STATION, RADIO, 128B

TECHNICAL HANDBOOK - TECHNICAL DESCRIPTION

Tels F 713 and F 714 will not be published in this series. Sufficient information is available in this regulation to cover Unit, Field and Base repairs.

SUBJECT INDEX

INDEX TO TABLES

INDEX TO FIGURES

BRIEF DESCRIPTION

GENERAL

1. The Station radio 128B is man-portable and operated from dry batteries; there are certain non-standard REME modified versions in service which differ from the production version. The transmitter and receiver are housed separately in light aluminium boxes, each protected with separate canvas pouches. Interconnection is made by an 8-way connector, and the supplies from the batteries are fed via a 4-way connector to the transmitter. These equipments cover the frequency range 2-8Mc/s in two bands: 2 to 4Mc/s and 4 to 8Mc/s. They can transmit c.w. signals only, but are suitable for r.t., m.c.w., and c.w. reception.

RECEIVER

2. The receiver is a superheterodyne consisting of a combined oscillator/mixer stage, i.f. stage, detector and a.f. amplifier, and power amplifier stage which feeds a pair of high resistance headphones. A b.f.o. is incorporated for c.w. reception.

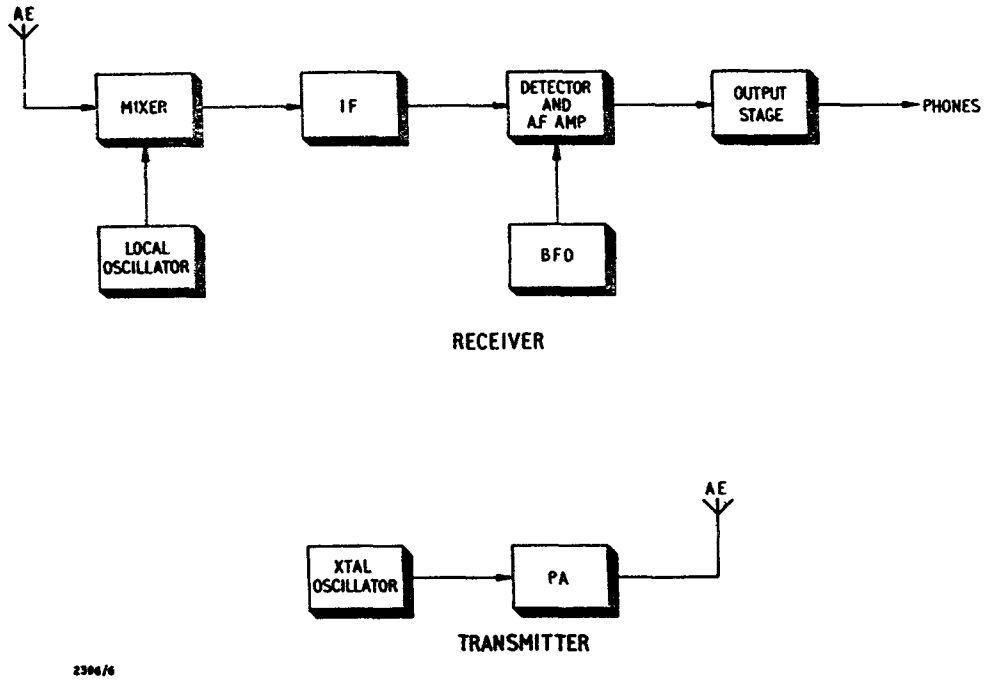


Fig 1 - Block diagram

TRANSMITTER

3. The transmitter consists of a crystal controlled oscillator (V1) and a power amplifier (V2) which may be hand-keyed and which can be matched to any type of antenna system likely to be used. It transmits only on fundamentals, and delivers approximately 1W of r.f. power to the antenna.

DETAILED DESCRIPTION

RECEIVER
(Fig 2001)

Antenna coupling system

4. The r.f. signal is fed via C1 to the antenna coils L1 or L2, and thence to the third grid of the mixer/oscillator valve V1. The antenna coils are selected by switch SA1, and tuning over the range is accomplished by VC1.

Oscillator frequency changer

5. Valve V1 is a heptode which combines the actions of oscillator and frequency changer. Grids 1 and 2 form the oscillator grid and anode respectively. The oscillator is a series fed, tuned grid, circuit. L3 is the 4 to 8Mc/s coil, and L4 is the 2 to 4Mc/s coil. Tuning over the range is accomplished by VC2, and range switching is achieved with SA2. After mixing, the 470kc/s difference frequency is selected at the anode by the i.f. transformer T1.

I.F. amplifier

6. The output from T1 is amplified in V2, a variable-mu pentode whose grid bias can be varied by adjusting RV1 to control the gain of the receiver. V2 is coupled to the detector by a second tuned transformer T2, which completes the i.f. amplifier.

Detector and 1st a.f. amplifier

7. V3 contains the diode detector whose d.c. path is completed by R8, R6 and T2 secondary. C14 and C15 in association with R6 remove the i.f. component of the output, while the a.f. component developed across R8 is amplified in the pentode section of V3. After amplification the signal is fed via C19 to the power amplifier V4.

Power amplifier

8. The power amplifier is a straightforward output pentode, choke-capacity coupled to the jack socket JK1. C21 is incorporated to reduce the gain at the high frequencies. Voltage negative feedback is applied direct from anode to grid, via R12.

Beat frequency oscillator

9. The b.f.o. valve V5 is a pentode strapped as a triode, and used as a Hartley oscillator, the h.t. being applied to the anode via a tap on the coil (L5). With VC3 in its mid-position the b.f.o. is tuned for zero beat by the inductance L5. The variable capacitor VC3 gives the b.f.o. a frequency range of ±10kc/s.

Jack switch

10. The l.t. negative supply is normally open-circuited but is automatically connected to earth by contacts which operate when the jack-plug is inserted. This acts as an on/off switch for the receiver.

TRANSMITTER
(Fig 2005)

Oscillator

11. V1 is a crystal controlled oscillator, choke-capacity coupled to the power amplifier V2.

Power amplifier

12. V2, the power amplifier, is screen-keyed, the h.t. voltage being applied to the screen via the morse key. R3 and C6 form a key click filter. The r.f. output is then fed via C8 to the parallel tuned circuit of either L1/VC1 or L2/VC1. These coils L1 and L2 have several taps selected by switch SB to enable various antenna impedances to be matched.

13. The capacitors C9 and C10 form an r.f. voltage divider connected across the antenna output terminals to produce a small r.f. potential which is rectified by MR1 to produce a d.c. component. This is applied to the meter M1, to indicate the voltage output. MR1 produces an approximate logarithmic scale, and so prevents serious overloading of the meter whilst retaining good sensitivity to low-level signals.

Operation of switch SA

14. SA is a combined mode and range switch performing five operations, viz:-

a. SA1 returns the h.t. negative either to earth for the transmitter, or through series resistors to produce the bias for the receiver gain control.

b. SA2 switches VC1 either across L1 for the 2 to 4Mc/s band, or across L2 for the 4 to 8Mc/s band.

c. SA3 enables a common antenna to be employed and switches it either to the receiver or transmitter.

d. SA4 connects the appropriate output coil L1 or L2 to the anode of V2 via C8.

e. SA5 is the l.t. switch, switching off the transmitter filaments when the receiver is in use, or the receiver filaments when the transmitter is in use.

Netting switch SD

15. This pressel switch is provided on the transmitter to facilitate 'netting operations', that is, two or more stations working on the same frequency. With the mode switch set to receive and the net switch pressed, the transmitter oscillator operates and the receiver is then tuned with the aid of the b.f.o. to the transmitter frequency.

SETTING UP PROCEDURE

GENERAL

16. Link the terminal marked LINK RX AE to the AE terminal on the receiver, and connect the antenna wire to the AE terminal on the transmitter. Drive the earth spike into the ground and connect it to the earth terminal on the transmitter.

17. Make sure that the transmit/receive switch is in the OFF position, then connect the transmitter to the receiver (PL1) and plug in the batteries (PL2). Insert the morse key jack-plug in the transmitter jack socket marked KEY, and the crystal into the XTALS socket. Insert the headphones jack into the PHONES socket, and the station is then ready for use.

RECEIVER

18. With the transmit/receive switch in an RX position, set the band switch to the required frequency range, and the gain control to a suitable level.

19. Set the tuning dial to the frequency required and tune a few degrees either side of this position until the station is heard. If the signal being received is telephony or m.c.w., switch the BFO to OFF. If the signal is c.w. switch the BFO to ON and adjust the BFO tuning knob in conjunction with the main tuning control until the signal is clear in tone and distinguishable from adjacent stations.

TRANSMITTER

20. Check that the appropriate crystal for the frequency being used is in position. Switch on by setting the mode switch to TX1 or TX2 and the p.a. tuning knob to the correct frequency, adjusting the tuning until a reading is obtained on the meter. Try the AE LOAD switch in various positions and adjust the p.a. tuning in each position for maximum deflection on the meter. Reset the switch to the position which gives maximum deflection.

21. If either the antenna or the crystal frequency are changed new settings will have to be found.

The NET switch

22. This pressel switch is provided on the transmitter to facilitate 'netting operations', that is, two or more stations working on the same frequency. To set up the receiver to the 'net' frequency:-

a. Plug the 'net' crystal into the transmitter.

b. Set the selector switch to RX.

c. Set the receiver band switch to the appropriate frequency range.

d. Set the receiver dial approximately to the 'net' frequency.

e. Switch on the BFO and centralise the BFO tuning control.

f. Press the NET button and tune the receiver for zero beat.

g. Readjust the BFO tuning to produce a ssuitable tone in the phones.

h. The receiver is now set-up to the network frequency for c.w. If telephony or m.c.w. is to be expected switch off the BFO.

ALIGNMENT AND SPECIFICATION TESTING

Table 1 - Test equipment

Item	Designation	Part No	Alternative	Part No
1	Signal generator No 12/2	Z4/6625-99-102-8077	Signal generator No 12	Z4/ZD 02674
2	Counter electronic frequency	Z4/6625-99-933-1822	Frequency meter SCR211	Z1/ZC/1411 (Z1/SIGS/US/SIGS/ 6625-00-568-9999)
3	Wattmeter, absorption, a.f., No 1, CT44, equipment	Z4/6625-99-949-0510		
4	Wattmeter, absorption, h.f., No 2, CT211, equipment	Z4/ZD 00747		
5	Signal generator, video frequency, No 1, CT416, equipment	Z4/ZD 04247	Oscillator, beat frequency, No 8, equipment	Z4/ZD 00198
6	Oscilloscope set, CT436, with Probe	Z4/6625-99-102-6694	Oscilloscope, type 13A	Z4/10S/831
7	)) Multimeter,) electronic, CT471C)	Z/6625-99-955-6255	Voltmeter, electronic	Z4/6625-99-103-3116
8			Voltmeter, valve No 3, CT208, equipment	Z4/6625-99-949-0470
9	Resistors fixed, film, 1kW ±1%, 1.5W	Z/5905-99-021-5639		
10	Crystals 2, 3, 4, 6 and 8Mc/s, Type ZBC ref DEF spec 5271			
11	Power supply unit to give 135V at 50mA, 1.5V at 250mA, eg Power supply set, bench testing, man-pack radio set	Z4/6625-99-949-5448	) Qty 4 batteries, dry,) h.t., 67.5V, No 1)) Qty 1 battery, l.t.,) 1.5V, No 14	Y3/6135-99-910-1123 Y3/6135-99-910-1137

RECEIVER

A.F. stages

23. Plug a jack into JK1 and connect the output leads to the Wattmeter a.f. No 1, setting the range to 2mW and the impedance to 20kΩ. Connect the Signal generator, video frequency, No 1, to pin 6 of V4 and V3, in turn, and check that the inputs required at 1kc/s to produce 1mW output are not greater than:-

V4 400mV

V3 12mV

24. With the signal generator connected to pin 6 of V3, and using the 1mW output at 1kc/s as a reference level, note the output at 100c/s and 10kc/s. These must not fall below:-

Frequency	100c/s	1kc/s	10kc/s
Level	-2dB	0dB (1mW)	-8dB

I.F. stages

25. Set the gain control to maximum. Connect the Signal generator No 12/2 via a 0.01μF capacitor to pin 6 of V2. Inject a 470kc/s signal modulated 30°/o at 1kc/s. Peak the i.f. transformer T2 and note the signal generator setting for 1mW output. Connect the signal generator via a 0.01μF capacitor to pin 6 of V1. Peak the i.f. transformers T1 and T2 and note the signal generator setting for an output of 1mW. Increase the signal generator output by 6dB and vary the frequency each side of the i.f. for an output of 1mW. Check these frequencies using the counter. Increase the signal generator output by a further 34dB and again vary the frequency for 1mW, checking these frequencies with the counter. The specification figures are as follows:-

a. Sensitivity at pin 6 of V2: 2.2 to 4.4mV.

b. Sensitivity at pin 6 of V1: 40 to 80μV.

c. Overall bandwidth at 6dB down: 4 to 4.5kc/s.

d. Overall bandwidth at 40dB down: not greater than 18kc/s.

I.F. rejection

26. Set the signal generator to 470kc/s, modulated 30°/o at 1kc/s, and connect it to the AE terminal. Set the receiver to 2Mc/s and increase the signal generator output level until the wattmeter indicates 1mW. The input required should be greater than 45dB above the i.f. sensitivity figure at the grid of V1.

BFO range and gain

27. Remove the wattmeter from JK1 and insert a pair of headphones. Connect the signal generator No 12/2 via a 0.01μF capacitor to pin 6 of V1. Inject a c.w. signal at 470kc/s. Switch on the b.f.o. and set the control knob to zero. Adjust the core of L5 for zero beat in the headphones. Remove the phones, insert a jack-plug, and take the receiver output to the Y plates of an oscilloscope. Connect the signal generator, video frequency, to the X plates and check that the frequency range of the b.f.o. is:-

BFO range	±10kc/s	±1kc/s

28. Set the b.f.o. frequency to 1kc/s and connect the a.f. output to the wattmeter. Adjust the signal generator No 12/2 input level for 1mW a.f. output. Check that the ratio of this input to the i.f. sensitivity figure (para 25.b.) is not less than:-

BFO gain in dB	+12

Calibration

29. Using the Signal generator No 12/2 crystal checked at 2Mc/s, 4Mc/s and 8Mc/s, the calibration is carried out as follows. Set the signal generator to 2Mc/s, modulated 30°/o at 1kc/s. Connect the dummy antenna to the AE terminal, set the receiver dial to 2Mc/s, and adjust L4 for maximum a.f. output. Set the signal generator to 4Mc/s (crystal checked) and the receiver dial to 4Mc/s. Adjust C9 for maximum output. Repeat until the calibration on range 1 is within ±1°/o at all Mc/s points.

30. Using the alignment frequencies of 4Mc/s and 8Mc/s repeat the above on range 2, adjusting L3 at 4Mc/s and C7 at 8Mc/s.

R.F. alignment

31. The r.f. alignment is carried out at 2.17Mc/s and 3.65Mc/s on range 1 and 4.43Mc/s and 7.32Mc/s on range 2. The procedure is as follows: Connect the signal generator to the AE terminal. Set the frequency to 2.17Mc/s, checked on the counter, modulated 30°/o at 1kc/s. Tune the receiver to 2.17Mc/s and adjust L2 for maximum output. Tune the receiver and signal generator (checked on the counter) to 3.65Mc/s, adjust C3 for maximum output. Repeat the above to ensure correct alignment. Switch to range 2 and, using the alignment frequencies of 4.43Mc/s and 7.32Mc/s, adjust L1 and C2 respectively. Having completed the r.f. alignment recheck the calibration as detailed in para 29-30.

Sensitivity

32. Using the frequencies 2, 3 and 4Mc/s for range 1, and 4, 6 and 8Mc/s for range 2, check the r.f. sensitivity at maximum gain for 1mW output (see Table 2). Having done this, check the signal-to-noise ratio and image rejection as follows.

Table 2 - R.F. sensitivity figures and image rejection

Mc/s	Sensitivity µV	Image rejection dB
2	15	29
3	15	24
4	15	19
4	40	26
6	40	20
8	40	18

Signal-to-noise- ratio

33. Connect the multimeter electronic (m.e.) across the a.f. wattmeter, ensuring that the earth terminal on the m.e. is connected to the earthy side of the wattmeter. Set the m.e. to the 10V range and the gain control to maximum. Using the m.e. as the level indicator adjust the input for 1mW on the a.f. wattmeter and note

the m.e. deflection, call this (V_1). Switch off the modulation and note the new m.e. deflection, call this (V_2). Using the formula $dB = 20 \log_{10} \frac{V_1}{V_2}$ calculate the signal-to-noise ratio, which should exceed 15dB at all frequencies in Table 2.

Image rejection

34. Setting the receiver and signal generator to the Mc/s points shown in Table 2, set the input level to give 1mW output. Tune the signal generator to the carrier +940kc/s (twice the i.f.) and increase the signal generator level until 1mW output is again achieved. Check that this level exceeds the figure given in Table 2.

TRANSMITTER

Alignment of p.a. circuit

35. Set switch SA to TX1. Connect either the h.f. wattmeter on the 50Ω range, or the 500Ω resistance (two 1k resistors in parallel) and Voltmeter, valve, No 3 across the AE and E terminals. Using crystal frequencies of 2Mc/s and 4Mc/s adjust the core of L1 for the least calibration error at the band edges. Adjust AE load for maximum output.

36. Set SA to TX2 and repeat this procedure for frequencies of 4Mc/s and 8Mc/s, adjusting the core of L2. Check that the circuits tune through the band edge frequencies.

Output

37. Connect the h.f. wattmeter across the AE and E terminals. Set switches SB to 1 and SA to TX1. Using crystal frequencies of 2Mc/s, 3Mc/s and 4Mc/s, check that the r.f. output is at least 800mW.

38. Set SA to TX2 and using crystal frequencies of 4Mc/s, 6Mc/s and 8Mc/s, check that the r.f. power output is at least 750mW.

39. Connect the 500Ω resistance (two 1k resistors in parallel) in place of the h.f. wattmeter, and set switch SB to 3 and SA to TX1. Connect the v.v. across the 500Ω resistor and using a crystal frequency of 4Mc/s check that the v.v. deflection exceeds 20.5V. Repeat at a frequency of 8Mc/s, with switch SA at TX2, when the v.v. deflection should be at least 19.5V. On both TX1 and TX2, check that an output is indicated for all settings of the AE tapping switch SB.

AE matching

40. If coils have been replaced or rewound, the output impedance on both bands for each position of the AE tap switch SB is to be checked using a range of known value resistors or a potentiometer. The approximate values required to match the circuit are:-

TAP	1	2	3	4	5	6	7
IMPEDANCES	50	180	500	1k	1.6k	2k	5k

Netting

41. Switch on the b.f.o. Set switch SA on the transmitter to RX1 and RX2 in turn. Operate the NET button and check that it is possible to tune the receiver to the crystal frequency in both switch positions.

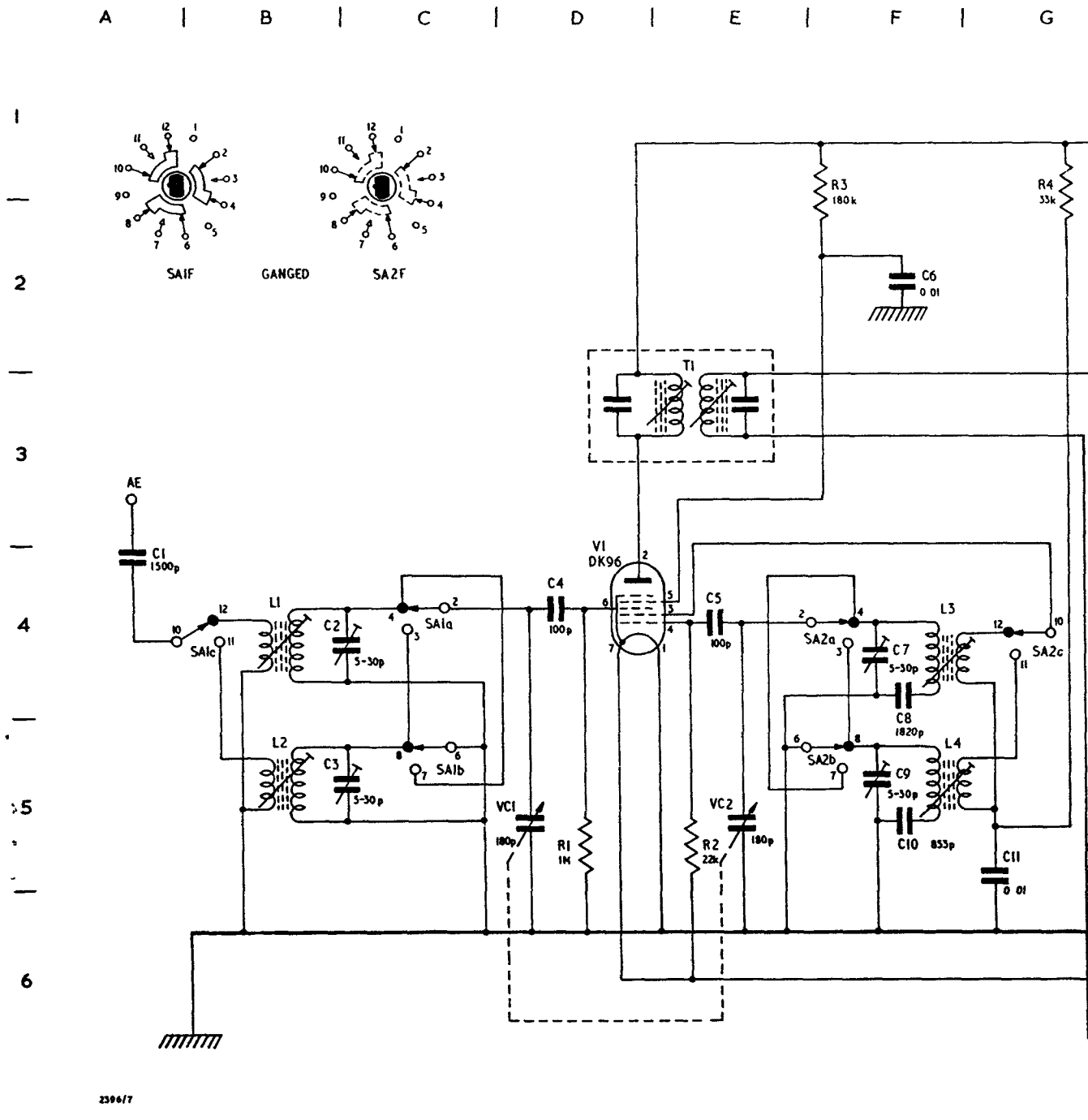
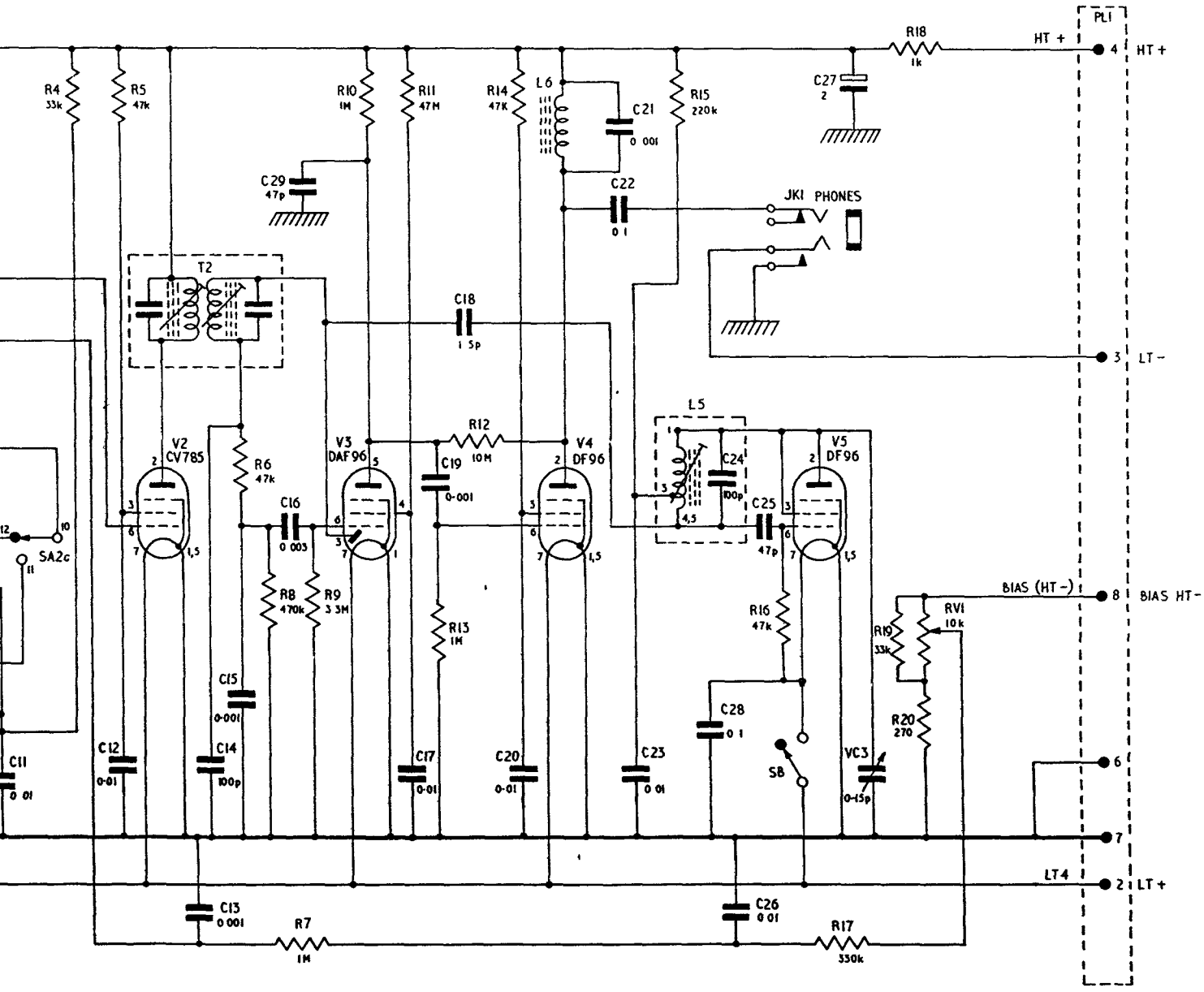
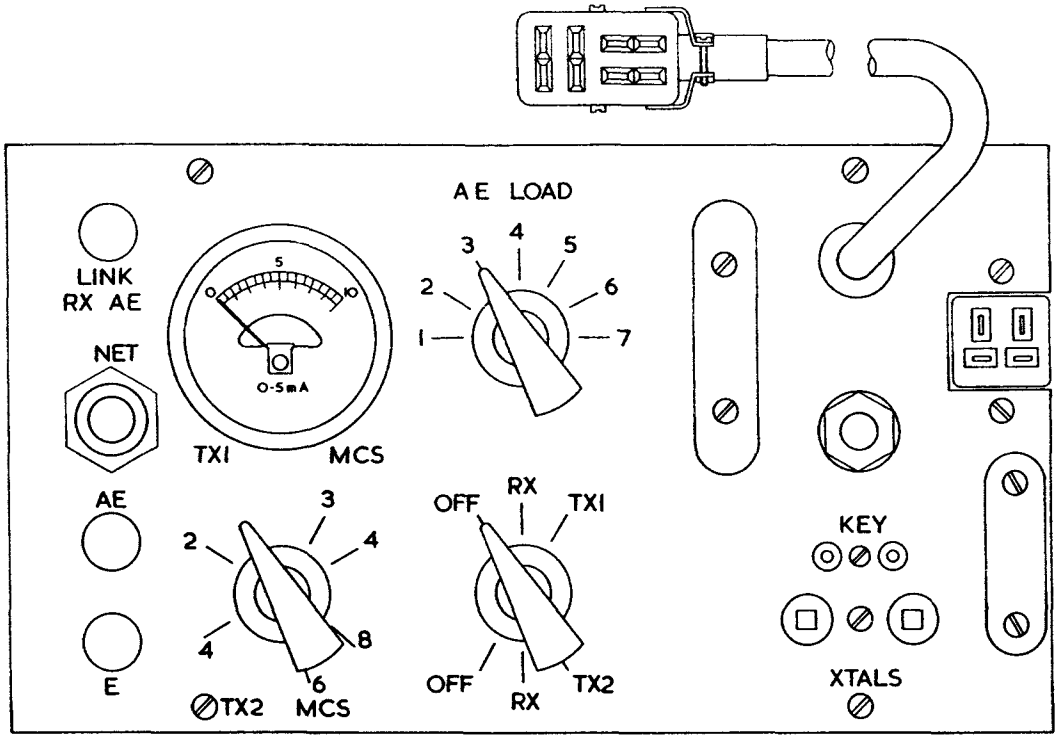


Fig 2001 - Rece

G | H | J | K | L | M | N | O



- Receiver circuit diagram



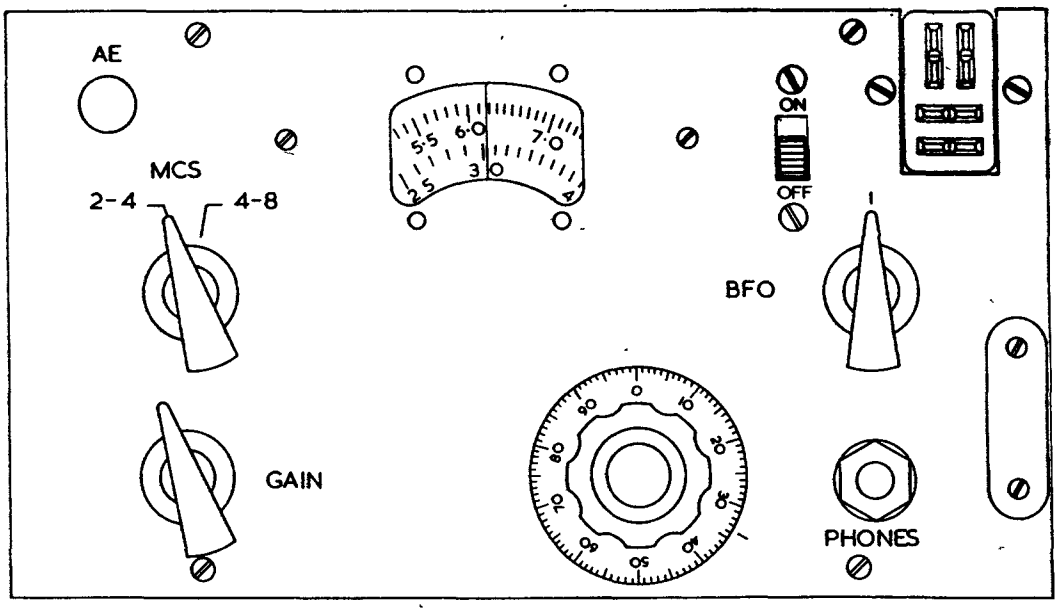


Fig 2002 - Transmitter and receiver front panels

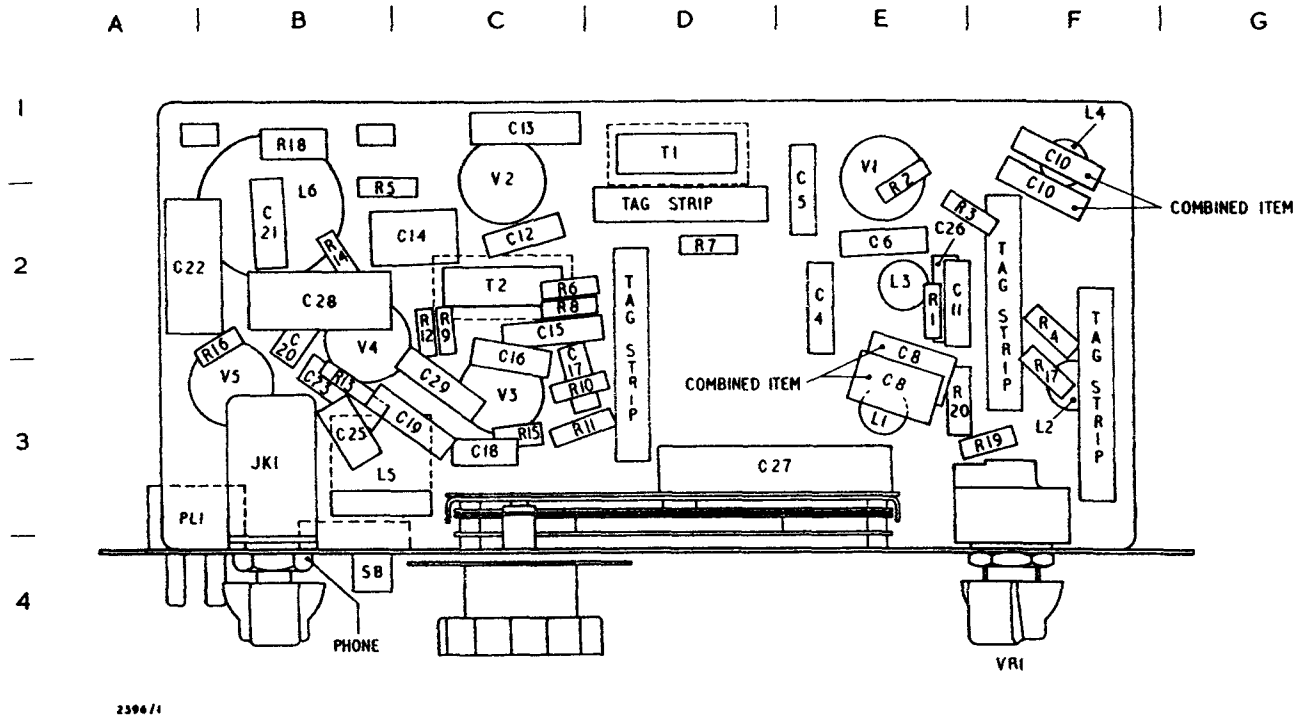


Fig 2003 - Receiver component layout (underside)

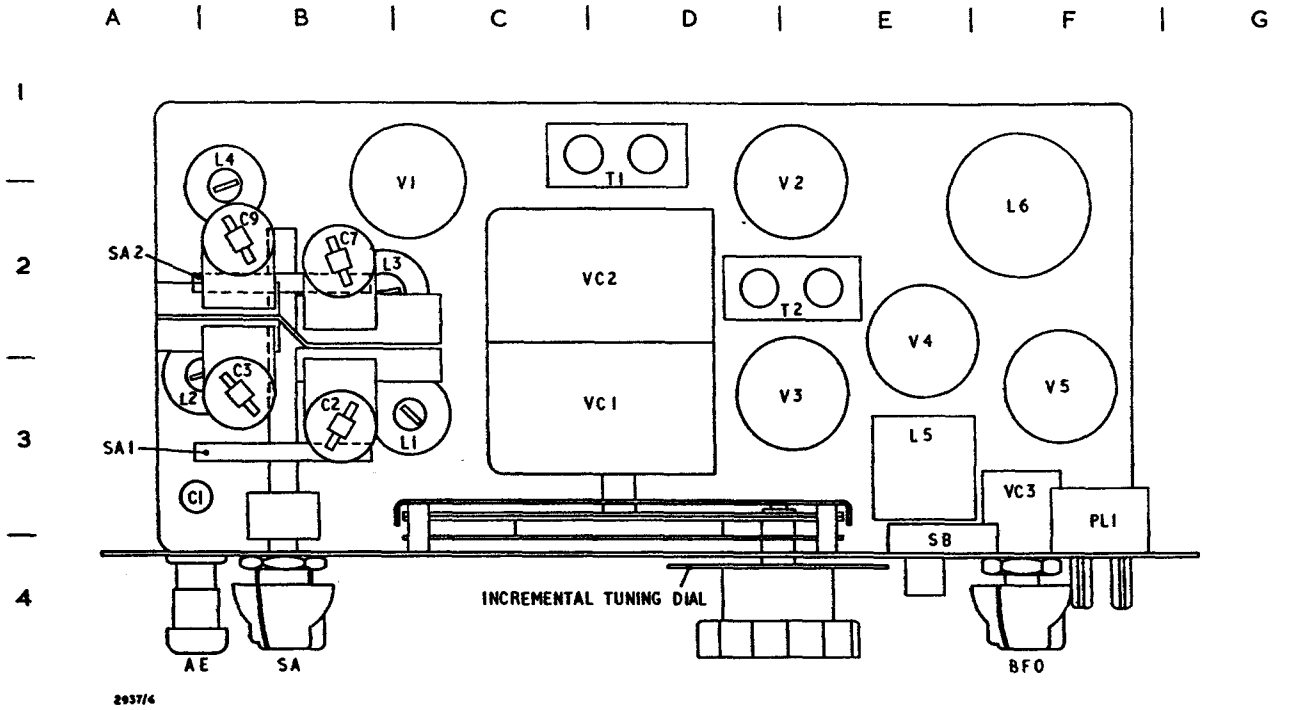


Fig 2004 - Receiver component layout (top)

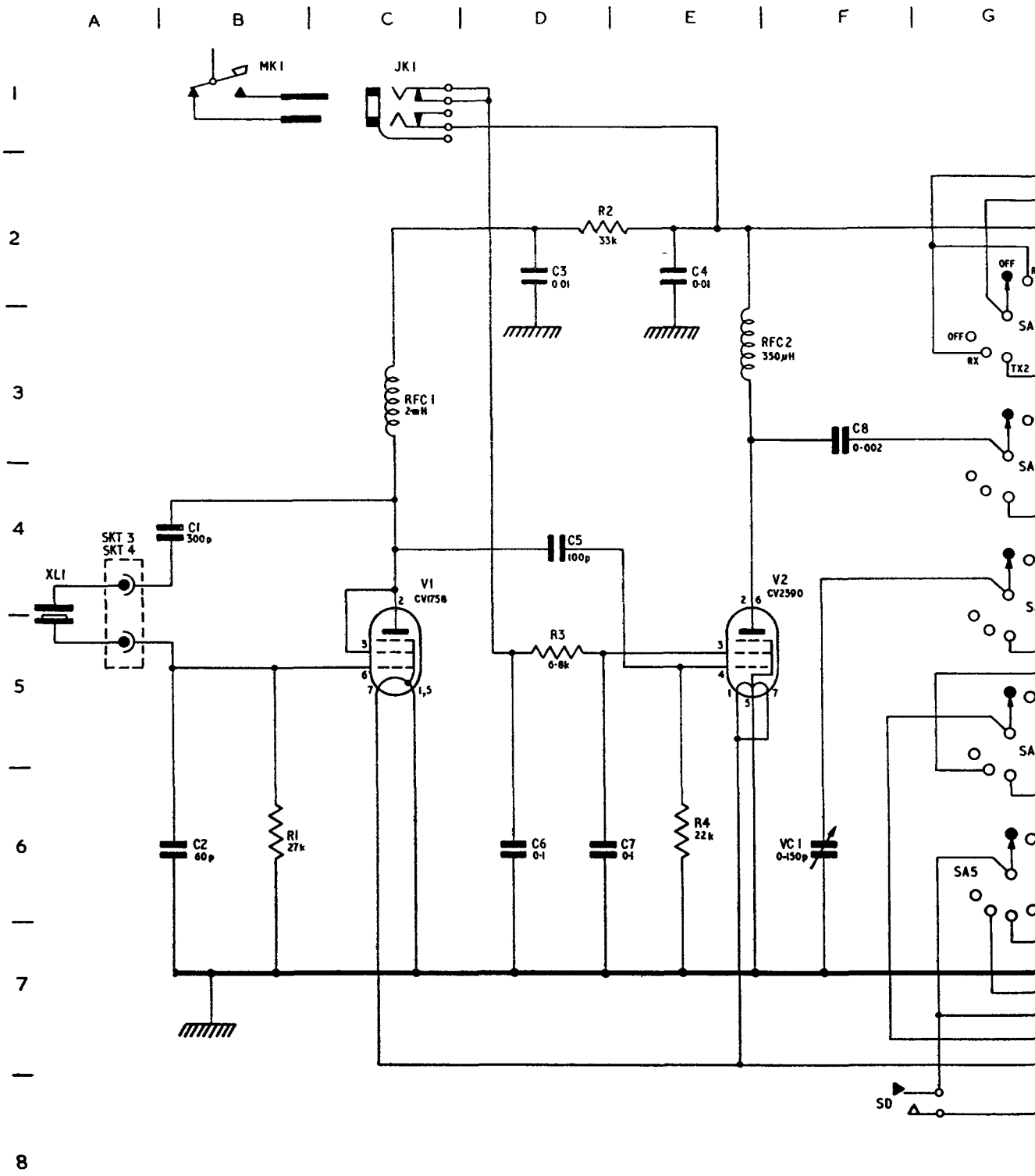


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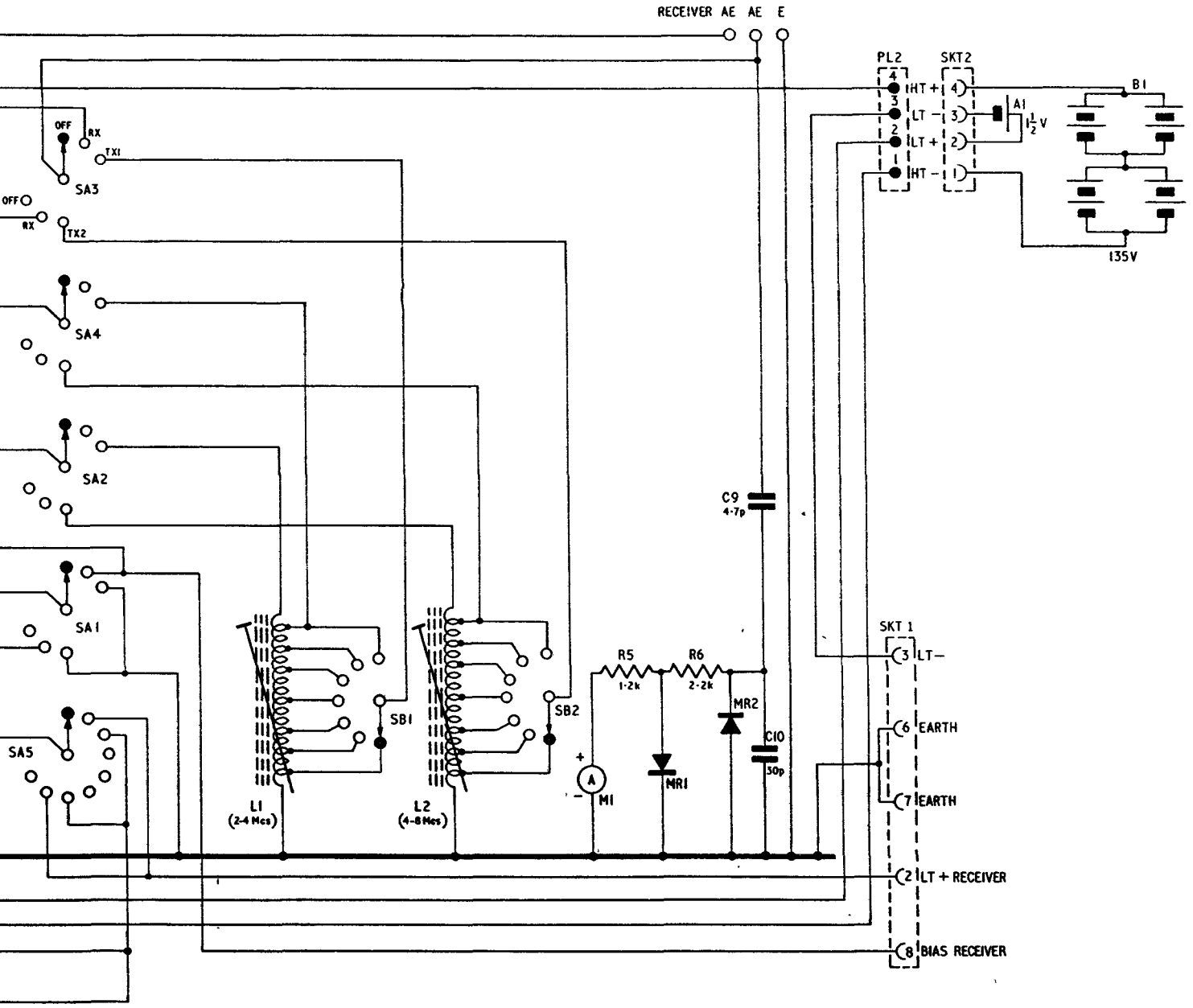
Fig 2005 - Transi

G | H | J | K | L | M | N | O



- Transmitter circuit diagram

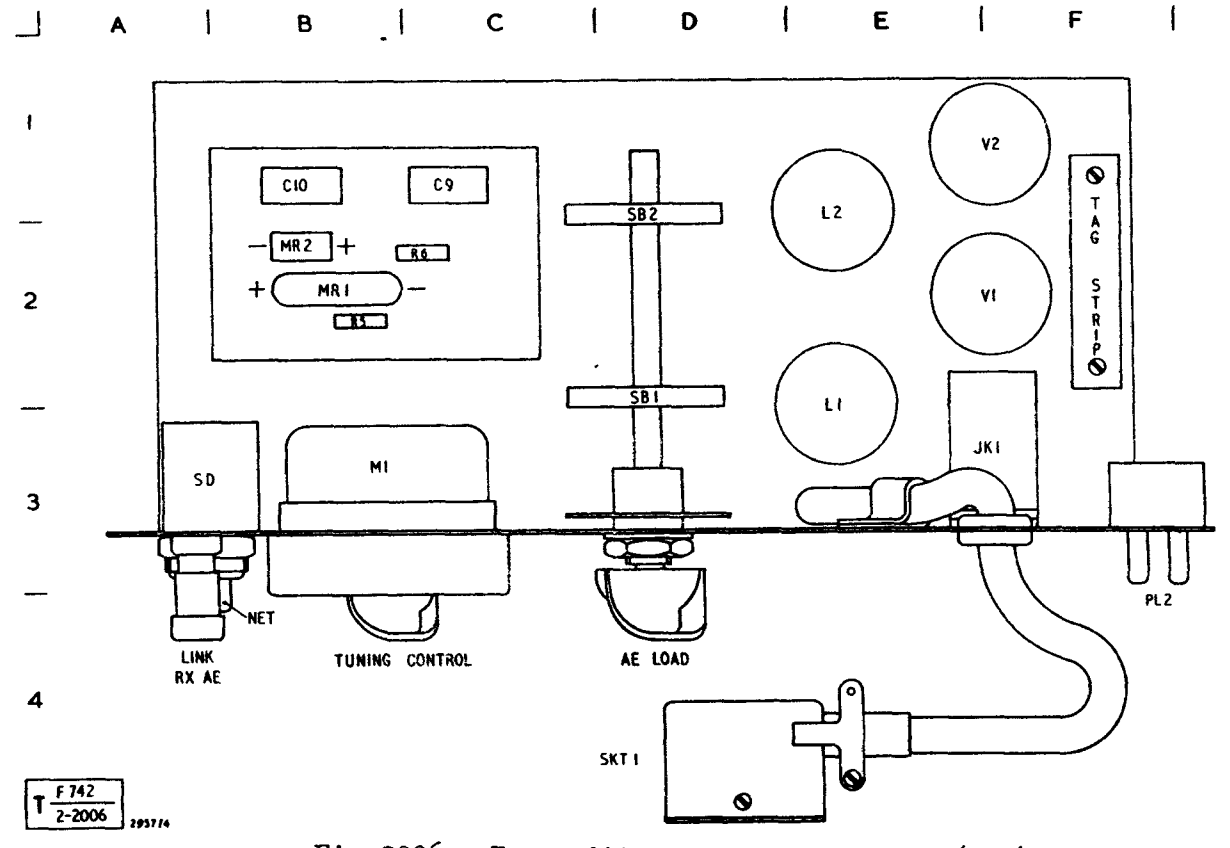


Fig 2006 - Transmitter component layout (top)

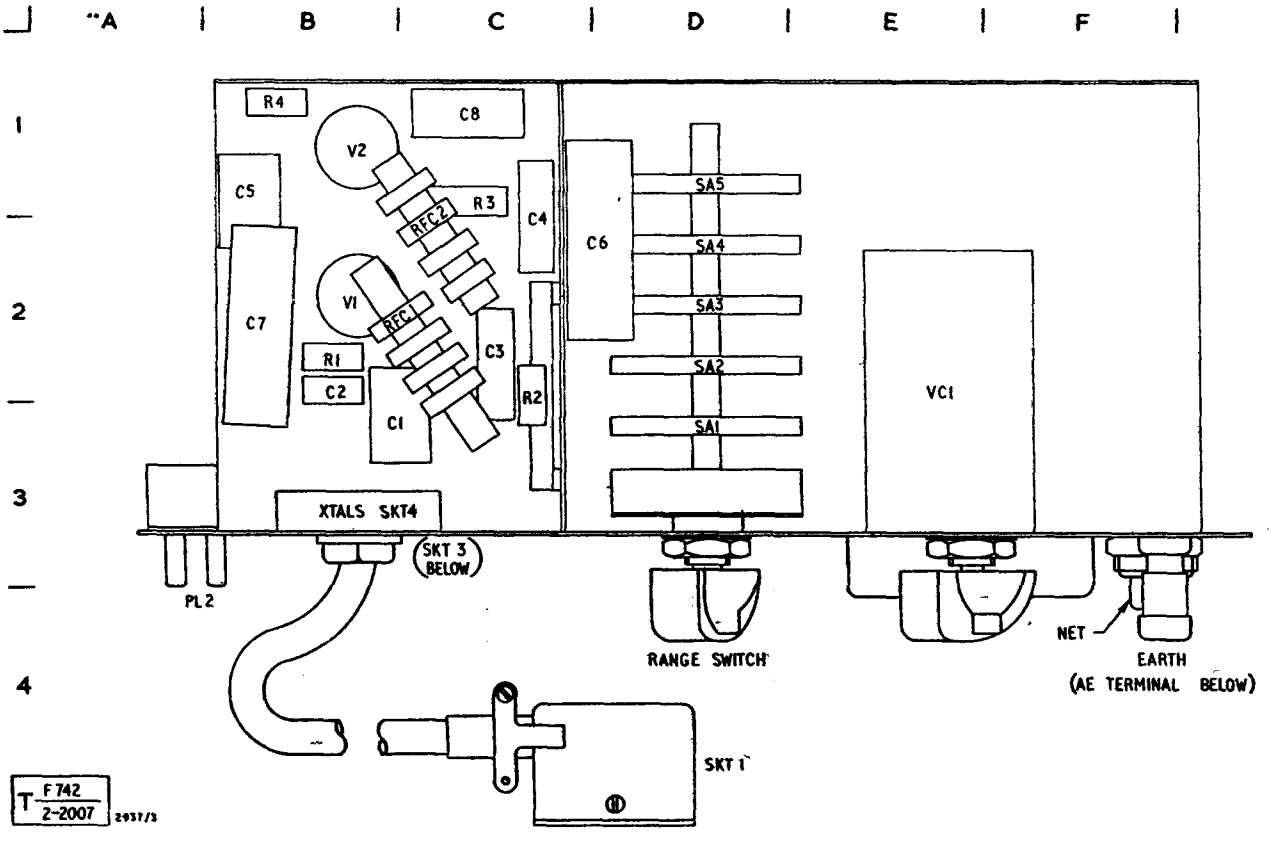


Fig 2007 - Transmitter component layout (underside)

Table 2001 - Receiver components

Cct ref	Location		Value (Ω)	Tol ±%	Rating (W)	Part No Z/5905-99-022
	Circuit Diagram	Layout Diagram				
			RESISTORS			
R1	01D5	03E2	1M	10	0.25	-3163
R2	01E5	03E2	22k	10	0.25	-2172
R3	01F2	03E2	180k	10	0.25	-3070
R4	01G2	03F2	33k	10	0.25	-2193
R5	01H2	03B2	47k	10	0.25	-2214
R6	01H3	03C2	47k	10	0.25	-2214
R7	01J6	03D2	1M	10	0.25	-3163
R8	01J4	03C2	470k	10	0.25	-3121
R9	01J4	03C2	3.3M	10	0.25	-3226
R10	01J2	03C3	1M	10	0.25	-3163
R11	01J2	03C3	4.7M	10	0.25	-3247
R12	01K3	03C2	10M	10	0.25	-3289
R13	01J5	03B3	1M	10	0.25	-3163
R14	01K2	03B2	47k	10	0.25	-2214
R15	01L2	03C3	220k	10	0.25	-3080
R16	01E5	03B2	47k	10	0.25	-2214
R17	01M6	03F3	330k	10	0.25	-3100
R18	01N1	03B1	1k	5	0.25	-2002
R19	01M5	03F3	33k	10	0.25	-2193
R20	01M5	03E3	270	5	0.25	-1161
RV1	01N5	03F3	10k pot (Log)	20	0.25	Z1/ZA 52814

Cct ref	Location		Value (μF)	Tol ±%	Rating (V)	Part No
	Circuit Diagram	Layout Diagram				
			CAPACITORS			
C1	01A4	04A3	1500p	20	500	Z1/ZA 52790
C2	01B4	04B3	5-30p		350	Z1/5910-99-940-8996
C3	01B5	04B3	5-30p		350	Z1/5910-99-940-8996
C4	01D4	03E2	100p	5	750	Z1/5910-99-012-3657
C5	01E4	03E2	100p	5	750	Z1/5910-99-012-3657
C6	01F2	03E2	0.01	20	150	Z/5910-99-011-5826
C7	01F4	04B2	5-30p		350	Z1/5910-99-940-8996
C8	01F4	03E3	1820p (.001)	2	350	Z/5910-99-012-4002
			(820p)	2	350	Z/5910-99-012-3512
C9	01F5	04B2	5-30p		350	Z1/5910-99-940-8996
C10	01F5	03F1	853p (820p)	2	350	Z/5910-99-012-3512
			(33p)	5	750	Z/5910-99-012-3640
C11	01G5	03E2	0.01	20	150	Z/5910-99-011-5826
C12	01G5	03C2	0.01	20	150	Z/5910-99-011-5826
C13	01H6	03C1	0.001	20	175	Z1/ZA 52793

Table 2001 - (cont)

Cct ref	Location		Value (μF)	Tol ±%	Rating (V)	Part No
	Circuit Diagram	Layout Diagram				
CAPACITORS - (cont)						
C14	01H5	03C2	100p	5	750	Z1/5910-99-012-3657
C15	01H5	03C2	0.001	20	500	Z/5910-99-012-0119
C16	01J4	03C2	0.003	20	500	Z/5910-99-012-0121
C17	01J5	03C3	0.01	20	150	Z/5910-99-011-5826
C18	01K3	03C3	1.5p	±0.25p	750	Z1/5910-99-940-1724
C19	01K4	03C3	0.001	10	350	Z/5910-99-012-4019
C20	01K5	03B3	0.01	20	150	Z/5910-99-011-5826
C21	01L2	03B2	0.001	20	175	Z1/ZA 52793
C22	01L2	03A2	0.1	20	150	Z1/5910-99-940-1619
C23	01L5	03B3	0.01	20	150	Z/5910-99-011-5826
C24	01L4	04E3	100p	5	350	Z1/5910-99-911-4989
C25	01M4	03B3	47p	10	500	Z/5910-99-013-2289
C26	01M6	03N2	0.01	20	150	Z/5910-99-011-5826
C27	01M2	03D3	2	+50-20	150	Z1/ZA 52794
C28	01L5	03B2	0.1	20	150	Z1/5910-99-940-1619
C29	01J2	03C3	47p	5	350	Z1/5910-99-940-8701
VC1	01D5	04D3	180p swing			Z1/ZA 52792
VC2	01E5	04D2	180p swing			Z1/ZA 52792
VC3	01M5	04F3	0-15p			Z1/ZA 48690

Cct ref	Location		Description	Part No
	Circuit Diagram	Layout Diagram		
INDUCTANCES				
L1	01B4	04C3	RF coil 4-8Mc/s	Z1/ZA 54527
L2	01B5	04A3	RF coil 2-4Mc/s	Z1/ZA 54524
L3	01F4	04C2	Oscillator coil 4-8Mc/s	Z1/ZA 54528
L4	01F5	04B2	Oscillator coil 2-4Mc/s	Z1/ZA 54529
L5	01M4	04E3	BFO coil	Z1/ZA 54530
L6	01E2	03B2	Low frequency choke 35H	Z1/ZA 54142
VALVES				
V1	01D4	04C2	DK96 heptode (CV9026)	Z/5960-99-037-4302
V2	01M4	04E2	DF91 variable mu pentode (CV785)	Z/5960-99-000-0785
V3	01J4	04H3	DA96 diode pentode (CV9024)	Z/5960-99-037-4300
V4	01L4	04E3	DF96 r.f. pentode (CV9025)	Z/5960-99-037-4301
V5	01M4	04F3	DF96 r.f. pentode (CV9025)	Z/5960-99-037-4301

Table 2001 - (cont)

Cct ref	Location: Circuit Diagram	Location: Layout Diagram	Description	Part No
		MISCELLANEOUS		
SA1a	01C4	04B3	Switch, rotary, wafer, 2-band, 6-pole, 2-way	Z1/ZA 52803
SA1b	01C5	04B3	Switch, rotary, wafer, 2-band, 6-pole, 2-way	Z1/ZA 52803
SA1c	01B4	04B3	Switch, rotary, wafer, 2-band, 6-pole, 2-way	Z1/ZA 52803
SA2a	01F4	04B2	Switch, rotary, wafer, 2-band, 6-pole, 2-way	Z1/ZA 52803
SA2b	01F5	04B2	Switch, rotary, wafer, 2-band, 6-pole, 2-way	Z1/ZA 52803
SA2c	01G4	04B2	Switch, rotary, wafer, 2-band, 6-pole, 2-way	Z1/ZA 52803
T1	01E3	04D2	Transformer, i.f., 470kc/s	Z1/ZA 52928
T2	01H3	04E2	Transformer, i.f., 470kc/s	Z1/ZA 52928
PL1	0102	04F4	Plug, electrical, 8-pole	
JK1	01M3	03B3	Jack, telephone	Y1/YA 8277
AE	01A3	04B4	Terminal lug	Y3/5940-99-911-4721

Part numbers are current at date of issue only. When available use the ISPL to demand stores.

Table 2002 - Transmitter components

Cct ref	Location: Circuit Diagram	Location: Layout Diagram	Value (Ω)	Tol ±%	Rating (W)	Part No Z/5905-99-022
			RESISTORS			
R1	05B6	07B3	27k	5	0.25	-2182
R2	05D2	07C3	33k	5	0.25	-2191
R3	05D5	07C2	6.8k	10	0.5	-2111
R4	05E6	07B1	22k	5	0.25	-2169
R5	05L6	06B2	1.2k	10	0.25	-2016
R6	05L6	06C2	2.2k	10	0.25	-2046

Cct ref	Location: Circuit Diagram	Location: Layout Diagram	Value (μF)	Tol ±%	Rating (V)	Part No
			CAPACITORS			
C1	05B4	07B3	300p	10	350	Z1/ZA 52796
C2	05B6	07B3	60p	10	7750	Z1/ZA 52797
C3	0502	0703	0.01	20	175	Z/5910-99-011-5594

Table 2002 - (cont)

Cct ref	Location		Value (μF)	Tol ±%	Rating (V)	Part No
	Circuit Diagram	Layout Diagram				
CAPACITORS - (cont)						
C4	05E2	07C2	0.01	20	175	Z/5910-99-011-5594
C5	05D4	07B2	100p	5	750	Z/5910-99-012-3657
C6	05D6	07B2	0.1	20	175	Z/5910-99-011-5597
C7	05D6	07B2	0.1	20	175	Z/5910-99-011-5597
C8	05F3	07C1	0.002	20	350	Z1/ZA 52681
C9	05M3	06C2	4.7p	10	750	Z1/ZA 52798
C10	05M6	06B2	30p	5	750	Z1/ZA 52799
VC1	05F6	07E3	150p var			Z1/5910-99-911-4929

Cct ref	Location		Description	Part No
	Circuit Diagram	Layout Diagram		
MISCELLANEOUS				
V1	05C5	06F2	CV1758 r.f. pentode	Z/5960-99-000-1758
V2	05E5	06F1	CV2390 output pentode	Z/5960-99-000-2390
RFC1	05C3	07C3	Radio frequency choke, 2mH	Z1/ZA 54578
RFC2	05E3	07C2	Radio frequency choke, 350mH	Z1/ZA 54579
L1	05H6	06F2	P.A. coil, 2-4Mc/s	Z1/ZA 54543
L2	05K6	06E3	P.A. coil, 4-8Mc/s	Z1/ZA 54542
JK1	05C1	06F3	Jack, telephone	Y1/YA 8277
SKT1	05M6	06/704	Socket, 8-pole, electrical	Z1/ZA 54025
SKT2	05N2	-	Socket, 4-pole, electrical	
SKT3	05A4	07B3	Socket, crystal, 2-pole	Z1/Z5 54029
SKT4	05A4	07B3	Socket, crystal, 2-pole	Z1/5935-99-901-0038
PL2	05M2	06F3	Plug, 4-pole, electrical	
SA1	05G5	07D3	)	
SA2	05G5	07B3	)	
SA3	05G3	07D2	) Switch, 5-pole, 9-way	Z1/ZA 52815
SA4	04G4	07D2	)	
SA5	05G6	07D1	)	
SB1	05J6	06D3	)	
SB2	05K6	06D2	) Switch, 2-pole, 7-way	Z1/ZA 52804
SC	05G8	06A3	Switch, push-button	Z1/5930-99-932-5304
M1	05L6	06C3	Meter, indicating, 500μA f.s.d.	Z4/ZA 24968
MR1	05L6	06B2	Rectifier, selenium, 280-LU-1457	Z1/ZA 36303
MR2	05M6	06B2	Semi-conductor device, diode CV425	Z/5960-99-000-0425

Table 2002 - (cont)

Cct ref	Location		Description	Part No
	Circuit Diagram	Layout Diagram		
MISCELLANEOUS – (cont)				
MK1	05B1	-	Key, telegraph	Z1/ZA 54574
B1	0502	-	Battery, dry, 67.5V Qty 4	Y3/6135-99-910-1123
A1	05N2	-	Battery, dry, 1.5V	Y3/6135-99-910-1137

Part numbers are current at date of issue only. When available use the ISPL to demand stores.

Table 2003 - Receiver voltage measurements

Measurements are made using an Avo model 9SX or 8S					
Electrodes	V1	V2	V3	V4	V5
Anode	78-92	78-92	35-45	74-88	22-28
Screen (G2)	28-35	54-66	21-30	56-69	-
Grid 4	44-55	-	-	-	-

Table 2004 - Transmitter voltage and current measurements

Tests are made with Avo model 9SX or 8S The keyed condition is with the transmitter tuned to a frequency of 3Mc/s and loaded with 500Ω		
Test point	Keyed	Unkeyed
V1 Anode and screen	50 ±5V	50 ±5V
V2 Anode	135V ±5V	135 ±5V
V2 Screen	80 ±5V	0
HT consumption	25mA	2mA

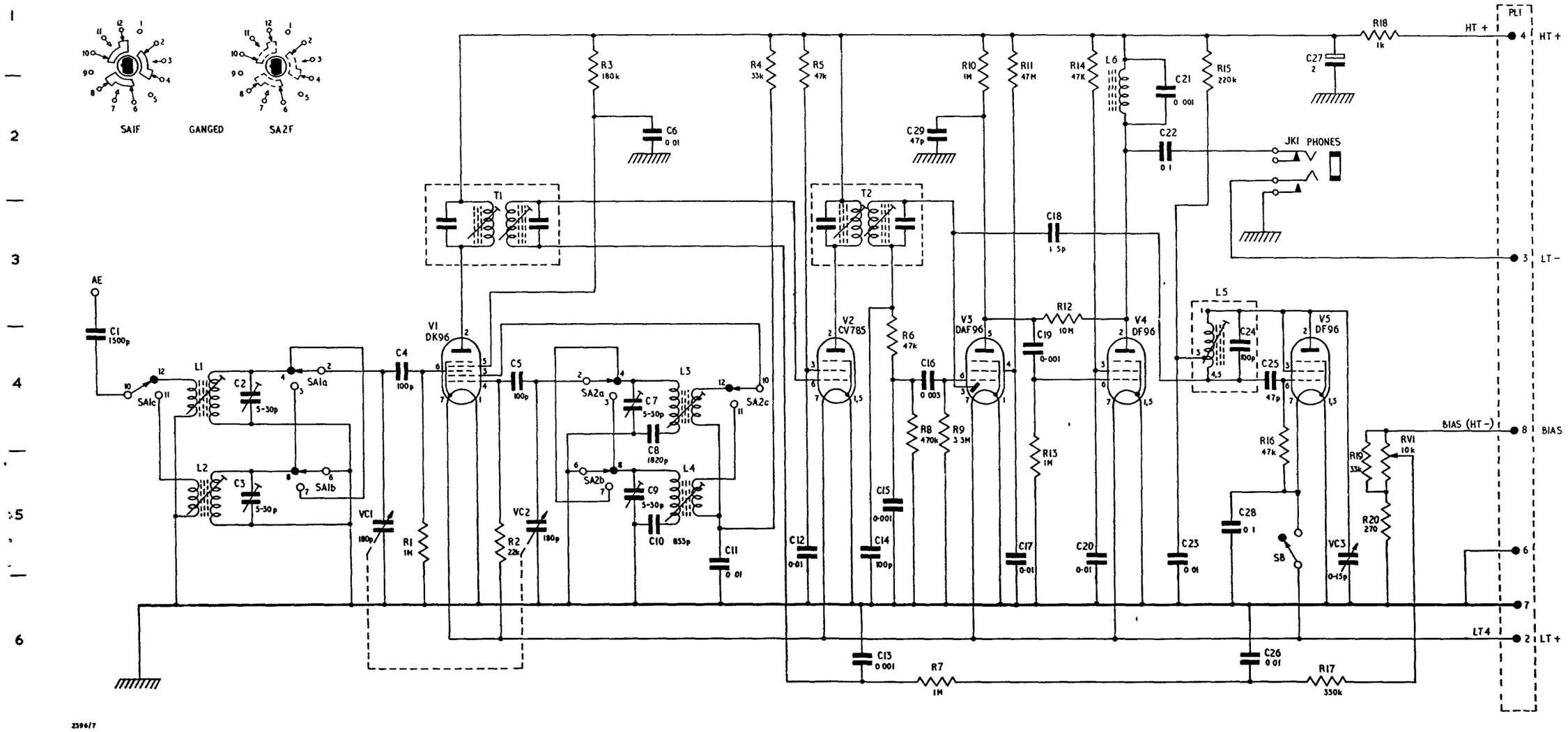
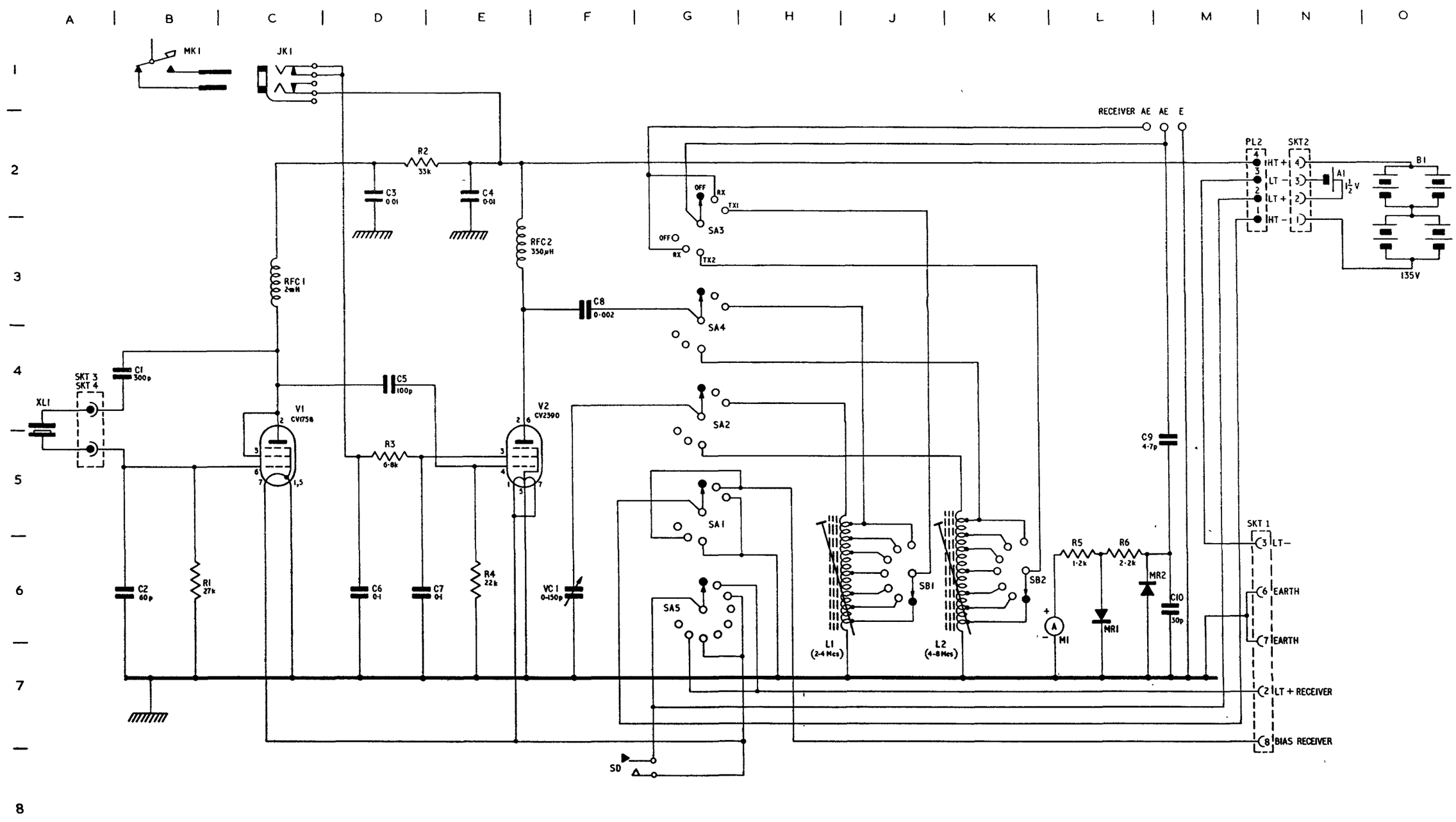


Fig 2001 - Receiver circuit diagram



2997/3

Fig 2005 - Transmitter circuit diagram