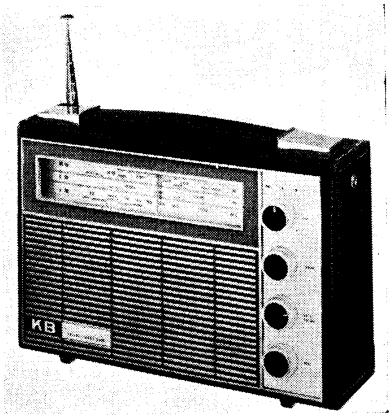
ERT

SERVICE CHART 1554

New Series



KB KR019

REGENTONE TR419

Additional copies of this chart price 1s. 6d. post free. Payment with order please to ERT, 40 Bowling Green Lane, London EC1

TWELVE-transistor plus five-diode battery portable covering LW, MW and FM/VHF. Features include AFC on FM/VHF.

Batteries. Four Ever Ready LPU11, HP11, Vidor LPV11, HP11, Exide T19 or equivalents.

Consumption. Quiescent 9mA, 50mW, 45mA, 300mW 110mA.

Wavebands. MW 184-586m(1630-512kc/s). LW 1091-2174m(275-138kc/s). FM/VHF 86.5-105.1mc/s.

Transistors. TR1 2SA103 mixer-oscillator AM, TR2 2SA70 IF amplifier AM/FM, TR3 2SA70 IF amplifier AM/FM, TR4 2SA71A RF amplifier FM, TR5 2SA71A mixer FM, TR6 2SA70 first IF amplifier FM, TR7 2SA71B oscillator FM, TR8 2SA100 reactance transistor, TR9 2SB32 audio preamplifier, TR10 2SB33 audio driver, TR11 and TR12 2SB33 push-pull output.

Diodes. D1 0A90 IF overload protection AM/FM, D2 0A90 AM detector, D3/D4 0A90 ratio detector FM, D5 0A90 IF overload protection FM.

Thermistor. TH1 5D300 bias stabilizer.

IFs. 470kc/s and 10.7mc/s.

Aerials. Internal ferrite rod for M and L waves, telescopic rod for FM/VHF. Socket for car radio.

Speaker. 3½in. dia. 8ohms.

Output. 300mW.

Outlet. Socket for extension speaker or personal phone. Internal speaker automatically muted when jack plug inserted.

Dimensions. 6¼in. high, 9in. wide, 2¾in. deep.

Weight. 4lb including batteries.

Manufacturer. Kolster-Brandes Ltd.

Service department. Combined Radio and Television Service Ltd., Regent Works, Sidcup, Kent. Tel.: Footscray 3333. Scottish depot: College Milton, East Kilbride, Glasgow. Tel.: East Kilbride 25101.

SERVICE NOTES

Drive cord assembly. Fully open gang. Pass end of cord through hole A on drive drum, leaving approximately 1½in. protruding on the top side. Wrap cord 2½ times clockwise round drum then pass the cord round pulley C and pulley D. Pass the cord round tensioner E and over drive drum.

Wrap cord three turns anti-clockwise round drive spindle F and then pass through slot G on drum. Tie both ends of the cord firmly together making sure that tension is being applied by the tensioner.

Fully close gang. Attach pointer H to cord and position over the L of Light on the FM scale.

Voltage readings. Voltage readings in table taken with 20,000ohms/volt testmeter with set switched to FM. Voltages are positive with respect to chassis negative.

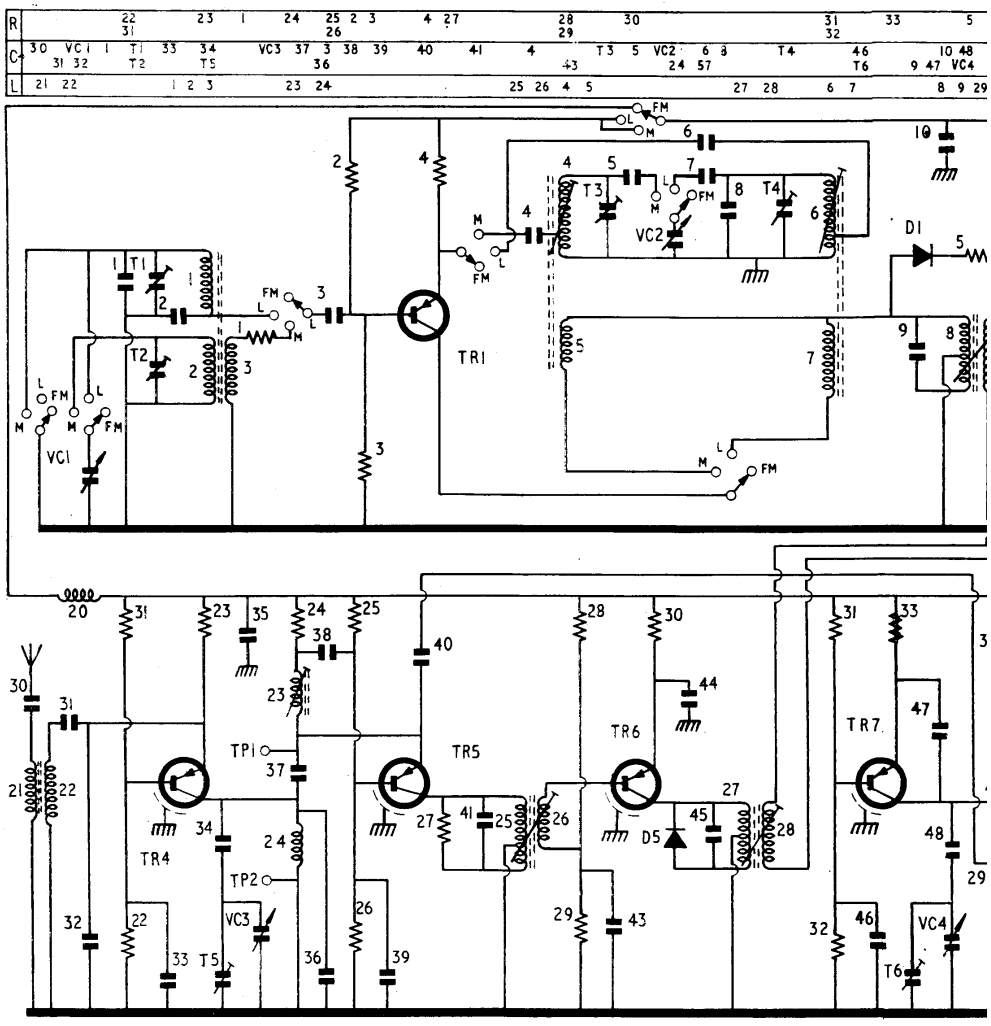
BRIEF CIRCUIT DESCRIPTION

TR4 operating as grounded base RF amplifier receives FM signals from the telescopic aerial via input transformer L21/L22. Collector load of TR4 comprises tuned circuit L24/VC3. L29/VC4 provide FM oscillator circuit. FM mixer TR5 receives signal and oscillator voltages on its emitter via C37 and C40 respectively. 10.7mc/s FM IF signal is selected in TR5 collector circuit by first IF transformer L25/L26.

There follow three IF amplifier stages, TR6, TR2 and TR3, then the signal is fed to ratio detector D3 and D4. Diode D5 is FM IF signal overload limiter.

DC voltage developed at the ratio detector is fed via R38 to the base of TR8 and controls its conduction. This in turn varies the effect of C49 across L29 and changes the oscillator tuning in such a direction to provide automatic frequency control.

On AM TR1 operates as mixer-oscil-



RESISTORS

R1	150	E8
R2	4K7	E8
R3	15K	E8
R4	2K2	E8
R5	3K3	F8
R6	18K	F8
R7	1K	G7
R8	75K	F8
R9	2K2	F8
R10	4K7	G8
R11	10K	G8
R12	1K	G7
R13	220	H7
R14	1K	H8
R15	1K	G8
R16	470	H8
R17	2K2	H7
R18	4K7	H8
R19	10K	H8
R20	10K	G8
R22	6K8	E5
R23	1K	E5
R24	470	E6
R25	3K3	E6
R26	27K	E7
R27	10K	E6
R28	4K7	G7
R29	10K	F6
R30	1K	G7
R31	3K3	G5
R32	6K8	F5
R33	470	G5
R34	100	G5
R35	47K	G5
R36	10K	F5
R37	150K	F5
R38	100K	G5
R39	5K	v/c
R40	1K	D4
R41	10K	tone
R42	4K7	D3
R43	27K	C4
R44	100	D2
R45	1K	C2
R46	100	C2
R47	5K6	C4
R48	3K9	B4
R49	47K	C4
R50	10	A3
R51	100	A4
R52	100	C3
R53	240	B2
R54	5K6	A2
R55	2.2	C1
R56	560	A1

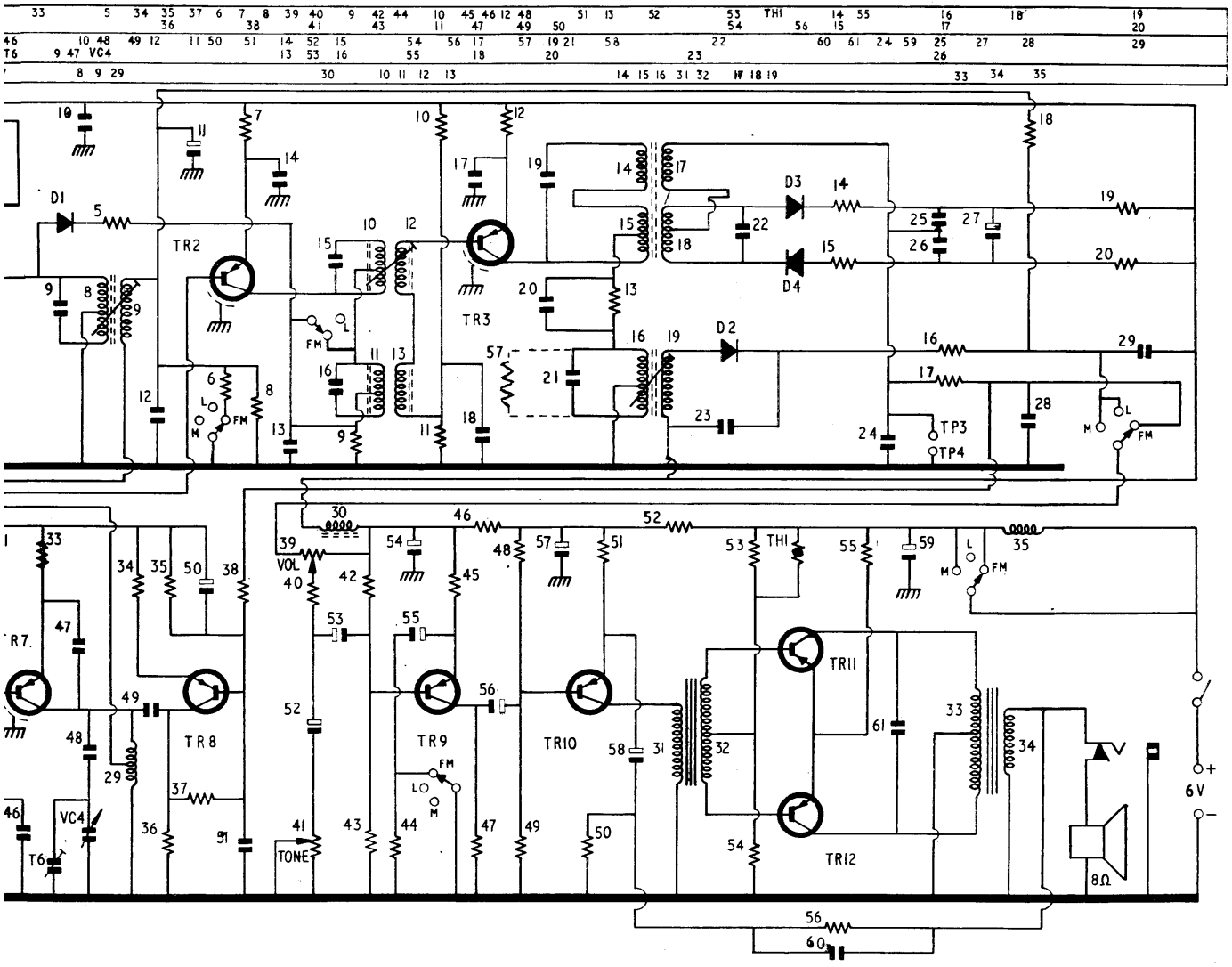
CAPACITORS

C1	55pF	—
C2	2K5pF	E8
C3	20KpF	E8
C4	5KpF	F7
C5	310pF	E7
C6	10KpF	E7
C7	140pF	E7
C8	120pF	E7
C9	part of IFT	F7
C10	100mF	F8
C11	5mF	F8
C12	20KpF	F8
C13	20KpF	F8
C14	20KpF	F7
C15	part of IFT	G7
C16	part of IFT	G8
C17	20KpF	G7
C18	20KpF	G8
C19	30pF	H7
C20	500pF	H7
C21	part of IFT	H7
C22	part of IFT	H8
C23	20KpF	H8
C24	2KpF	H7
C25	1KpF	H8
C26	1KpF	G8
C27	10mF	H8
C28	5KpF	H7
C29	20KpF	H8
C30	10pF	E5
C31	20pF	E5
C32	25pF	E5
C33	1KpF	E5
C34	160pF	E6
C35	40KpF	F5
C36	18pF	E5
C37	3pF	E6
C38	600pF	E6
C39	1KpF	E6
C40	7pF	F6
C41	part of IFT	E7
C42	30mF	F5
C43	10KpF	F6
C44	10KpF	F6
C45	part of IFT	F7
C46	1KpF	F5
C47	7pF	G6
C48	160pF	F6
C49	10pF	G6
C50	5mF	F5
C51	20KpF	F5
C52	200KpF	D3
C53	1mF	D3
C54	100mF	D2
C55	30mF	C2
C56	1mF	B4
C57	100mF	C3
C58	30mF	A4
C59	100mF	C1
C60	20KpF	A1
C61	40KpF	B2

TRANSISTOR VOLTAGES

No.	Type	Function	Emitter	Base	Collector
TR1	2SA103	AM mix-osc	4.0	3.8	—
TR2	2SA70	IF amp	2.9	2.7	1.9
TR3	2SA70	IF amp	2.9	2.6	0.2
TR4	2SA71A	FM RF amp	3.0	2.7	—
TR5	2SA71A	FM mixer	3.6	3.3	—
TR6	2SA70	FM IF amp	2.9	2.7	—
TR7	2SA71B	FM osc	2.9	2.7	—
TR8	2SA100	Reactance	4.0	3.8	2.8
TR9	2SB32	AF amp	3.6	3.4	2.2
TR10	2SB33	Driver	4.7	4.5	0.5
TR11	2SB33	Output	6.0	5.8	—
TR12	2SB33	Output	6.0	5.8	—

NOTE: Voltage readings taken on FM and are positive with respect to negative chassis



lator with separate aerial and oscillator coils for each band. IF signal passes through two stages of amplification, TR2 and TR3, and is then fed to AM detector D2. DC voltage developed across C23 is applied to base of TR2 via R18 to provide automatic gain control.

Audio amplification is achieved by preamplifier TR9, driver TR10 and push-pull output transistors TR11 and TR12. Negative feedback is applied via R56 and C60 to the emitter of TR10. Output stage bias is temperature stabilized by thermistor TH1.

ALIGNMENT (AM)

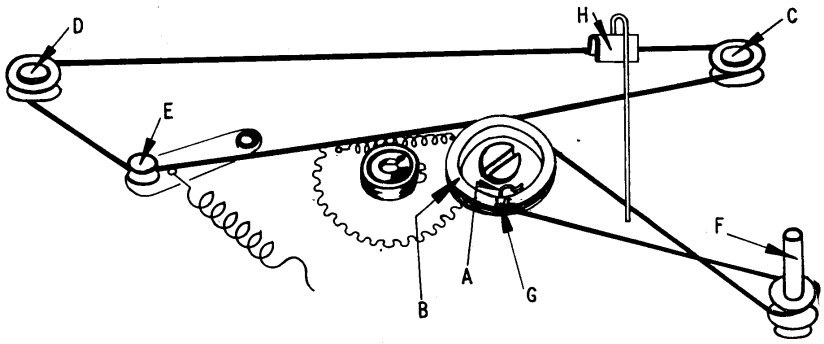
Equipment required. Modulated signal generator covering 140-1630kc/s (modulation 30 per cent at 1000c/s), output meter 8ohms, test coil comprising 85 turns enamelled copper wire on 2in. diameter former, trimming tools.

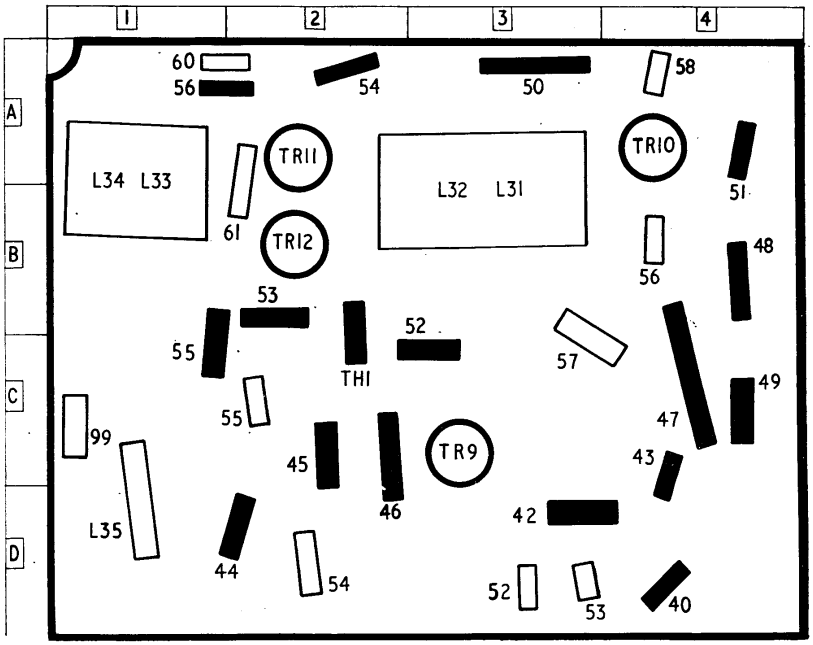
Connect output meter in place of speaker (earpiece socket may be used for this). Set volume control to maximum. Turn tone control to maximum HF response. Connect generator output to test coil and position it, coaxially with the ferrite rod, 5in. from MW aerial coil. Adjust generator to maintain output reading on meter at approximately 50mW.

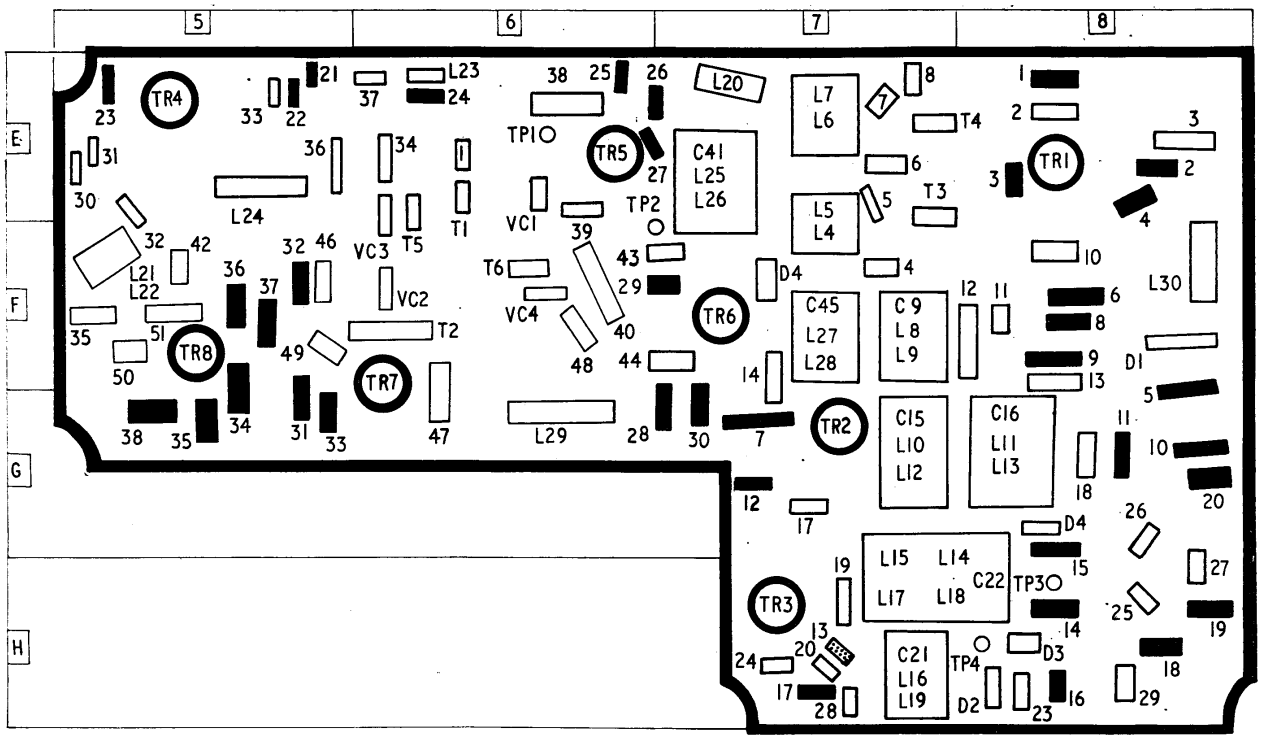
Switch to MW. Fully close gang. Adjust pointer to line up with L of Light on FM scale. Inject 470kc/s modulated signal. Fully open gang. Adjust cores of L16, L19, L11, L13, L8 and L9 in that order for maximum output reading. Repeat until no further improvement is obtained.

Fully close gang. Inject 509kc/s modulated signal. Adjust cores of L4/L5 for maximum output. Open gang. Change generator tuning to 1630kc/s. Adjust trimmer TC3 for maximum output. Tune generator to 600kc/s and inject modulated signal at this frequency.

Tune receiver to 500m. Adjust MW aerial coil L2/3 by sliding along ferrite rod for maximum output. Change







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generator tuning to 1400kc/s. Tune receiver to 214m. Adjust trimmer TC2 for maximum output. Repeat last three operations until no further improvement is obtained.

Switch to LW. Fully close gang. Inject 140kc/s modulated signal. Adjust L6/L7 for maximum output. Fully open gang. Inject 270kc/s modulated signal. Adjust trimmer TC4 for maximum output. Change generator tuning to 160kc/s. Tune receiver to 1875m. Adjust LW aerial coil L1 by sliding along ferrite rod for maximum output. Set generator to 250kc/s. Tune receiver to 1200m. Adjust trimmer TC1 for maximum output. Repeat last three operations for optimum results.

ALIGNMENT (FM)

Equipment required. AM/FM signal generator covering 10.7-105mc/s, output meter 8ohms, 5KpF capacitor, trimming tools.

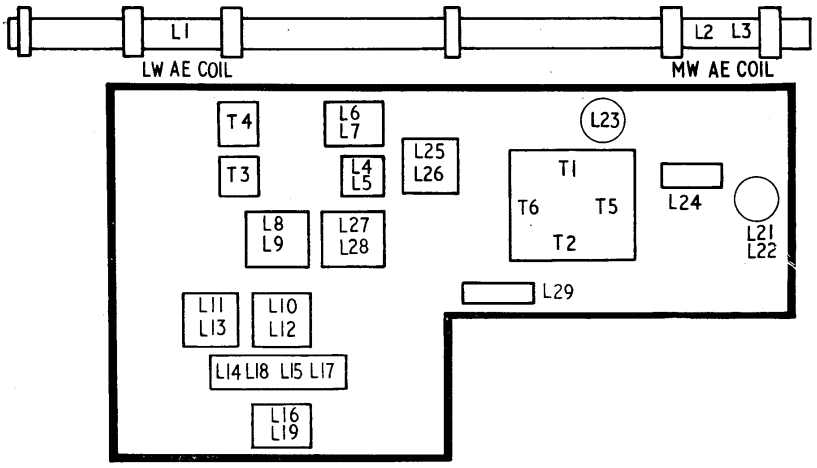
Connect output meter in place of speaker (earpiece socket may be used for this). Connect generator to TP1 via 5KpF capacitor. Turn volume control to maximum and tone control to maximum HF response.

Switch to FM. Fully close gang capacitor. Set pointer to L of Light on the FM scale. Inject 10.7mc/s signal deviated ∓25kc/s at 1000c/s. Adjust generator to provide 50mW output on meter.

Adjust cores of L15, L10, L12, L27, L28, L25 and L26 in that order for maximum output. Reduce generator output as circuits come into line to maintain meter reading at 50mW.

Adjust L23 for *minimum* output. Change generator to 10.7mc s AM with modulation 30 per. cent at 1000c/s. Adjust L18 for *minimum* output. Repeat last four operations for optimum results. Fully close telescopic aerial. Connect generator output to car radio aerial socket. Fully close tuning gang. Tune generator to 87mc/s FM deviated ∓25kc/s at 1000c/s. Adjust L29 by manipulating turns for maximum output.

Retune generator to 105mc/s. Fully open tuning gang. Adjust trimmer TC6 for maximum output. Tune generator and receiver to 90mc/s. Adjust L24 by manipulating turns for maximum output. Tune generator and receiver to 104mc/s. Adjust trimmer TC5 for maximum output. Repeat last four operations until no further improvement obtained.



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