P.C.	
V4	Rectifier ...	EZ80	Anode to Anode 555V. A.C.						—	285	75
V5	Output ...	EL84	260	46	255	P.C.	—	—	7.4	53	
V6	V.H.F. Osc. and Mixer ...	ECC85	Not used on A.M.								

H.T. supply to tuner unit with receiver switched to V.H.F. = 242V, D.C. at 8 mA.

NOTES:—P.C. indicates that to take this reading a connection on the printed circuit would have to be broken it has therefore been ignored.

All measurements taken with receiver tuned to L.F. end of M.W. band.

No signal input. Mains input 200 volts into 190—210 volt tap.

Measurements taken with an Avometer Model 8 instrument which has a resistance of 20,000 ohms per volt.

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## A.M. TRIMMING PROCEDURE FOR V.H.F. 2D RECEIVER

Insert "MW aerial connection" plug into "External" socket.

Apply signal as below:	Set receiver controls to:—	Adjust in order for Maximum output (except 2).
1. 470 Kc/s between chassis and control grid of V1 via 0.01 mfd. condenser.	L.F. end of M.W. band.	Iron dust cores in A.M. windings of T2 and T1.
2. 470 Kc/s between aerial and earth sockets via 100 $\mu$ F condenser.	L.F. end of M.W. band.	Trimmer C6 for MINIMUM output.
3. As 2, but 214 Kc/s.	L.W. 1400 metres.	Iron dust core of L5 and L.W. winding on rod aerial.
4. As 2, but 600 Kc/s.	M.W. 500 metres.	Iron dust core of L4 and coupling coil on rod aerial.
5. As 2, but 1500 Kc/s.	M.W. 200 metres.	Trimmer C21 and C1.
6. Repeat 4 and 5 until calibration and tracking are correct.		
7. As 2, but 6.1 Mc/s.	S.W. 49.18 metres.	Iron dust cores of L3 and L1.
8. As 2, but 17.8 Mc/s.	S.W. 16.85 metres.	Trimmers C20 and C5.
9. Repeat 7 and 8 until calibration and tracking are correct.		

## F.M. TRIMMING PROCEDURE

### I.F. ALIGNMENT

1. Adjust preset resistor R20 for minimum resistance.
2. Inject 10.7 Mc/s frequency modulated  $\pm 75$  Kc/s into V2 control grid and adjust iron dust cores of T2 for maximum output.
3. Inject 10.7 Mc/s amplitude modulated approx. 50% into V2 control Grid and adjust R20 for minimum output.
4. Inject 10.7 Mc/s as in 2 above into V1 control grid and adjust iron dust cores of T1 for maximum output.
5. Tune to high frequency end of band and inject 10.7 Mc/s signal as in 2 above between tuner unit oscillator core and chassis. Adjust iron dust cores of T6 for maximum output.

### R.F. ALIGNMENT

1. Verify that pointer lines up with marks at low frequency end of the scale with gang condenser fully closed.
2. Set pointer to 96 Mc/s calibration on scale. Inject 96 Mc/s frequency modulated  $\pm 15$  Kc/s between A.M. Aerial socket and lower F.M. aerial input socket; (inner conductor of coaxial lead to the latter socket). Adjust position of core mounting plate by loosening clamp, screwing push rod to bring receiver on tune and re-securing clamp.

NOTE:—A replacement of the ECC85 valve should not normally necessitate re-adjustment of the Tuner Unit circuits, but should calibration be in error, carry out "R.F. Alignment" para. 2 above.

**N.B.—Faulty V.H.F. Tuner Units and those in need of complete re-alignment should be returned to U.T.M. Ltd., Gloucester Street, Cambridge.**

## *Notes*

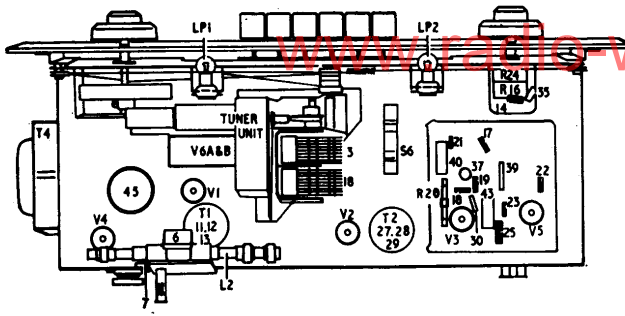
1. The Special Flywheel Tuning needs no maintenance other than a very occasional drop of oil.
2. External Speaker 5—8 ohms impedance.
3. Dial Lamps 6.5 volt 0.3 amp.
4. Make sure Mains Voltage Adjuster is in correct position to ensure (a) maximum valve and component life, and (b) full benefit of the Pye "FIDELITY" reproduction.

### TO REMOVE CHASSIS

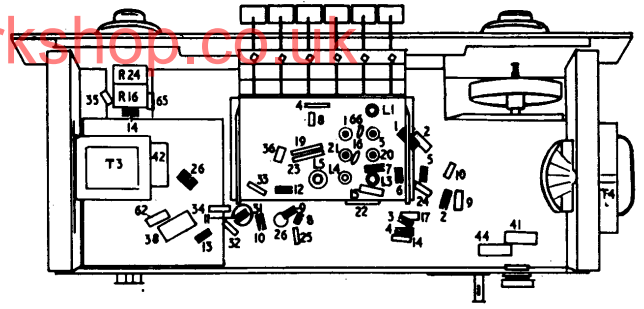
1. Remove Mains Plug from wall socket.
2. Remove back of set.
3. Withdraw all plugs from chassis.
4. Remove chassis fixing screws.
5. Withdraw chassis.

### TO FIT A NEW TUNING SCALE

1. Place new scale centrally on scale end brackets and secure by means of the four clips. Care must be taken to ensure that the small tongue on the inside face of the clip engages the hole in the scale end bracket.
2. With gang fully meshed, adjust pointer to the spots at the right-hand end of the scale tracks.



NOTE:— RESISTORS SHOWN SOLID BLACK



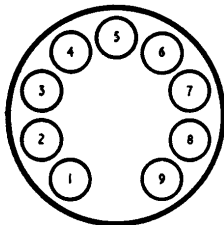
NOTE:— RESISTORS SHOWN SOLID BLACK

FIG. 1

FIG. 2

### VALVE BASE CONNECTIONS

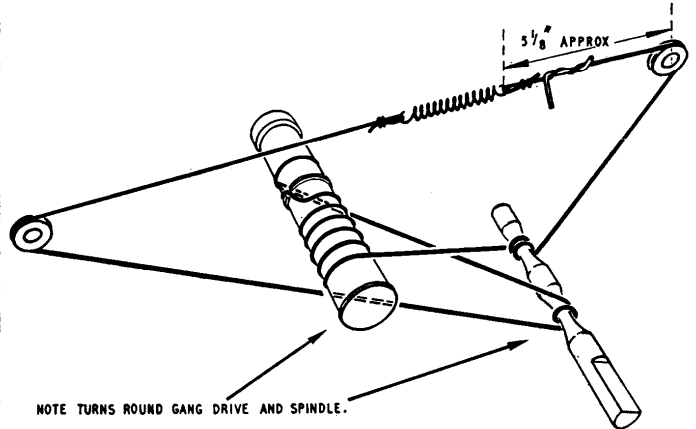
	1	2	3	4	5	6	7	8	9
V1 ECH 81	G2, G4	G1	K, G5, S	H	H	AH	G3	AT	GT
V2 EF 89	S	G1	X	H	H	S	A	G2	G3
V3 EABC 80	A <sup>m</sup> D	A <sup>m</sup> D	K <sup>m</sup> D	H	H	A <sup>l</sup> D	KT, K <sup>m</sup> D, K <sup>m</sup> DS	G	A
V4 EZ 80	A <sup>l</sup>	IC	K	H	H	IC	A <sup>m</sup>	IC	IC
V5 EL 84	IC	G1	K, G3	H	H	IC	A	IC	G2



VIEW LOOKING AT PINS

FIG. 3

DRIVE CORD VIEWED FROM TOP FRONT OF CHASSIS WITH GANG FULLY CLOSED



NOTE TURNS ROUND GANG DRIVE AND SPINDLE.  
THE DRIVE CORD SHOULD BE OF NYLON BRAIDED GLASS YARN.  
LENGTH 62 1/2 INCHES BETWEEN CENTRES OF LOOPS.

FIG. 4

## Notes

### TO REMOVE TUNER UNIT

1. Unsolder H.T., Heater, Aerial and I.F. Output leads.
2. Open Gang Condenser approximately half way and remove the two lower Tuner Unit fixing screws.
3. Close Gang Condenser and remove the upper Tuner Unit fixing screw.  
NOTE:—Do not remove the Gang bracket fixing screws.
4. Remove the fixing screw securing the opposite end of the tuner unit to the chassis.
5. Remove tuner unit.

**TO FIT A NEW TUNER UNIT** reverse the above procedure and check calibration, if the calibration is in error carry out the I.F. alignment procedure paragraph 5 and R.F. alignment procedure.

CONDENSERS					
	Specification	Volts	±	Fig.	No.
C1	2—30 $\mu$ F Trimmer			2	800348
C2	100 $\mu$ F Ceramic		20%	2	653116
C3	528 $\mu$ F Swing Gang Condenser			1	800372
C4	110 $\mu$ F Mica		2%	2	664104
C5	2—30 $\mu$ F Trimmer			1	800348
C6	4—70 $\mu$ F Trimmer			1	800076
C7	100 $\mu$ F Ceramic		20%	1	653116
C8	330 $\mu$ F Ceramic		10%	2	652676
C9	5,000 $\mu$ F Ceramic Disc		+40—20%	2	660551
C10	5,000 $\mu$ F Ceramic Disc		+40—20%	2	660551
C11*	180 $\mu$ F Polystyrene		2%	1	665533
C12*	15 $\mu$ F Mica		2%	1	660859
C13*	180 $\mu$ F Polystyrene		2%	1	665533
C14	100 $\mu$ F Ceramic		20%	2	653116
C15	100 $\mu$ F Ceramic		20%	2	653116
C16	15 $\mu$ F Ceramic N750		10%	2	670544
C17	0.04 $\mu$ F Tubular	150		2	669106
C18	528 $\mu$ F Swing Gang Condenser			1	800372
C19	160 $\mu$ F Mica		2%	2	664134
C20	2—30 $\mu$ F Trimmer			2	800348
C21	2—30 $\mu$ F Trimmer			1 & 2	800348
C22	520 $\mu$ F Mica		2%	2	664564
C23	200 $\mu$ F Mica		2%	2	664164
C24	100 $\mu$ F Ceramic		20%	2	653116
C25	5,000 $\mu$ F Ceramic Disc		+40—20%	2	660551
C26	5,000 $\mu$ F Ceramic Disc		+40—20%	2	660551
C27†	200 $\mu$ F Polystyrene		2%	1	653210
C28†	200 $\mu$ F Polystyrene		2%	1	653210
C29†	47 $\mu$ F Mica		2%	1	664496
C30	150 $\mu$ F Ceramic		10%	1	660447
C31	800 $\mu$ F Ceramic Disc		10%	2	660550
C32	100 $\mu$ F Ceramic		20%	2	653116
C33	150 $\mu$ F Ceramic		10%	2	653157
C34	100 $\mu$ F Ceramic		20%	2	653116
C35	0.01 $\mu$ F Tubular	150		1 & 2	669082
C36	0.02 $\mu$ F Tubular	150		2	669105
C37	4 $\mu$ F Electrolytic	350		1	667843
C38	10 $\mu$ F Electrolytic	25		2	667942
C39	0.03 $\mu$ F Ceramic		+20—80%	1	660021
C40	2 $\mu$ F Electrolytic	150		1	667799
C41	0.01 $\mu$ F Tubular	300		2	669135
C42	0.05 $\mu$ F Tubular	A.C. 300		2	669177
C43	50 $\mu$ F Electrolytic	A.C. 12		1	667734
C44	0.01 $\mu$ F Tubular	300		2	669135
C45	50+50 $\mu$ F Electrolytic	350		1	667909
C46	1,000 $\mu$ F Lead Through				653117
C47	150 $\mu$ F Ceramic Disc		10%		660447
C48	2.2 $\mu$ F Ceramic		1/2 $\mu$ F		653186
C49	800 $\mu$ F Ceramic		+40—20%		660437
C50	1,000 $\mu$ F Lead Through				653117
C51	0.7—3 $\mu$ F Trimmer				800349
C52	4 $\mu$ F Trimmer				800182
C53	5 $\mu$ F Ceramic		1/4 $\mu$ F		652697
C54	5 $\mu$ F Ceramic		1/4 $\mu$ F		652697
C55	5 $\mu$ F Ceramic		1/4 $\mu$ F		653188
C56	1.5—15 $\mu$ F Trimmer				800400
C57	2—20 $\mu$ F Trimmer				800401
C58	8.2 $\mu$ F Ceramic		1/4 $\mu$ F		653187
C59	56 $\mu$ F Mica		5%		660878
C60	22 $\mu$ F Ceramic		5%		653185
C61	1,000 $\mu$ F Lead Through				653117
C62	5,000 $\mu$ F Ceramic Disc		+40—20%	2	660551
C63	1,000 $\mu$ F Lead Through				653117
C64†	10 $\mu$ F Mica		2%		660879
C65	33 $\mu$ F Ceramic Tubular		10%	2	651842
C66	15 $\mu$ F Ceramic N750		10%	2	650744

Note:—\*Integral part of I.F. Transformer ... 771732  
 †Integral part of I.F. Transformer ... 771733  
 ‡Integral part of I.F. Transformer ... 771737

INDUCTANCES				
	Specification	Ref.	Fig.	No.
L1	S.W. Aerial Coil	S.W.39	2	781813
L2	Rod Aerial Assembly		1	742907
L3	S.W. Osc. Coil	S.W.29	2	781199
L4	M.W. Osc. Coil	M.W.1	2	780234
L5	L.W. Osc. Coil	L.W.1	2	780241
L6	R.F. Anode Coil			781916
L7	Mixer Osc. Coil			781917

RESISTORS					
	Ohms	Watts	±	Fig.	No.
R1	1 meg.		20%	2	670410
R2	39,000		10%	2	670537
R3	1,000		10%	2	670518
R4	470,000		20%	2	670408
R5	33,000		10%	2	670536
R6	47,000		10%	2	670538
R7	100		10%	2	670506
R8	56,000		10%	2	670539
R9	1,000		10%	2	670518
R10	47,000		10%	2	670538
R11	100,000		20%	2	670404
R12	1.8 meg.		20%	2	674554
R13	470,000		20%	2	670408
R14	22,000		10%	1 & 2	670534
R15	Not used				
R16†	1 meg. Volume Control			1 & 2	810444
R17	2,700		10%	1	671820
R18	47,000		10%	1	670613
R19	220,000		20%	1	670665
R20	500 Pre-set Potentiometer			1	810856
R21	47,000		10%	1	670613
R22	680,000		20%	1	671807
R23	1,000		10%	1	672628
R24†	50,000 Tone Control			1 & 2	810444
R25	150		10%	1	670432
R26	1,000		5%	2	671185
R27	220		10%		670609
R28	220,000		20%		670665
R29	10,000		10%		670631
R30	1 meg.		20%		670618
R31	22,000		10%		670635
R32	22,000		10%		670635

Note:—†Dual Control

TRANSFORMERS				
	Specification	Fig.	No.	
T1	F.M./A.M. I.F. Trans. { Prim. A.M. 5-50 Sec. A.M. 5-50 }	1	771732	
T2	I.F. Trans. { Prim. A.M. 5-50 Sec. A.M. 5-50 }	1	771733	
T3	Output Trans. { Prim. 300 $\Omega$ Sec. — }	2	771781	
T4	Mains Trans. { Prim. 42.2 $\Omega$ Sec. 378 $\Omega$ }	1 & 2	771768	
T5	Aerial Input Trans.		771738	
T6	I.F. Trans.		771737	

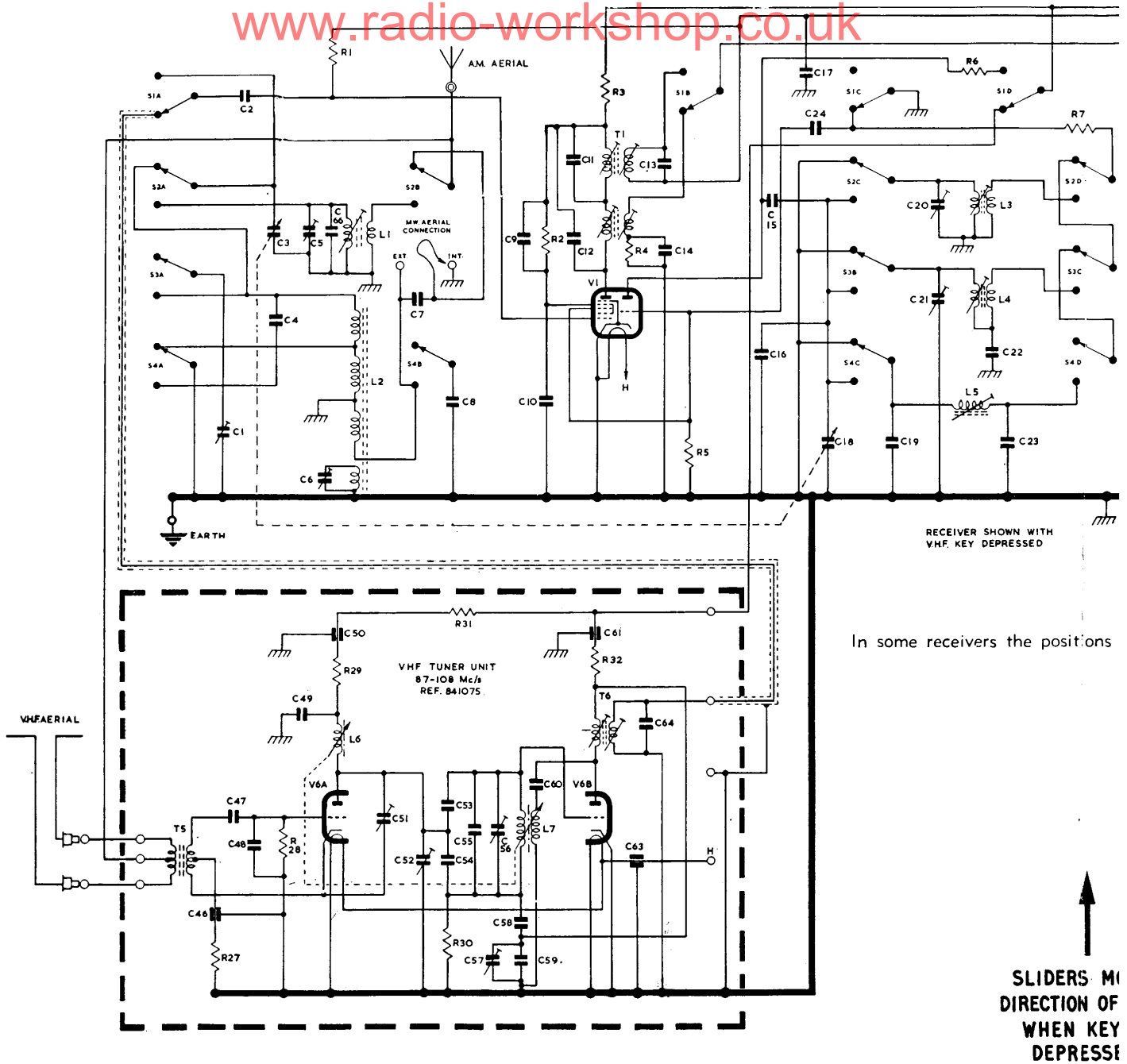
SWITCHES & LAMPS				
	Specification	Fig.	No.	
S1A—E	V.H.F. Bank	} 6 Key Switch Unit Assembly	5	742906
S2A—D	S.W. Bank			
S3A—C	M.W. Bank			
S4A—D	L.W. Bank			
S5A—B	Gram Bank			
S6	ON/OFF Bank	1		
LS	Loudspeaker 5 ohms			850223
LP1	Dial Lamp 6.5V. 0.3A.			700494
LP2	Dial Lamp 6.5V. 0.3A.			700494

Note:—Components not having a figure number shown against them are in the tuner unit.

MISCELLANEOUS				
	Specification	Fig.	No.	
	Cabinet Assembly: Including baffle brackets			760052
	Medallion:			712844
	Ornamental Strip:			714390
	Escutcheon:			481555
	Escutcheon Channel:			550778
	Escutcheon Spring:			708460
	Card Back:			690836
	Aerial Assembly; F.M.:			743514
	Scale; Tuning:			704707
	Clip; Scale:			707401
	Knob; Volume:			744243
	Knob; Tuning: Small:			744244

# CIRCUIT DIAGRAM FOR T

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## MISCELLANEOUS CONT'D

Knob; Tuning: Large	...	744246
Knob; Tone:	...	744245
Spring; Knob: Small	...	706015/A
Spring; Knob: Large	...	707434
Clip; Retaining: For card back fixing	...	705996
Screw; Wood: No. 8 x 1 1/4" for card back fixing	...	382457/A

## NOTE:

For chassis bearing Serial Nos. 766001—769000, the Tuner Unit, as shown on this Service Sheet, it fitted. Subsequent sets incorporate a new Tuner Unit, Ref. 841281, which involves the following changes:

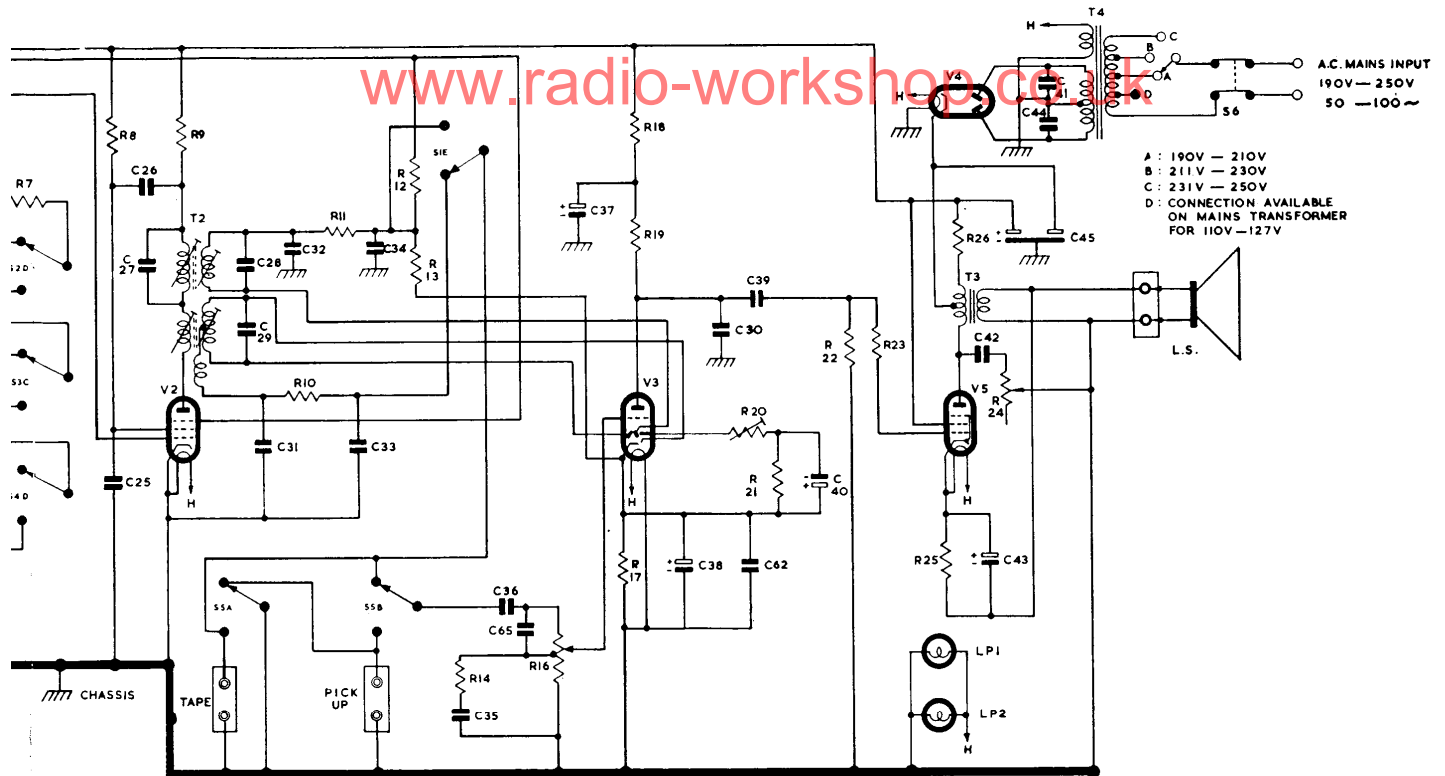
L7 becomes Ref. 781995

T6 becomes Ref. 771969

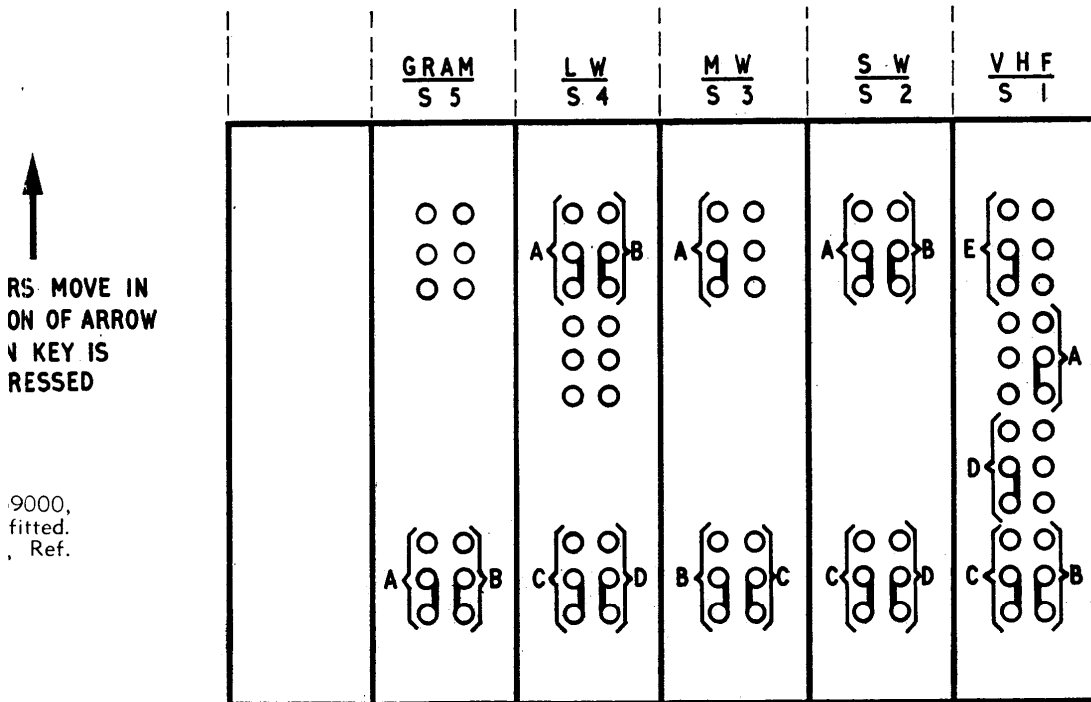
C4 is deleted

The Tuning Scale becomes Ref. 704711

# THE PYE MODEL V.H.F.2D



Conditions of C2 and R1 are different from those shown and a C-R network is included in the secondary circuit of T6.



**Fig. 5**