G.E.C.

SERVICE BULLETIN 177

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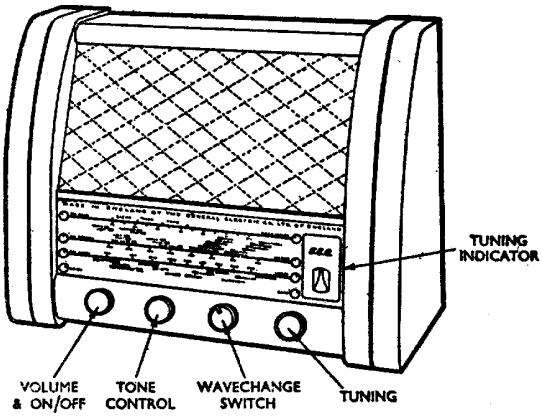
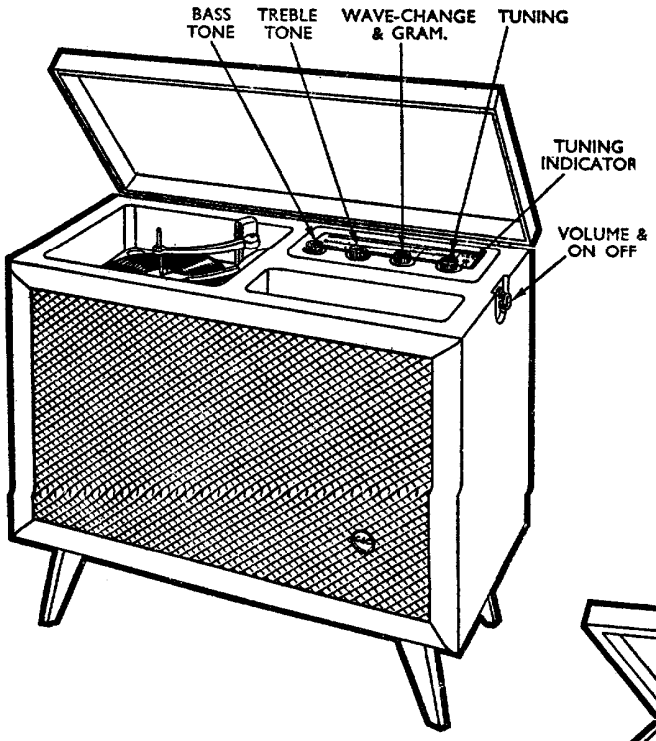
F.M./A.M. RADIO

(Home models)



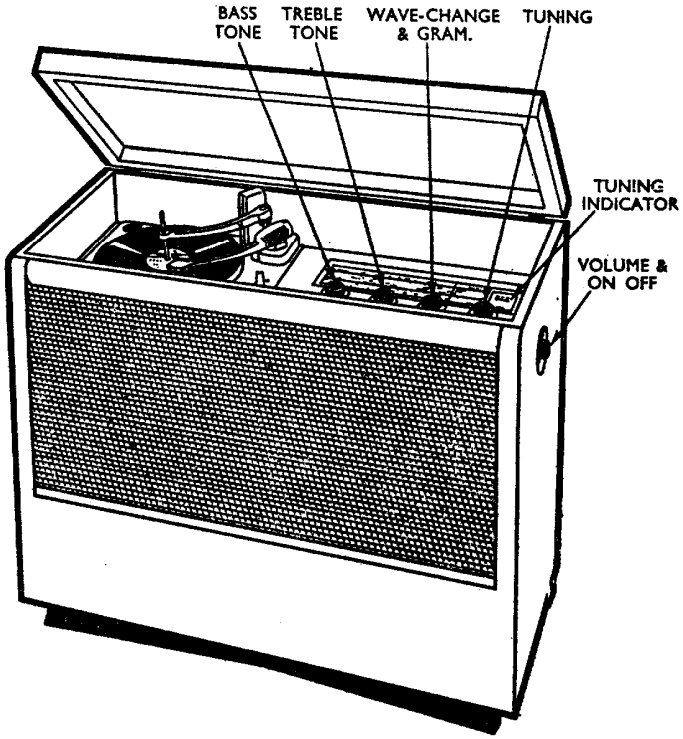
BC5842

8 valves, A.C. mains, F.M./A.M. superheterodyne receiver. Gramophone pick-up terminals. Internal F.M. and A.M. aerials.



BC9640

8 valves, A.C. mains, F.M./A.M. superheterodyne, three speed Radiogramophone. Internal F.M. and A.M. aerials.



BC9442

8 valves, A.C. mains, F.M./A.M. superheterodyne, three speed Radiogramophone. Internal F.M. and A.M. aerials.

GENERAL SPECIFICATION

POWER SUPPLIES	190—250 volts, 40—100 c/s
POWER CONSUMPTION (approximate)	BC5842 55 watts BC9442 70 watts BC9640 70 watts

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WAVEBANDS	V.H.F. (F.M.) 87·2— 100·3 Mc/s Medium 186 — 549 metres (1·61—0·545 Mc/s) Long 1100 —1950 metres (0·273—0·154 Mc/s)
V.H.F. AERIAL INPUT	Impedance 80Ω. Balanced
INTERMEDIATE FREQUENCY	A.M.—470 kc/s F.M.—10·7 Mc/s

G.E.C. VALVES

V1	V.H.F. (F.M.) amplifier	Z77
V2	V.H.F. (F.M.) frequency changer ...	Z77
V3	A.M. frequency changer	X719
V4	I.F. amplifier	W719
V5	Signal detector, A.G.C. rectifier, A.F. amplifier	DH77
V6	Output pentode	N709
V7	Tuning indicator	EM80
V8	H.T. rectifier	U78

RATIO DETECTOR CRYSTALS 2—Germanium GEX34

LOUDSPEAKERS (permanent magnet)

BC5842	*BC9442*	*BC9640*
8 in. × 5 in. elliptical	10 in.	10 in.

Speech coil impedance, 3 ohms at 400 c/s
Extension loudspeaker terminals

NET WEIGHT	19 lb.	68 lb.	65 lb.
DIMENSIONS	height 13 in.	28¾ in.	29⅛ in.
	width 17 in.	31¾ in.	32½ in.
	depth 8½ in.	14½ in.	16½ in.

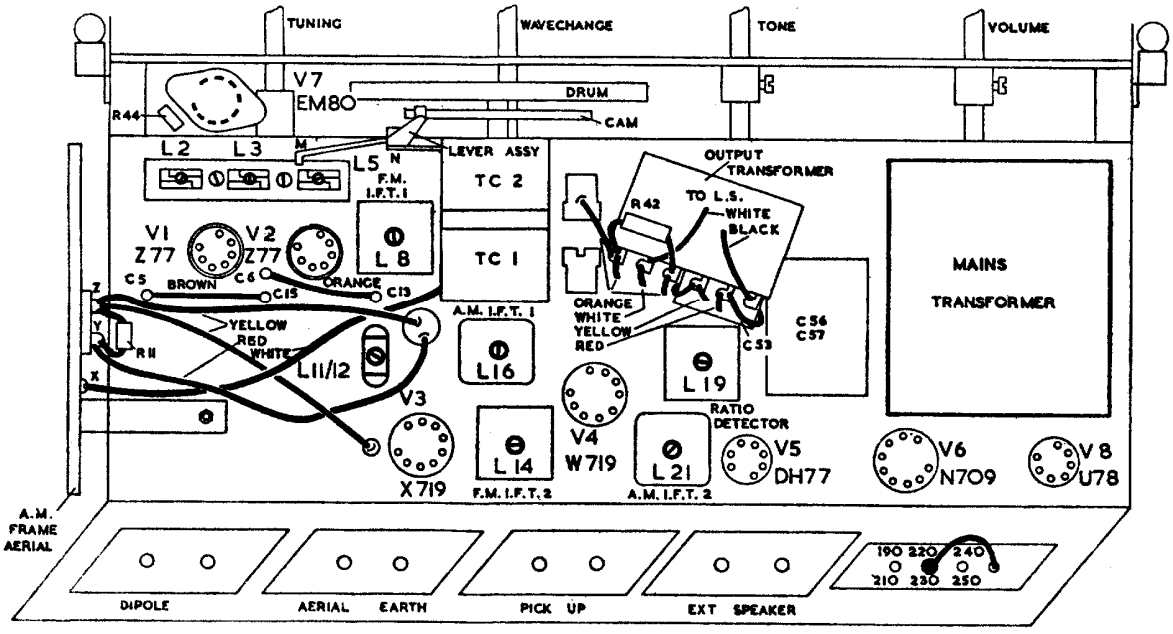

FIG. 1. UPPER VIEW OF CHASSIS

DISMANTLING

BC5842

(*a*) Remove the back panel, held by five screws

(*b*) Remove the four control knobs (push fit)

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(*c*) Remove the four chassis fixing screws

(*d*) Disconnect the loudspeaker leads

(*e*) Withdraw the chassis

BC9442 and BC9640

RECEIVER

(*a*) Remove the back panel, held by six screws

(*b*) Remove the five push fit control knobs (one at side)

(*c*) Remove the aerial panel assembly, held by three screws, washers and nuts

(*d*) Unsolder the loudspeaker and pick-up leads

(*e*) Disconnect the record changer mains lead at the terminal block on the receiver chassis

(*f*) Remove the two receiver chassis fixing screws, lower the receiver and withdraw it from the cabinet

RECORD CHANGER

(*g*) Proceed as in (*a*), (*d*) and (*e*)

(*h*) Remove the washer and nuts from each of the three suspensions and withdraw the record changer

WIRING COLOUR CODE

A colour code is employed for wiring to distinguish between circuit functions. The chart gives details of wire covering colours and the circuits in which they are used.

Colour	Use
ORANGE	Unsmoothed H.T. positive
RED	Smoothed H.T. positive
BLUE	Screen grids and mains
GREEN	Grids and oscillator coils
WHITE	Aerial and loudspeaker
BROWN	Heaters and dial lamps
BLACK	Points at chassis potential
YELLOW	Anodes and general purposes
	All sleeving is yellow

COLLARO RC54 A.C. AUTOMATIC RECORD CHANGER

The changer will play automatically up to 8 records of mixed size (7 in., 10 in. or 12 in.) at any one of the 3 speeds of 33⅓, 45 or 78 r.p.m.

The one piece plastic pick-up arm is integral with the turnover pick-up head, which is fitted with a type "O" crystal insert with type 5304/L long playing stylus and type 5304/N standard stylus. The stylus may be removed by undoing the small screw which holds it to the cartridge.

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A muting switch connected across the pick-up short-circuits it except in the playing position and when the changer is switched off.

THE MOTOR is an induction constant speed type (model A.C. 53) with an input resistance of approximately 700 ohms.

A standard motor pulley for 50 c/s is fitted. For different supply frequencies a replacement motor unit and motor pulley to suit the new frequency must be fitted.

TURNTABLE REMOVAL. Remove the circlip and bright metal washer from the centre of the turntable. Lift the turntable off the spindle with a small to and fro rotary movement.

LUBRICATION should not normally be required as the motor is fitted with self-oiling bearings. Should lubrication of the motor bearings appear to be necessary after a very long period of service, it is recommended that the complete motor unit be returned to the manufacturers for overhaul or replacement. Dismantling the motor assembly is not recommended as it is difficult to reassemble the motor satisfactorily without special equipment, and noisy running and uneven speed may result.

Care should be taken to keep oil and grease from the inner rim of the turntable, the driving surfaces of the motor pulley 4 (fig. 3) and the two rubber idler wheels, the record retaining slide and the record selector pawl on the main spindle. Occasionally wipe these surfaces with a clean rag moistened with petrol or carbon tetrachloride.

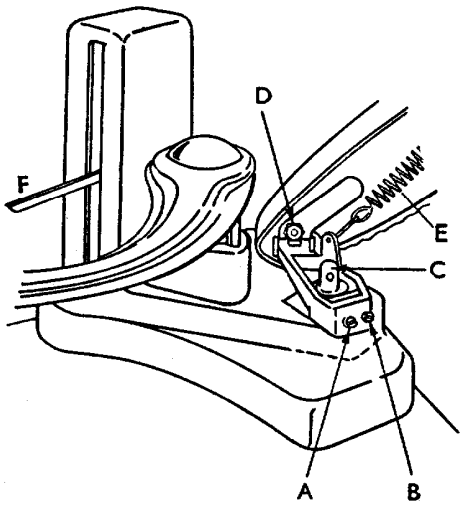

Fig. 2. COLLARO RC54 PICK-UP HEIGHT AND POSITION ADJUSTMENTS

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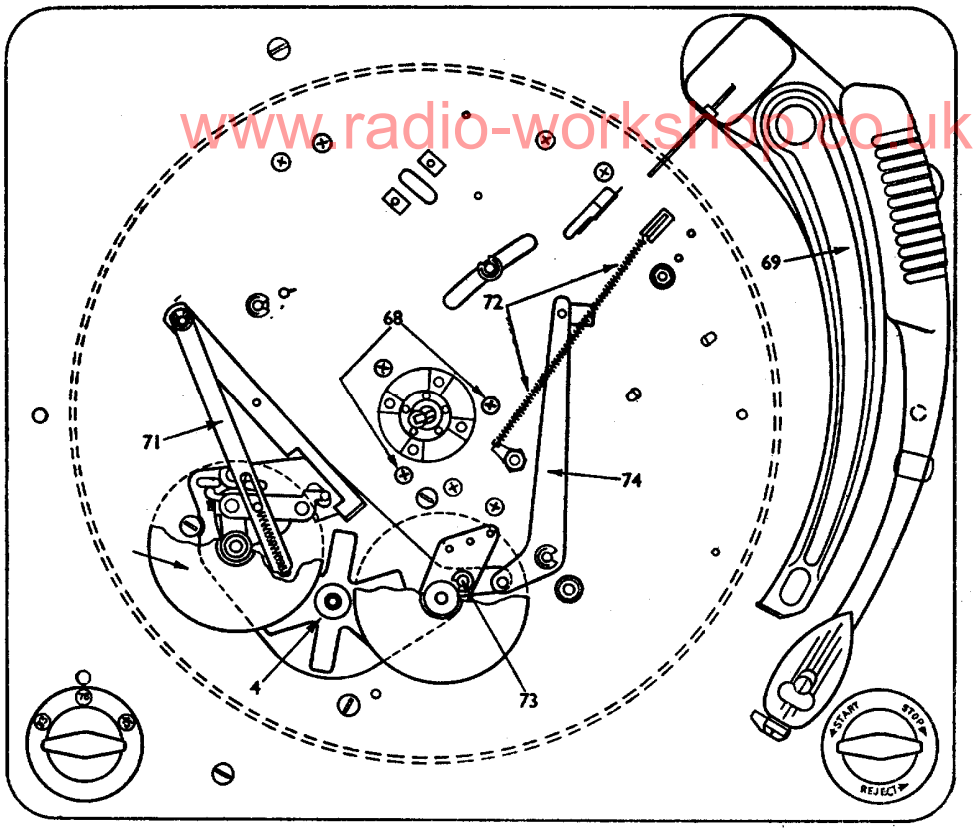

Fig. 3. UPPER VIEW OF COLLARO RC54 RECORD CHANGER

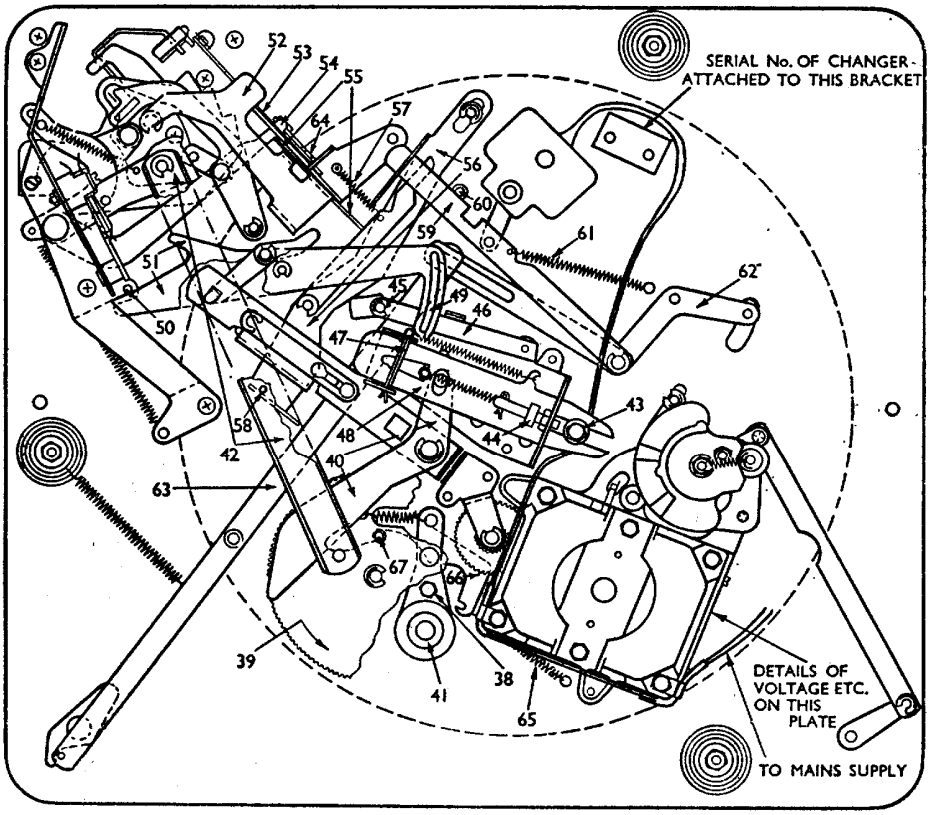

Fig. 4. UNDER VIEW OF COLLARO RC54 RECORD CHANGER

PICK-UP HEIGHT may be adjusted by inserting a suitable pin in the hole of spindle C (fig. 2) when the pick-up is in its rest position and screwing the spindle up or down to allow the pick-up arm to just clear its rest by approximately $\frac{1}{8}$ in.

If on switching on again the changer does not start up and complete the change cycle, turn the control knob fully to the " START " position and hold there for a few moments before gently releasing.

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PICK-UP SETTING DOWN POSITION will be erratic if the nut shown at D (fig. 2) is loose. To adjust the position at which the stylus alights on the record turn the two screws A and B (fig. 2) on the base of the pick-up arm $\frac{1}{8}$ of a turn at a time. To bring the position further in, loosen screw A and tighten screw B. To bring the position further out, loosen Screw B and tighten screw A the same amount. *Avoid excessive force when tightening these screws.* The changer gives automatic positioning for 7 in., 10 in. and 12 in. records and this adjustment affects all positions equally.

PICK-UP STYLUS PRESSURE is not adjustable. A fixed stylus pressure suitable for $33\frac{1}{3}$, 45 and 78 r.p.m. records is given by the spring E (fig. 2).

Never use a record which is warped, cracked, chipped or has an enlarged or otherwise damaged centre hole. Destruction of the stylus may result, or more than one record drop at a time.

RECORD DROPPING. *Keep the record retaining slide and the record selector pawl on the main spindle clean and free from oil and grease at all times.*

The record size indicating lever F (fig. 2) is unaffected by 7 in. records dropping on to the turntable, bent halfway down by 10 in. records and bent fully down by 12 in. records.

TUNING CAPACITOR PLATES FULLY MESHED
TO GAIN ACCESS TO THE DRIVE, REMOVE THE TWO DIAL LAMPHOLDERS, THE TUNING INDICATOR FROM ITS CLIP AND THE REGISTER BACKPLATE START AT 'A' AND FINISH AT 'F', PLACING THE SPRING IN ANY HOLE WHICH MAKES THE DRIVE SUFFICIENTLY TAUT.
LENGTH OF CORD 'A' TO 'E' IS 51"

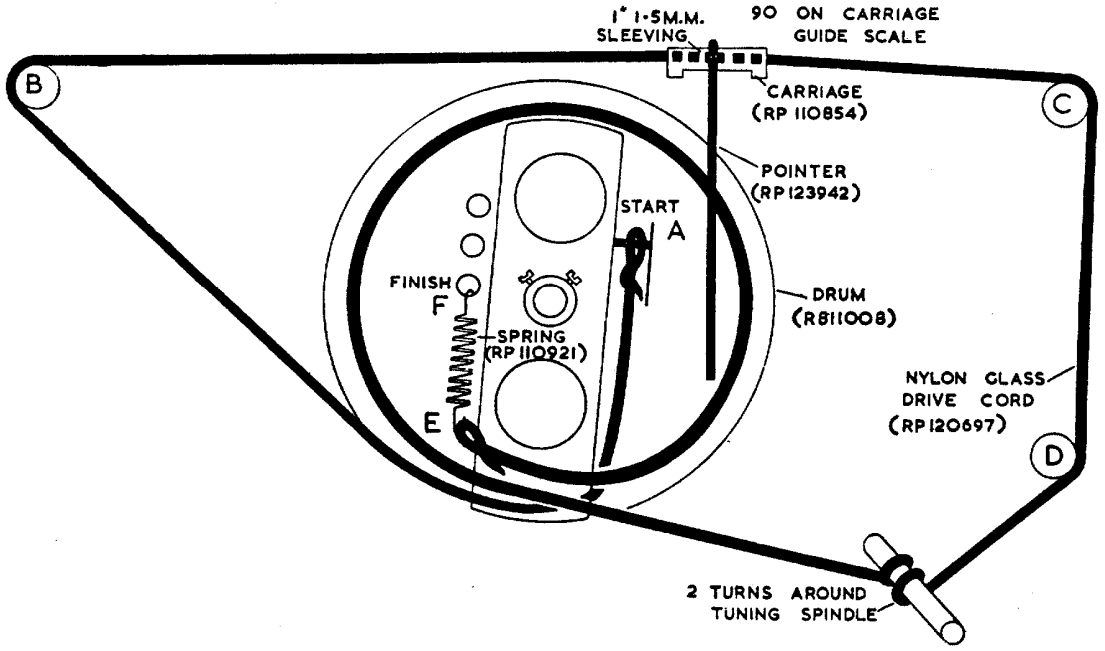

Fig. 5. TUNING DRIVE

Adjustments to the record dropping mechanism are critical and should not be attempted without reference to the record changer manufacturer.

AUTO TRIP ADJUSTMENT. No adjustment is provided. Failure may be caused by the curved end of the Feed Lever 49 (fig. 4) accidentally being upwards or downwards thus preventing the free movement of the Striker bent Arm 46 (fig. 4). Also check that the long Pin 50 (fig. 4) always lies within the forked end of the Feed Lever 51 (fig. 4).

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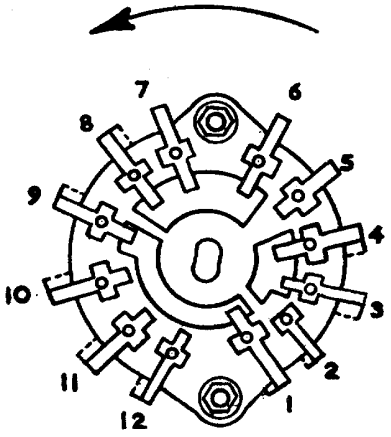
CONTINUOUS OPERATION OF THE CHANGE CYCLE. If the change mechanism operates continuously without allowing each record to play to the end the cause may be (*a*) weakening or displacement of Spring 65 (fig. 4), (*b*) Drive Withdrawal Pawl 66 (fig. 4) being stiff on its pivot 73 (fig. 3), (*c*) Auto-Trip Lever 74 (fig. 3) being stiff on its pivot. Any of these causes may prevent the Drive Withdrawal Pawl 66 (fig. 4) being properly picked up by the Pin 67 (fig. 4) in the Operating Gear 39 (fig. 4).



FULL LINE CONTACTS
S1, 2, 3,

DOTTED LINE CONTACTS
S4, 5,

Fig. 6. WAVECHANGE SWITCH (REAR VIEW)

F.M. SERVICE NOTES

MODULATION HUM

Modulation hum can be caused by the V1 and V2, Z77 valves.

In some early productions the 1μF capacitor C16 was not fitted as the screen decoupling capacitor to the oscillator valve V2. It will be found that in these receivers a 1μF capacitor is used as C58 in the audio feedback loop as in the radiogramophone models BC9442 and BC9640. When modulation hum is encountered the 1μF capacitor should be connected in parallel with C7, the 3000pF screen decoupling capacitor of V2. After wiring in position it should be fixed with hot wax to the screen side and to complete the feedback circuit R43 must be disconnected from the interchassis connector and connected to the extension loudspeaker socket to which C58 was originally soldered.

LOW PITCHED MICROPHONY

Low pitched microphony can result from one of the following causes—

(i) Oscillator core fixing loose in the tuning bar. It can be tightened by slightly deforming the metal on one side of the split in the bar.

(ii) Loose turns on the oscillator coil. The coil should be changed as the addition of an adhesive to the winding to prevent vibration will almost certainly effect the temperature coefficient and cause drift.

(iii) Loose oscillator coil former fixing.

(iv) Loose components and poor connections in the oscillator section. Great care must be taken when servicing this part of the receiver to avoid producing the conditions which cause microphony.

(v) In early production receivers the frame aerial assembly was fixed to the ganged capacitor and this caused a tendency to microphony in some instances. Removing the frame aerial to a position at the V1 end of the chassis (fig. 1) and fixing it by means of the screw holding the clamp for C51 (8μF) will clear microphony due to vibration of the frame aerial and ganged capacitor.

High pitched microphony

A high pitched microphony can be caused by the oscillator valve V2 (Z77), which may be up to standard in all other respects.

A very few early production receivers of the BC5842 Table model had an oscillator circuit arrangement as used in the BC9442 and BC9640 radiogramophones. If high pitched microphony is experienced on these receivers they can be converted to the later circuit by disconnecting pin 7 (V2) yellow sleeved lead from the " top end " of the oscillator coil L5 and connecting it to the centre tap of the coil, also connecting a 10pF ±0·5pF Erie type P100k capacitor (part no. RK202768) between the " top end " of L5 and chassis.

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Hum on BC9442 and BC9640 Radiogramophones

Check the lead connecting the volume control bracket to the main chassis for a break. If a black stiff lead is used replace it with a flexible braiding.

Multipath distortion

It has been found that in a few localities severe reflections arriving at the receiving aerial, out of phase with the direct signal, have caused objectionable distortion. This may manifest itself on one or more of the three programmes and vary in magnitude over a period of time. Experience has shown that increasing the aerial efficiency and in extreme cases, improving the aerial directivity, clears this " multipath " distortion.

If the difficulty arises it is recommended that the following procedure is adopted :—

(*a*) When using the internal aerial move the receiver to different positions in an attempt to find a place where there is no distortion.

(*b*) Check with a simple dipole in the immediate vicinity of the receiver, e.g. picture rail fixing.

If unsuccessful—

(*c*) Check with an outdoor or loft aerial.

(*d*) In very severe cases it will be advisable to instal an efficient directive external aerial.

General

Add a shakeproof tag to one of the fixing screws of the loudspeaker frame and connect it with a short black lead to the tag of the speaker which is connected to chassis (black lead). This change prevents a potential build up between the speech coil and magnet assembly.

CIRCUIT NOTES

The V.H.F. (F.M.) circuits are shown on the top section of the diagram to separate, as far as possible, the F.M. and A.M. functions of the receiver. X719 (V3) operates as a frequency changer on A.M. and as an I.F. amplifier on F.M., the A.M. oscillator tuned circuit is made ineffective by connecting a 150 ohm resistor (R9) across it by means of S3. The 47 pF capacitor, C30, by-passes the A.M. I.F. transformer secondary, L16, at F.M. intermediate frequencies. R27 (220k ohm) and R1 (100k ohm) form a potential divider across the 10k ohm load (R28) to apply part of its negative potential (that across R1) to V1 as A.G.C. on V.H.F./F.M. For A.M. reception the negative potential developed across R34 (470k ohm), due to rectification of the A.M. I.F. signal by one of the diodes of V5 (DH77), is applied to V3 (X719 heptode section) and V4 (W719). On F.M. the full negative potential of the ratio detector is applied to the tuning indicator (V7).

The coil assembly L9/L10 acts as an internal aerial for A.M. reception and two 4 in. square metal plates mounted on the chassis side of the back panel, with centres 11 in. apart, form an internal F.M. aerial which are plugged into the " dipole " aerial sockets. Provision is made for the use of an external aerial with balanced feeder.

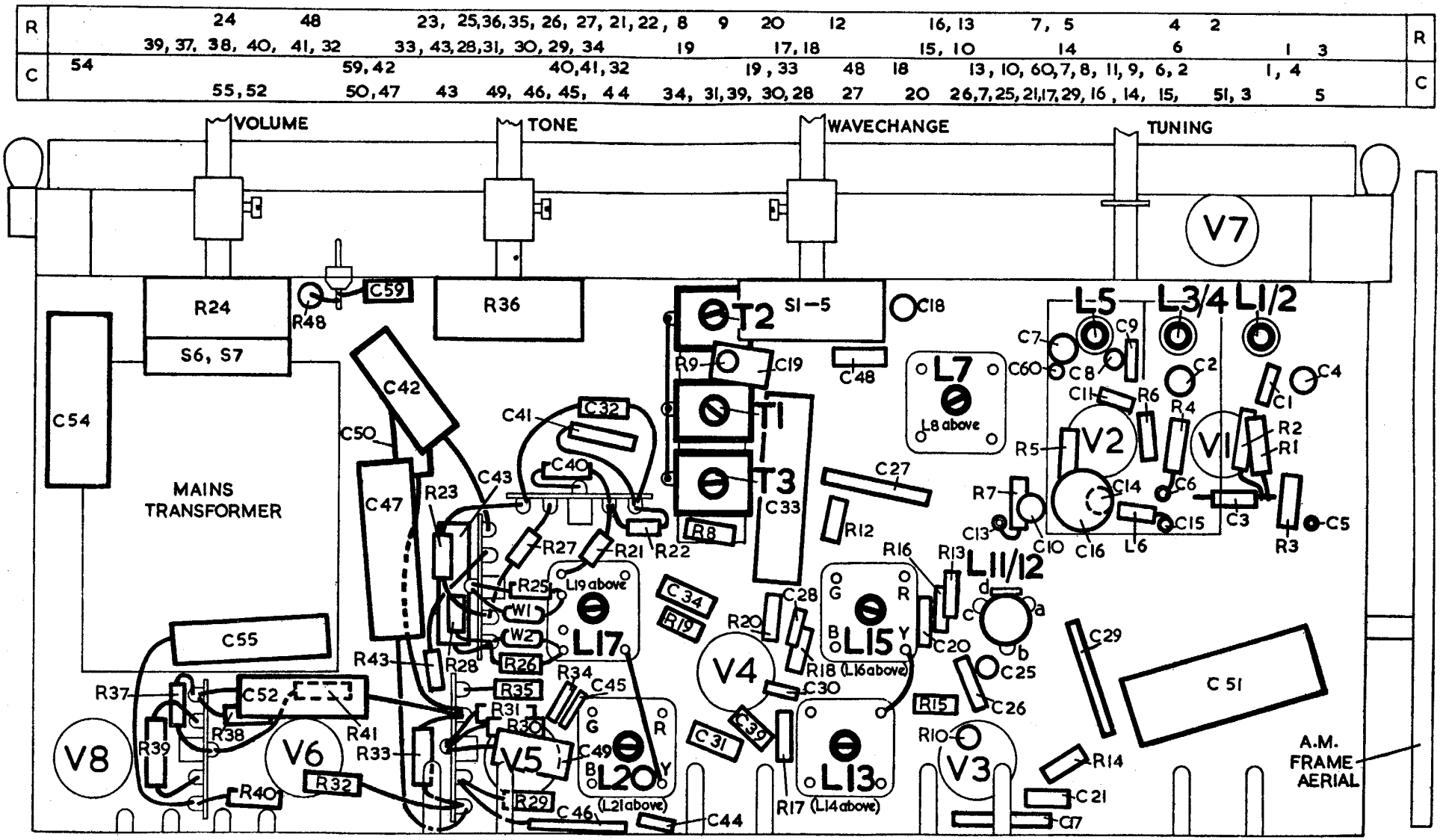

Fig. 7. UNDER VIEW OF CHASSIS

Mains switches S6 and S7 are incorporated in the volume control, R24. S1-3 are on the back and S4-5 are on the front (spindle end) of the wavechange switch wafer. The circuit diagram shows the switches as viewed from the front of the receiver with the control turned fully anti-clockwise for F.M. reception. A rear view of the switch is given in fig. 6.

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The cores of L1/2, L3/4 and L5 are ganged by a plate (fig. 1), which moves up and down against two springs when the tuning control is operated. The plate is actuated by a lever assembly and a cam, which is mounted on the spindle of the ganged tuning capacitor.

The tag connections for any tuning coil or I.F. transformer may be identified by the corresponding letters in the circuit and under chassis diagrams.

Details of the resistors and capacitors may be found in the replacement parts list on page 15.

Average potentials, measured with a 20,000 ohms voltmeter, with 230V 50 c/s mains applied to the 220/30V tap and no signal input, are given on page 13. Readings were taken with the receiver tuned to 91 Mc/s on V.H.F./F.M. and 1·5 Mc/s on M.W. The H.T. current corresponding to these conditions is given in the circuit diagram.

DIAL LAMPS. *Two OSRAM 6·5V 0·3A, m.e.s. OS75 lamps are fitted. Other types should not be substituted as they may give an unduly short life or fail to provide sufficient illumination.*

NOTE.—*The equipment is designed to employ the specified Valves and any replacements that may be necessary must be of these types. G.E.C. or Osram Valves may be fitted and are identical except for the Trade Marks, and the alternative branding is in no way associated with any difference in quality or manufacture.*

CIRCUIT ALIGNMENT NOTES

After switching on, five minutes should be allowed for the valves to reach their normal operating temperature. With the tuning capacitor at maximum the right hand edge of the pointer carriage should coincide with the " 90 " mark on the carriage guide.

Use a non-metallic screwdriver for dust core adjustments.

For A.M. alignment at I.F., inject the signal via a 2000pF isolating capacitor into the signal grid of V3 (pin 2) and for the signal frequency circuits feed the signal via a suitable dummy aerial to the aerial and earth sockets. Modulation should be 30% at 400 c/s.

For F.M. alignment at I.F. inject the signal via a 2000 pF isolating capacitor into the cathode of V2 (pin 2) and at V.H.F. feed the signal via a balanced 80 ohm network into the dipole socket. The cam should have equal overlap at either end of the tuning capacitor movement. A suitable output indicator is a d.c. voltmeter with a F.S.D. of 10 volts and resistance of at least 200k ohms. The meter reading should not be allowed to exceed 4 volts during the alignment procedure.

A.M. sensitivity figures indicate the required signal strength in microvolts, under the given alignment conditions, to produce 50 mW output (0·387 volts r.m.s. across a 3 ohm resistive load connected to the secondary of the output transformer or 18·8 volts between anode and tap connections on the primary). Sensitivity variations of up to +100% of the values tabulated may be tolerated.

F.M. sensitivity figures are the inputs in microvolts required to produce 4V across R28 in the disciminator circuit.

R	2, 1, 27,	3, 4,	10,	5,	11,	6,	7, 9,	8,	13, 14, 16, 12,
C	1, 3, 2, 6, 5, 4, 11,	7, 16, 10, 60, 8, 17,	9,	13, 12, 14, 15, 19, 18,	27, 31,	20,	21, 2		

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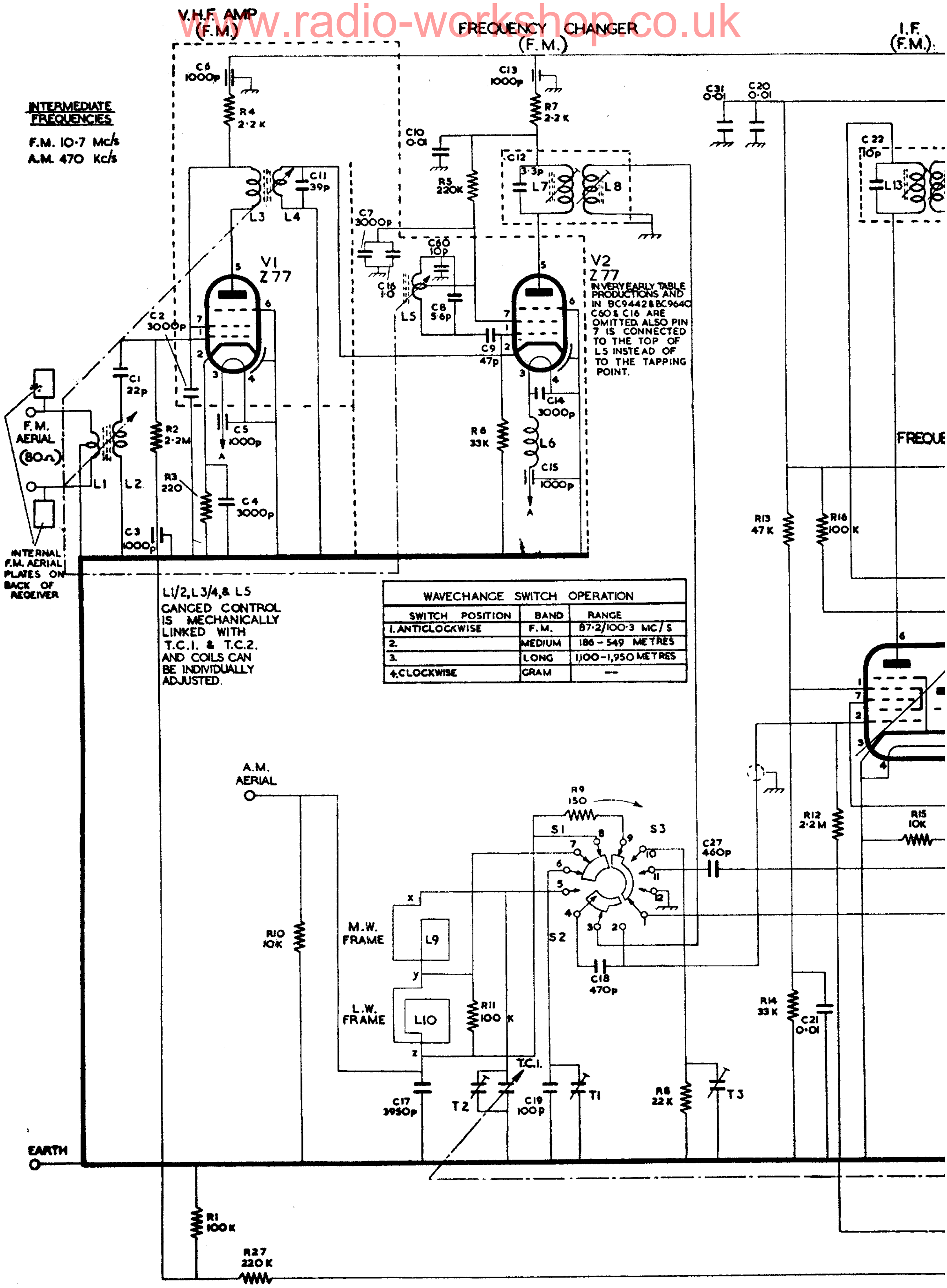

WAVECHANGE SWITCH OPERATION

SWITCH POSITION	BAND	RANGE
1. ANTICLOCKWISE	F.M.	87·2/100·3 MC/S
2.	MEDIUM	186 – 549 METRES
3.	LONG	1,100–1,950 METRES
4. CLOCKWISE	GRAM	—

Fig. 8. CIRCUIT D

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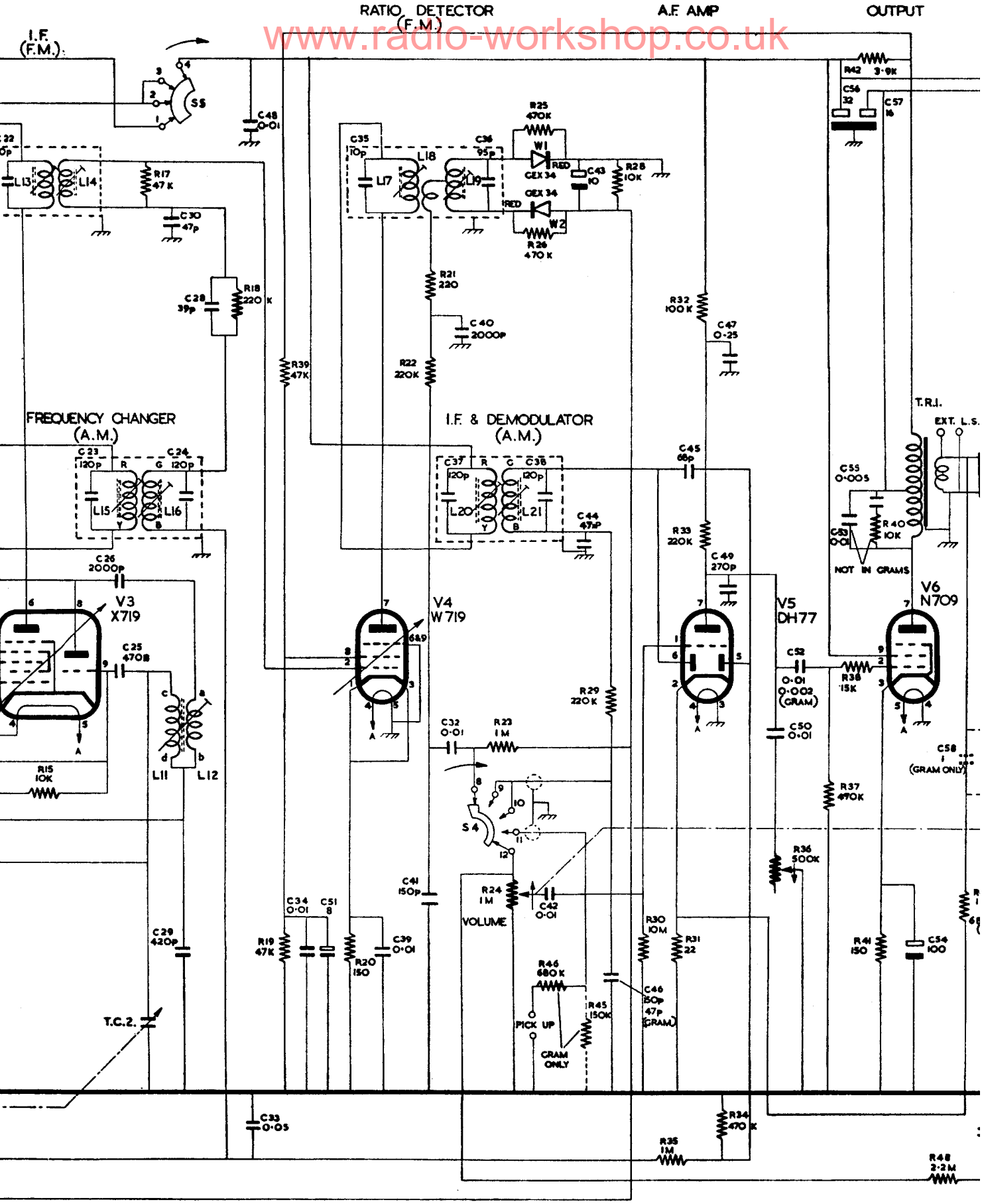
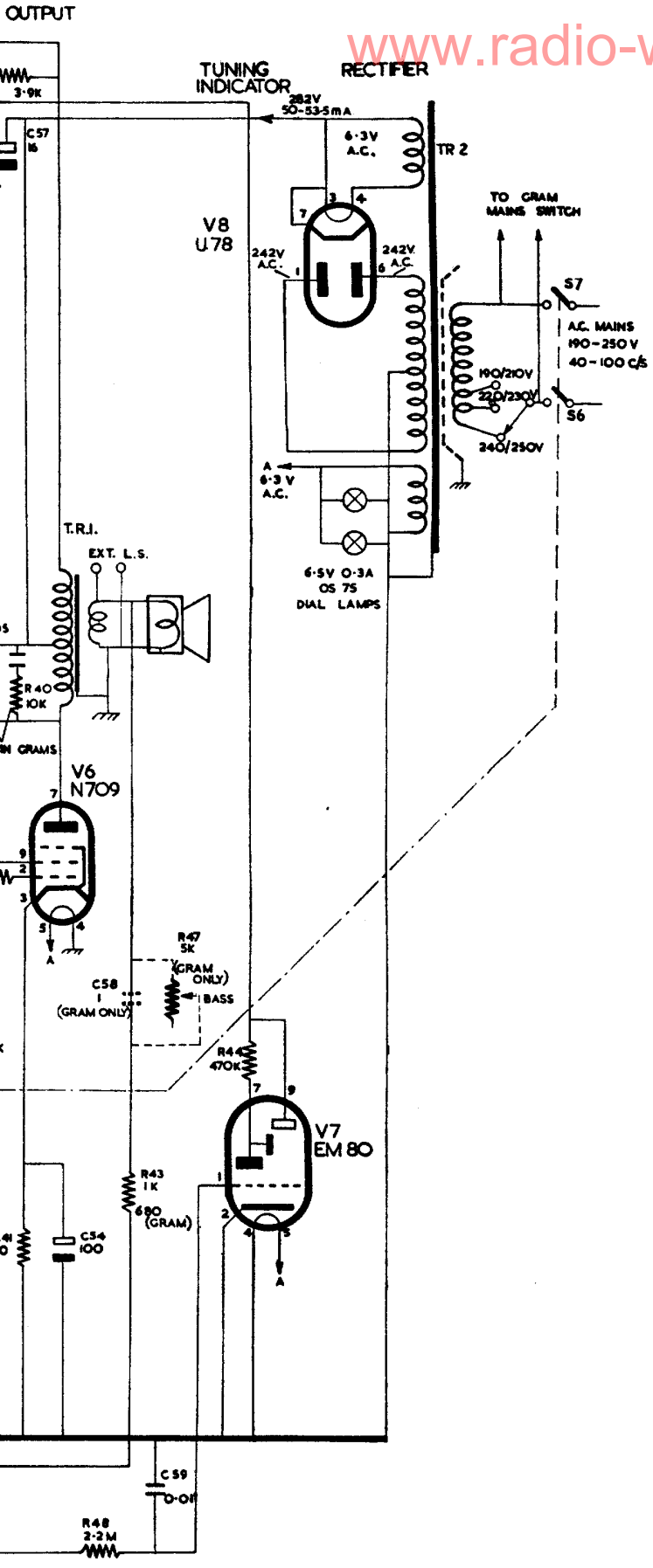


RCUIT DIAGRAM FOR BC5842 F.M./A.M. RADIO RECEIVER AND BC9442 AND BC9640 F.M./A.M. RADIOGRAMOPH

4,	36,	37,	38,	39,	42,	40.	41,	48,	47,	43,	44,
2,	50,		56,	57,	53,	55.	54,	58.	59,		



POTENTIAL READINGS

230V 50 c/s mains to 220/230V tap.

Measurements with 20,000 ohms/volt meter. No signal input and receiver tuned to 91 Mc/s on F.M. and 1·5 Mc/s on A.M.

Valve No.	Condition	Anode Volts	Screen Volts	Cathode Volts
1	F.M.	160	160	1·4
2	F.M.	170	50	—
3 (hexode)	F.M. A.M.	171 200	45 45	— —
3 (triode)	F.M. A.M.	22 30	— —	— —
4	F.M. A.M. Gram.	171 200 223	100 100 100	1·7 1·8 1·8
5	F.M. A.M. Gram.	64 67 70	— — —	— — —
6	F.M. A.M. Gram.	264 264 264	176 200 224	4·7 5·4 6·2
7	F.M. A.M. Gram.	40 45 43	175* 202* 225*	— — —
8	F.M. A.M. Gram.	— — —	— — —	282 282 282

* Potential at target

DIOGRAMOPHONES.

TUNED CIRCUIT ALIGNMENT

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Range	Frequency Mc/s	Scale Setting	Adjust in sequence	Notes	Average input μV
A.M. I.F.	0·470	90	L21, L20 L16, L15	Input to V3 grid (pin 2) Switch to L.W. Tuning capacitor at maximum Repeat adjustments	40
M.W.	0·6	76	L11/12		18
	1·5	7·9	T3		
	1·5	—	T2	Tuning control set for maximum output Repeat adjustments	15
L.W.	0·23	—	T1	Check scale reads between 30 and 32	40
F.M. I.F.	10·7	0	L17, L14 L13, L8, L7	Input to V2 cathode (pin 2) Switch to F.M. Tuning capacitor at minimum Meter across R28. Adjust for maximum output.* Finally adjust input for meter reading of 4 volts	
			L19	Transfer meter across C40 Adjust L19 for reading of 2 volts	
			L17, L14, L13 L8, L7	Meter across R28 Adjust for maximum output*	
			L19	Transfer meter across C40 Adjust L19 and note max. and min. readings. Add these figures, divide by 2 and set L19 to give a meter reading equal to this figure.	
V.H.F. (F.M.)	Third programme transmitter frequency for district	—	L5 L3, L2	Meter across R28 Input to dipole sockets Adjust for maximum output*	3

*When making these adjustments adjust the input to maintain the reading at or just below 4 volts.

COIL AND TRANSFORMER DATA

Circuit reference	Component	Resistance (ohms)	Inductance μH (or turns)	Part No. for Ordering
TR1	Output transformer			
	primary (total)	560		R810918
	secondary	0·48		
TR2	Mains transformer (265-0-265V)			R810671
	primary 0-200V	25·6		
	0-230V	29·3		
	0-250V	32·3		
	secondary total H.T.	650		
	rect. fil.	0·66		
	heaters	0·24		
—	Loudspeaker (BC5842)	2·8		R810839
—	Loudspeaker (BC9442, BC9640)	2·8		R809667
L1	F.M. aerial coil, C	0·05	2 turns	RP123964
L2	F.M. aerial coil, T	0·02	6 turns	
L3	F.M. R.F. coil, T	0·025	8 turns	RP123965
L4	F.M. R.F. coil, C	0·01	2 turns	
L5	F.M. osc. coil, T	0·15	4 turns	RP123966
L6	Heater choke...	0·03	19½ turns	RP124233
L7	1st F.M. I.F.T., primary	1·8	—	R810673
L8	1st F.M. I.F.T., secondary	1·25	—	
L9	Frame aerial, M.W.	0·9	178μH	R810669
L10	Frame aerial, L.W.	14	1591·5μH	
L11	A.M. osc. secondary, T	3·1	—	R810145
L12	A.M. osc. primary, C	1·2	—	
L13	2nd F.M. I.F.T., primary	1·25	—	R810674
L14	2nd F.M. I.F.T., secondary	1·8	—	
L15/16	1st A.M. I.F.T. (each winding)	8	—	RK203685
L17	Ratio detector, primary	0·97	—	R810675
L18	Ratio detector, tertiary	0·18	—	
L19	Ratio detector, secondary	0·11	—	
L20/21	2nd A.M. I.F.T. (each winding)	8	—	RK203685

Note :—" C " refers to the coupling winding and " T " to the tuned winding

REPLACEMENT PARTS—ORDER REFERENCE NUMBERS

Cabinet (BC5842)	R810364
Cabinet (BC9442)	R810356
Cabinet (BC9640)	R810979
Back assembly (BC5842)	R810657
Back assembly (BC9442)	R810829
Back assembly (BC9640)	R810971
Register (BC5842, BC9442) ...	R810659
Register (BC9640)	R810968
Clips (R810659 register)	RP122454
Escutcheon (R810968 register) ...	R810966
Mask (R810968 register)	R810969
Knob (wavechange)	R806976
Knobs	R806975
Knob (R47-BC9442, BC9640) ...	R807311
Felt washers	RP100754
Plugs (aerial etc.)	RK203680
Aerial plate assembly (BC9442, BC9640)	R810827
Wavechange switch	R810760
Trimmer (triple, 3·5-30pF)	RP123780
Tuning capacitor (2 gang, 528pF change)	RK204304
Drum assembly	R811008
Spring (drum)	RP110921
Lever assembly	RP123916
Cam	RP123919
F.M. coil plate	RP124063
F.M. coil rod (small)	RP123920
F.M. coil rod (large)	RP123921
Tension spring (for RP123920) ...	RP124254
Tension spring (for RP123921) ...	RP123986
Carriage	RP110854
Pointer (BC5842)	RP123942
Pointer (BC9442)	RP124259
Pointer (BC9640)	RP124245
Nylon glass drive cord	RP120697
Mains adjustment panel	RP123578
Mains adjustment plug	RP123584
Mains terminal block (BC9442, BC9640)	RP123411
Chassis fixing grommets (BC9442, BC9640)	RP122991
Mains lead (BC5842)	R803259
Mains lead (BC9442, BC9640) ...	R803873
Grommet (mains lead)	RP117766
Tuning spindle	RP123913
Clip for tuning spindle	RP103361
Extension spindle	RP120655
Tag boards (4 way)	RP123704
Insulated connector	RP111324
Clamping ring (for RP111324) ...	RP111325
Lampholder (BC5842, BC9442) ...	RK200641
Lampholder (BC9640)	RP123776
Terminal plates	RP107765
F.M. coil clip	RP123912
A.M. coil clip	RK202528
F.M. dust core	RP124392
A.M. dust core	RK202529
Valve holder (V1)	R808943
Valve holder (V2)	RK202027
Valve holder (V3, 4, 6)	R808714
Valve holder (V5, 8)	RK204216
Valve holder (V7)	R810018
Screening can (V1)	RK203898
Screening can (V2)	RK202028

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RESISTORS

	ohms	*watts*	*tolerance* ±%	
R1, 11, 16, 32	100k	‡	10	RP190818
R2, 12, 48	2·2M	‡	10	RP190834
R3, 21	220	‡	10	RP190786
R4, 7	2·2k	‡	10	RP190798
R5, 18, 22, 27, 29, 33	220k	‡	10	RP190822
R6, 14	33k	‡	10	RP190812
R8	22k	‡	10	RP190810
R9, 20, 41	150	‡	10	RP190784
R10, 15, 28, 40	10k	‡	10	RP190806
R13, 39	47k	‡	10	RP191084
R17, 19	47k	‡	10	RP190814
R23, 35	1M	‡	10	RP190830
R24	1M	Vol. pot. (BC5842) (1" spindle ; with d.p. switch)		R810140 or R810923
R24	1M	Vol. pot. (BC9442, BC9640) (1" spindle ; with d.p. switch)		RP810801
R25, 26, 34, 37, 44	470k	‡	10	RP190826
R30	10M	‡	10	RP190842
R31	22	‡	10	RP190774
R36	500k	Tone potentiometer (1" spindle)		R810141 or R810924
R38	15k	‡	10	RP190808
R42	3·9k	5	10	RP195053
R43	1k	‡	10	RP190794
R43	680	‡	10	RP190792
R45	150k	‡	10	RP190820
R46	680k	‡	10	RP190828
R47	5k	Bass pot. (BC9442, BC9640) (1" spindle)		R811156

CAPACITORS

	capacitance	*volts*	*type*	*tolerance* ±%	
C1	22pF	500	Erie N750A	10	RP194274
C2, 4, 7, 14	3000pF	300	Disc CD831	—	RP194277
C3, 5, 6, 13, 15	1000pF	500	F.E.C. Feed through	—	RP194289
C8	5·6pF	750	Erie P100k	0·25pF	RK203490
C9, 30, 44, 46	47pF	750	Erie N750A	2	RK202641
C10, 20, 21, 31, 32, 34, 39, 48, 59	0·01μF	400	Hunts W99	20	RK203856
C11, 28	39pF	500	Erie N750A	10	RP194275
C12	3·3pF	500	Erie P100AD	0·5pF	(F.M. IFT1)
C16, 58	1μF	250	Paper tub.	20	RK202086
C17	3950pF	350	P.S.M.	4	RK203007
C18, 25	470pF	500	Erie GP2	10	RP194254
C19	100pF	350	P.S.M.	2	RK203783
C22, 35	10pF	500	Erie N750AD	10	(F.M. IFT2)
C23, 24, 37, 38	120pF	—	—	—	(A.M. IFT)
C26, 40	2000pF	500	Erie GP2	20	RP194001
C27	460pF	350	P.S.M.	1	RK202610
C29	420pF	350	P.S.M.	2	RP194012
C33	0·05μF	500	Paper tub.	25	RK201034
C36	95pF	350	P.S.M.	2	(Ratio Det.)
C41, 46	150pF	350	P.S.M.	2	RK202608
C42, 50, 52, 53	0·01μF	1000	Paper tub.	25	RK200875
C43	10μF	25	Elect.	—	RP194278
C45	68pF	500	Erie N750A	10	RP194276
C47	0·25μF	400	Hunt L51	20	RP194190
C49	270pF	350	P.S.M.	10	RK201484
C51	8μF	450	Elect.	—	RP194263
C52	0·002μF	1000	Paper tub.	25	RK201327
C54	100μF	12	Elect.	—	RP194313
C55	0·005μF	1000	Paper tub.	25	RK201257
C56, 57	16+32μF	350	Elect.	—	RP194246
C60	10pF	500	Erie P100K	0·5pF	RK202768