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13 January 2020

Dear [REDACTED],

Thank you for your email of 19 December 2019 requesting the following information:

*"I am interested in a copy of the following manuals for the UK/PRC-350*

*User Handbook UK/PRC-350  
EMERs for the PRC-350  
Complete Equipment Schedule for the PRC-350  
Illustrated Parts Catalogue for the PRC 350  
User Handbook, Clansman Audio Accessories  
EMER, Clansman Accessories - Tels C 740 to 749"*

I am treating your correspondence as a request for information under the Freedom of Information Act 2000 (FOIA).

A search for the information has now been completed within the Ministry of Defence, and I can confirm that some information in scope of your request is held. The documentation relating to the UK/PRC-350 that we have managed to locate can be found enclosed in the following nine attachments (in two further emails). We hope that this information will be of assistance to you with your research.

If you have any queries regarding the content of this letter, please contact this office in the first instance.

If you wish to complain about the handling of your request, or the content of this response, you can request an independent internal review by contacting the Information Rights Compliance team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail [CIO-FOI-IR@mod.gov.uk](mailto:CIO-FOI-IR@mod.gov.uk)). Please note that any request for an internal review should be made within 40 working days of the date of this response.

If you remain dissatisfied following an internal review, you may raise your complaint directly to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not normally investigate your case until the MOD internal review process has been completed. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website at <https://ico.org.uk/>.

Yours sincerely,

Defence Digital Secretariat

CONDITIONS OF RELEASE			
1.		3.	
2.		4.	

TEST KIT, CONDITION, CLANSMAN RADIO

TECHNICAL HANDBOOK - TECHNICAL DESCRIPTION

Note...

These Pages 1-14 (Part 1) and 1001-1011 (Part 2), Issue 3 supersede Tels M 662 (no parts) Pages 0-02, 1-29 and 1001-1002, Issue 1, Pages 1003-1004, Issue 2 and Pages 1005-1009 and 2001, Issue 1. The information has been completely revised.

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INTRODUCTION

GENERAL

1. This Part 1 consists basically of three sections, an introduction, a brief description and a more detailed description. The introduction includes a statement of the role and purpose of the equipment. The brief description details the construction and, under 'outline of working', describes the equipment in terms of simple block diagrams. The detailed description expands the 'outline of working' into terms of more detailed functional diagrams.

ROLE AND PURPOSE

2. The equipment enables users to check the taskworthiness of certain Clansman radios by providing a simple means of checking:

- a. Transmitter power output.
- b. Receiver sensitivity.
- c. Antenna systems.

3. Transmitter power is indicated on the test set meter the scale of which is divided into two sections; a green section which is marked GOOD, and a red section which is marked BAD. A 17-position switch selects the appropriate meter sensitivity for the Radio Under Test (R.U.T.). When checking receiver sensitivity the test set is used to introduce attenuation appropriate to the operating range of the r.u.t.

4. The receiver and antenna system checks require the use of an additional Clansman radio of similar frequency coverage (working radio (w.r.)).

5. A separate coaxial cable checker is provided, to allow checking of the cables used with the test set.

MAIN PARAMETERS

Operational parameters

6. The test kit is designed to test the following equipments:

- |        |            |
|--------|------------|
| RT 320 | RT 353     |
| RT 321 | RT 349     |
| RT 350 | A.R.F.A.T. |
| RT 351 |            |

Physical data

7. Depth: 355 mm (14 in.).  
Width: 265 mm (10.5 in.).  
Height: 222 mm (8.75 in.).  
Weight: 11.5 kg (25.3 lb).

Climatic range

8. Temperature:  
Storage: -40 °C to +85 °C.  
Operational: -5 °C to +40 °C.  
Humidity and physical conditions: Specification REMC 20FR, Issue 6 Cat IV, less (8c).

Transportation data

9. Operation and storage: Up to 2500 m (8000 ft).  
Air pressure range: For air transportation a pressure relief tap must be opened.

Packaging data

10. Packaging to: SRDE/PKG/620-3592.

Electrical data

11. R.F. power measurements: 70 mW to 75 W, 50 Ω, V.S.W.R. <1.2 : 1, 1.5 MHz to 76 MHz.  
Accuracy ± 10 % except RT 349  
70 mW ± 15 %.
- Maximum power dissipation: 75 W for 15 min.
- Receiver sensitivity:
- Variable attenuation: 100 dB in 10 dB steps  
10 dB in 1 dB steps.
- Fixed attenuation: 94 ± 5 dB.
- Sidestep oscillator: 200 kHz ± 20 Hz.
- Audio oscillator: 375 Hz warbling at 2.5 Hz, output 4.0 mV.

Power requirements

12. A d.c. supply of 12 V to 29 V, 30 mA is required to power the sidestep oscillator. This is normally derived from Pin C of the audio socket of the r.u.t. or w.r.

CODING AND IDENTIFICATION DATA

13. The equipment contains the following sub assemblies:  
a. Load Unit Assembly, Z4/5820-99-639-0987.

- b. Coaxial Switch Assembly, Z99/5930-99-639-0989
- c. Oscillator/Mixer Unit Assembly, Z4/5820-99-639-0994
- d. Attenuator Assembly, Z4/5820-99-639-0988
- e. Potentiometer Assembly, Z4/5820-99-639-0990.

14. No sub assembly prefixes are used to denote the location of the individual components. They are coded sequentially throughout the equipment, eg R1-R119, C1-C21.

#### REPAIR POLICY

15. Unit level repairs are limited to the repair or replacement of the accessories and certain front panel items (eg knobs). All other repairs may be undertaken at Field level. There are no Centremes. The test set consists of a front panel fitted with some detailed parts (eg meter) and five sub assemblies, which are all designated as discard items. Full details are given in Tels M 666.

#### ASSOCIATED PUBLICATIONS

16. CES: 43787.  
IPC: Army Code No 61600.  
User Handbook: 61653.

#### BRIEF DESCRIPTION

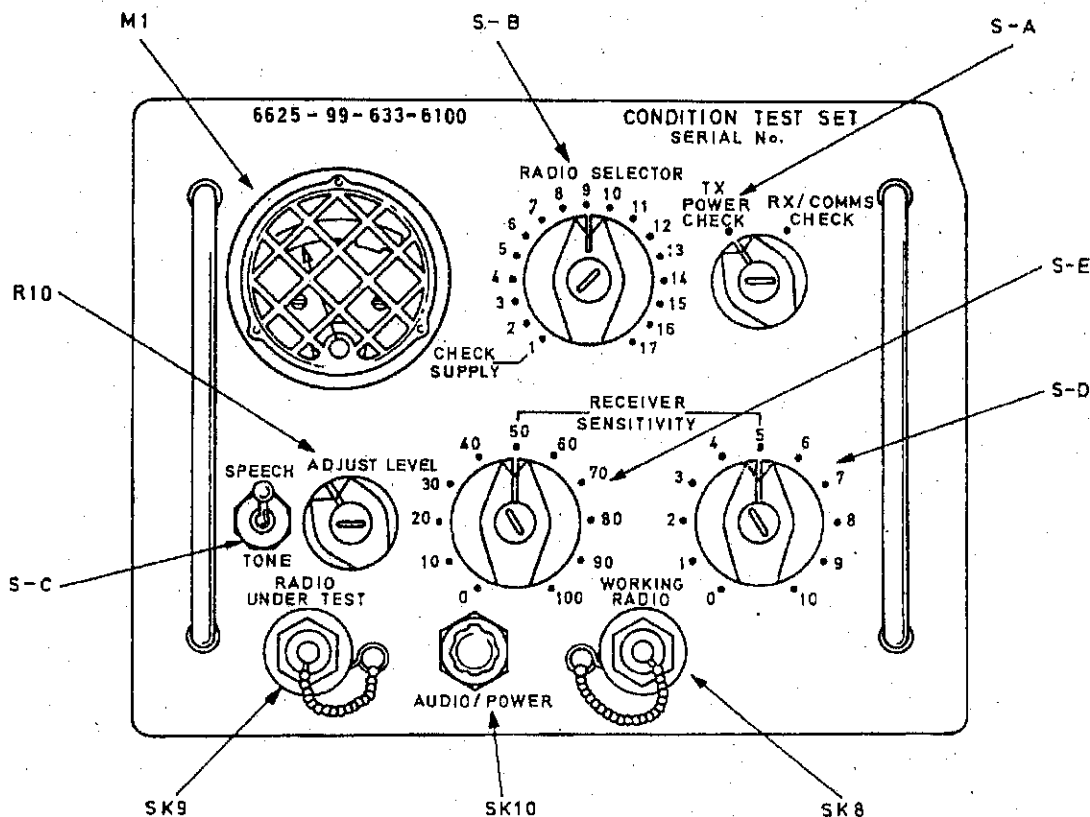
#### CONSTRUCTION

17. The test set is housed in an RAE case complete with a cover. The case when fitted with its cover will provide climatic protection against humidity and driving rain to the requirements of REMC/2OFR Issue 6, Category IV.

18. The cover is fitted with an inner lid which carries an instruction plate. A knurled fixing nut is fitted to the lid which when unscrewed gives access to a stowage compartment. This compartment contains the following items:

- a. Antenna, Pickup Loop, Z4/6625-99-633-6107 Qty 1
- b. Checker Assembly, Cable, Z4/6625-99-633-6106 Qty 1
- c. Cable Assembly, Power Electrical, Z42/5995-99-633-6105 Qty 1
- d. Cable Assembly, R.F. 2 m Lg, Z42/5995-99-633-6102 Qty 2
- e. Cable Assembly, R.F. 10 m Lg Z42/5995-99-633-6103 Qty 1
- f. Cable Assembly, R.F. 153 mm Lg, Z42/5995-99-633-6104 Qty 2
- g. Adaptor Aerial, RT 349, Z4/6625-99-649-5582 Qty 2

19. The front panel (Fig 1); which carries the meter, switches and sockets, is fitted with two 'D' type handles which provide roll over protection to the front panel components.



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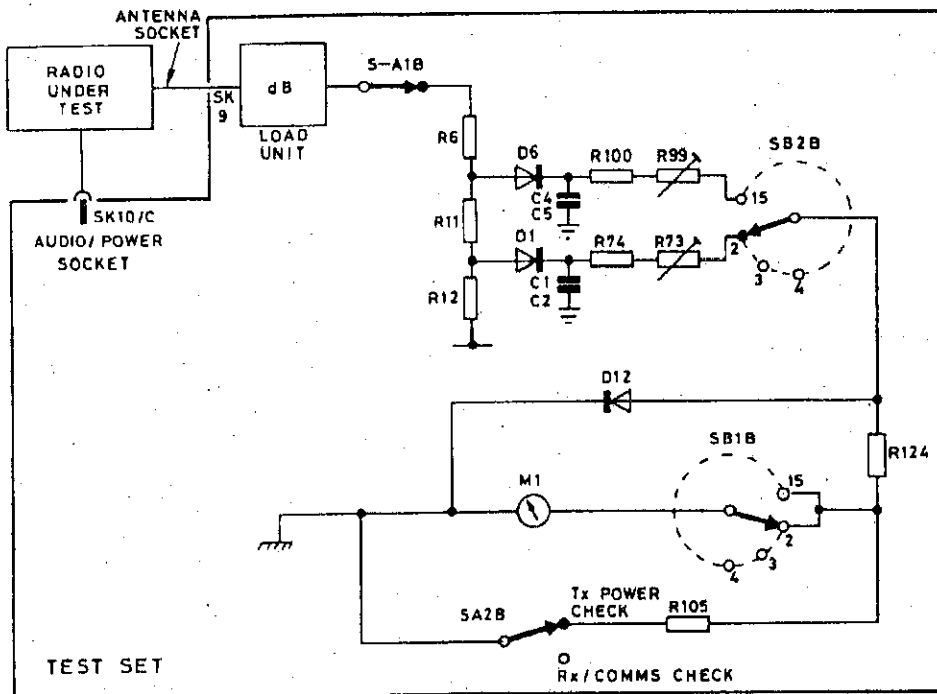
Fig 1 - Front panel

20. The Attenuator Assembly, the Coaxial Switch Assembly, and the Mixer/Oscillator Assembly are fitted to the rear of the front panel. The Potentiometer Assembly fits to the side of the Load Unit Assembly, which is mounted on four pillars fitted at the corners of the rear of the front panel (Part 2; Figs 2005 and 2006).

OUTLINE OF WORKING

TX power check (Fig 2)

21. To carry out this check the antenna socket of the r.u.t. is connected to SK9 and the AUDIO/POWER socket (SK10) to the audio socket of the r.u.t. using the connectors provided. Switch SA is set to TX POWER CHECK. RADIO SELECTOR switch (SB) is set to the appropriate position for the type of set and facility being tested.



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Fig 2 - TX power check; simplified circuit

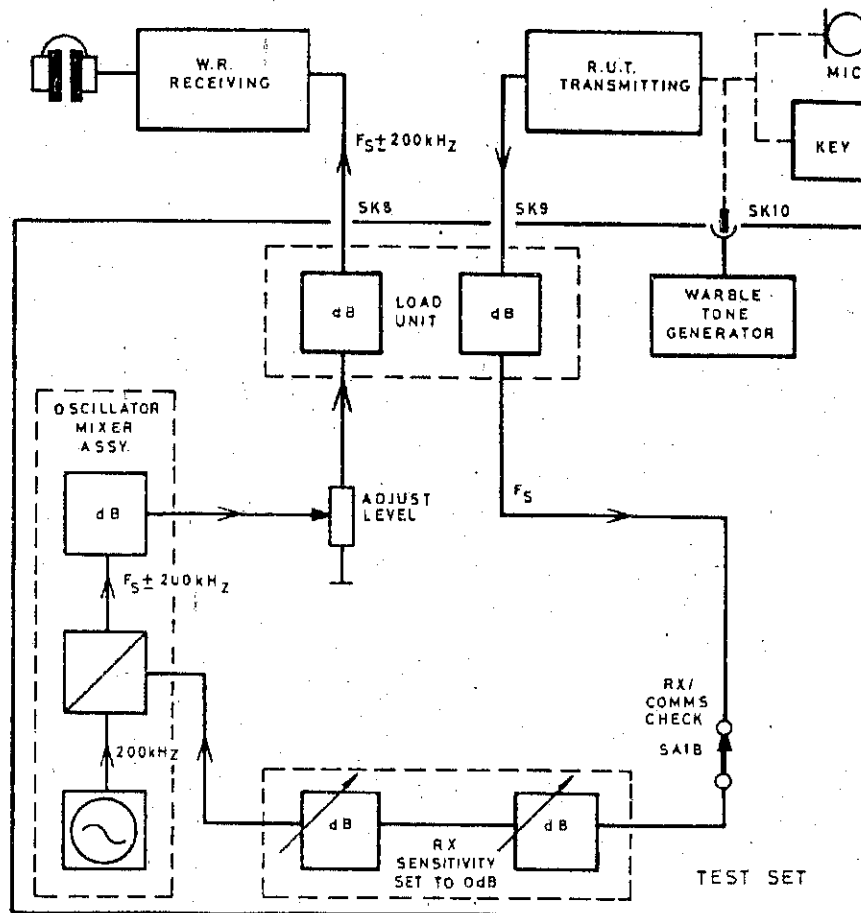
22. When switch SC is set to TONE it connects Pin F to Pin E of the AUDIO/ POWER socket (SK10) which causes the r.u.t. to go to the transmit condition. It also connects the output of the cyclic tone oscillator to the microphone input of the r.u.t. via Pins A and B of SK10.

23. The r.f. power is applied to the load unit which is a 50 Ω, 10.1 dB attenuator. The attenuated r.f. output is routed via SA to the divider chain (R6, R11 and R12). For radios other than the RT 349, the voltage developed across R12 is rectified by D1 and the r.f. is filtered by C1 and C2. The resultant d.c. is applied to Meter M1 via R74 (fixed), R73 (preset), SB2B, R124 (fixed) and SB1B. The preset is adjusted for a meter indication at the junction of the red and green sectors when the input power is the minimum acceptable for the r.u.t. corresponding to that particular setting of SB2 (Position 2 = RT 350, Position 3 = RT 351 etc).

24. When testing the RT 349 Position 15 of SB is used. Because the Tx power is much lower than in all other Clansman radios, this selects the voltage developed across R11 and R12 to be rectified by D6, filtered by C4 and C5 and passed on to the meter via R99 and R100.

25. Diode D12 affords meter protection in the event of SB being incorrectly set or a malfunction in the r.u.t. resulting in excessive power output. R105 is a fixed shunt on the meter in the TX POWER CHECK position of SA. Positions 16 and 17 of SB are not used.

RX/COMMS check, r.u.t. transmitting (Fig 3)



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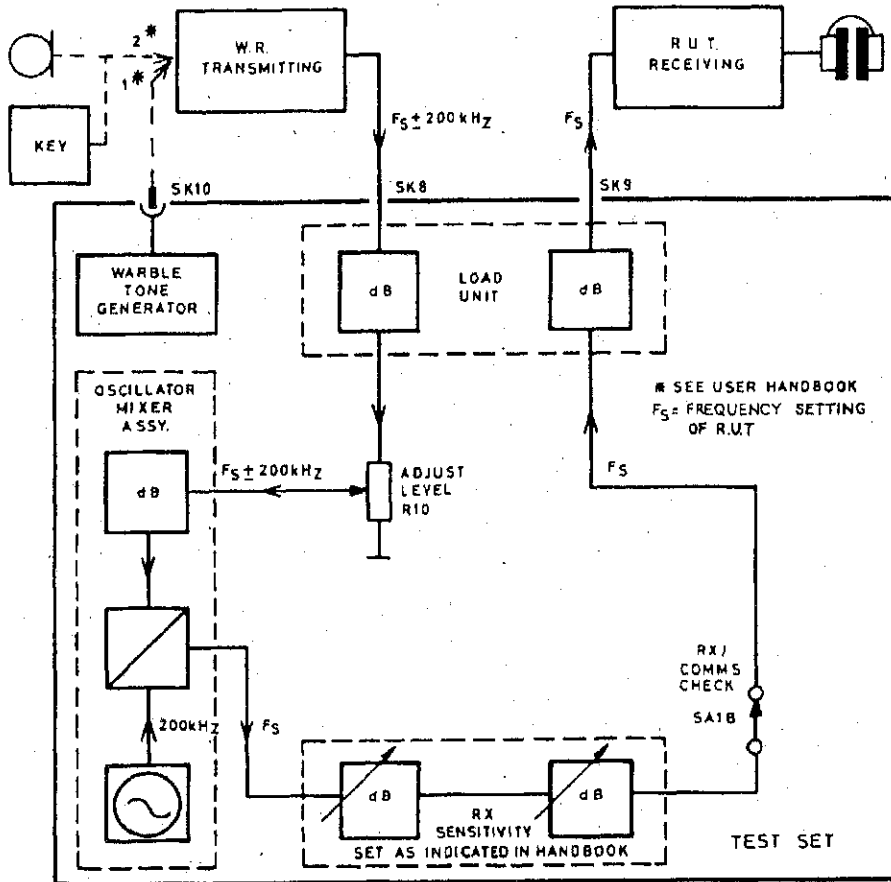
Fig 3 - RX/COMMS check, r.u.t. transmitting; block diagram

26. This test is to confirm that the modulating circuits of the r.u.t. are working satisfactorily. The r.u.t. is operated in the appropriate system mode, eg tone modulated, speech modulated or keyed. The r.f. output is taken through the load attenuator to the RECEIVER SENSITIVITY attenuators which are set to 0 dB and thence to the mixer. Here the signal frequency ( $F_s$ ) is mixed with the locally generated 200 kHz signal to produce an output of  $F_s \pm 200$  kHz. This output then passes through preset and fixed attenuators to the w.r. (The w.r. is tuned to a frequency of  $F_s \pm 200$  kHz and is set to receive signals of the same mode as those transmitted by the r.u.t.

27. If an operator is carrying out the check without assistance he can modulate the r.u.t. with the cyclic tone generator in the test set. With an assistant, he can check normal operation using a microphone and c.w. operation by use of a key. In all cases the received signal should be clear and undistorted. With the variable attenuators set to 0 dB the path loss between SK9 (RADIO UNDER TEST) and SK8 (WORKING RADIO) is 94 dB. The 200 kHz sidestep of the frequencies is to avoid stray radiation effects which would exist if the r.u.t. and w.r. were operating on the same frequency.



RX/COMMS check, r.u.t. receiving. (Fig 4)



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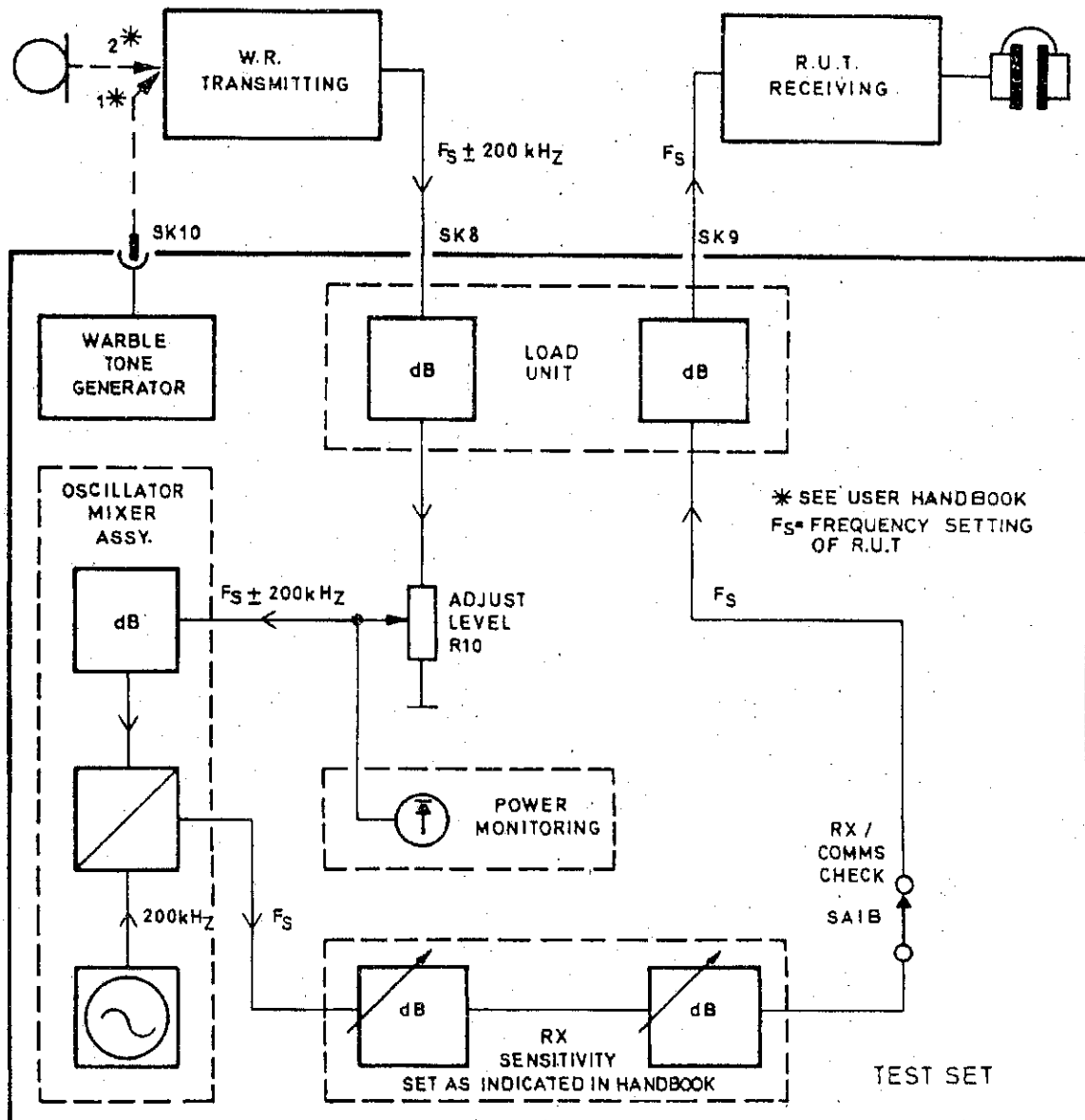
Fig 4 - RX/COMMS check, r.u.t. receiving; block diagram

28. The conditions for this test are essentially the same as described in Paras 26 and 27. This time however the w.r. is modulated and transmitting, whilst the r.u.t. is receiving. If the received signals are clear and undistorted then the receiver of the r.u.t. is working and not introducing any distortion. This is also a limited check of the frequency accuracy. Any difference in frequency between the w.r. and the r.u.t. (other than the 200 kHz) will result in the tone heard in the r.u.t. phones being different from that heard in the w.r. phones.

Receiver sensitivity check (Fig 5)

29. In this check essentially the same test is performed as described in Para 28. However this time the path loss is set to a figure which represents the expected range of the r.u.t. The User Handbook lists three requirements for this test:

- a. The RADIO SELECTOR switch (SB) must be set to the position corresponding to the r.u.t. on the lowest power available (except RT 353 when the 1 W setting is used).
- b. The transmitter power of the w.r. must be standardized so that any Clansman radio can be used to test any other Clansman radio (providing that it is of the same frequency and mode of modulation).
- c. The RECEIVER SENSITIVITY attenuators must be set to a predetermined setting given in the User Handbook.



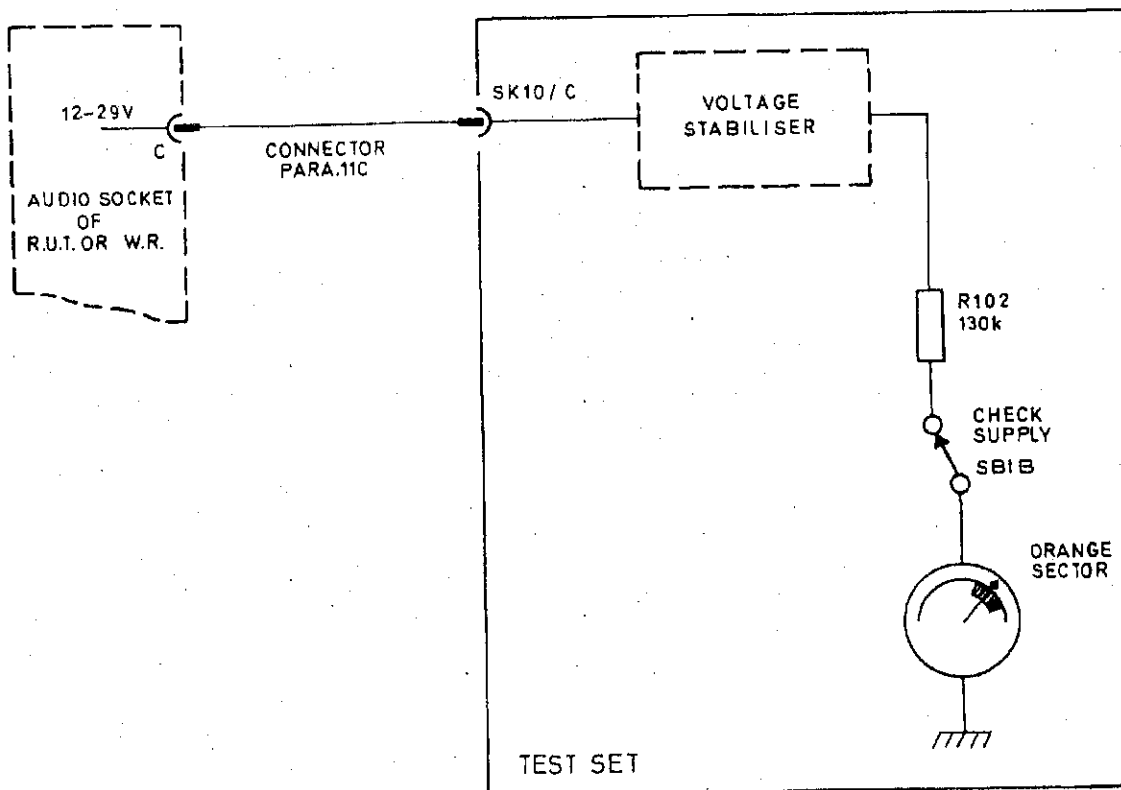
3861/18

Fig 5 - Receiver sensitivity check; block diagram

30. The working radio is set to the mode and power setting laid down in the User Handbook and is set to transmit. The ADJUST LEVEL control (R10) is then adjusted until the meter indicates at the junction of the GOOD/BAD sectors, thus standardizing the input signal. The path loss will be 94 dB (the fixed attenuation within the test set) plus the setting of the variable attenuators.

31. Two methods of carrying out this test are described in the User Handbook. In method one, requiring only one operator, the warbling tone is used to modulate the w.r. The operator has to decide whether he can hear the tone in the r.u.t. phones, ignoring any distortion or noise. If the results are inconclusive, eg when testing a h.f. radio in a noisy environment, the second method may be used. This requires two operators and inserts less attenuation between the w.r. and r.u.t. One operator speaks into the w.r. microphone, the second operator listens on the r.u.t. phones and decides whether the received signal is intelligible.

32. Resistor R104 is used to calibrate the fixed attenuation within the test set during the initial workshop setting up procedure.

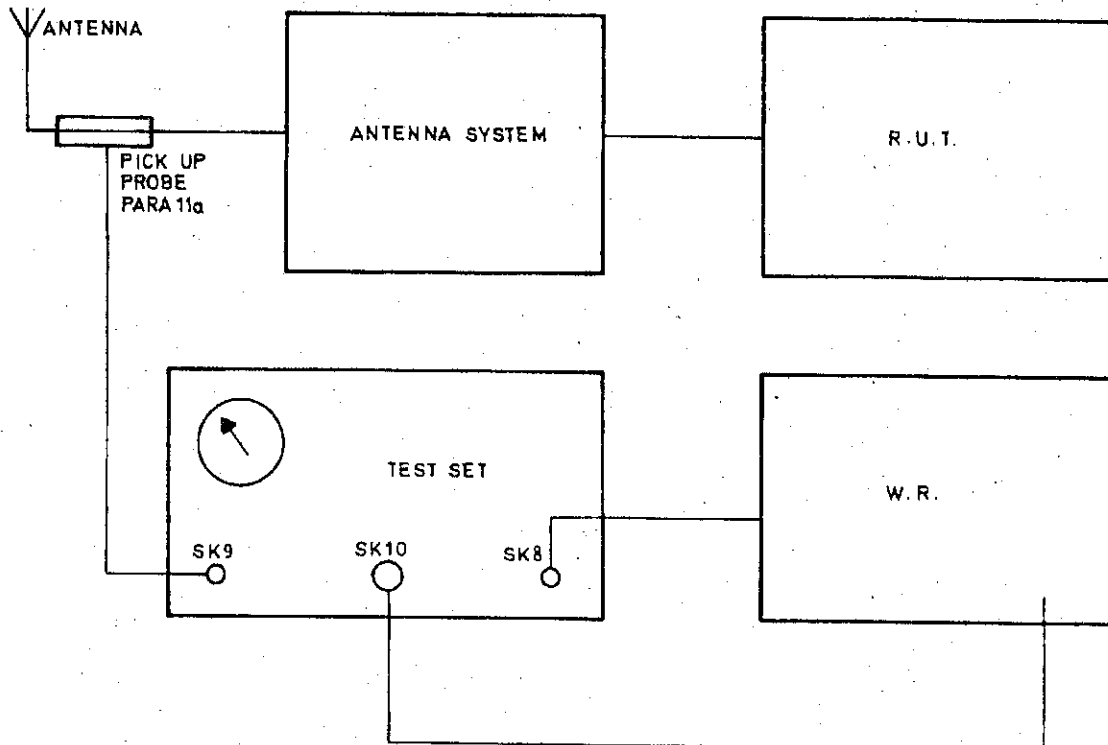


3861/19

Fig 6 - Check supply; simplified circuit

33. The test set normally receives its supply voltage from Pin C of either the r.u.t. or w.r. audio sockets which are connected to the AUDIO/POWER socket of the test set by a connector (Para 18.c.). According to the type of set being tested this voltage can vary in the range 12 V to 29 V d.c. This supply is stabilized in the test set to between 8.6 V and 10.2 V d.c. In the CHECK SUPPLY position of SB this voltage is applied to the meter via R102 and if the supply is correct the meter will indicate within the orange zone.

Antenna check (Fig 7)



3861/20

Fig 7 - Antenna check; block diagram

34. In all the previous checks tests have been carried out at the r.u.t. antenna coaxial socket except on the RT 349. To ensure that the antenna system is satisfactory a pick up probe is used which clips onto the antenna rod of the r.u.t. If satisfactory reception occurs then the antenna system, ie coaxial connectors, antenna tuning units etc must be functioning. The test conditions and results are as for the RX/COMMS check described in Paras 26, 27 and 28.

Coaxial connectors

35. The cable checker (Para 18.b.) is used to prove the serviceability of the test kit coaxial cables. Power for the checker is derived from the audio socket of the w.r. or r.u.t. (Para 33). The lamp marked SUPPLY should be lit.

36. The r.f. cable to be tested is connected between two of the coaxial sockets (dependent upon the terminations). If the cable is serviceable the lamp marked CABLE will light. If either the outer or inner is open circuit or if they are shorted together the CABLE lamp will not light.

DETAILED DESCRIPTION  
(Part 2, Figs 2001 and 2002)

POWER SUPPLIES AND STABILIZATION

37. The power supply for the test set is normally obtained from either the r.u.t. or w.r. The audio sockets of the radios have a d.c. voltage between Pin C (+ve) and Pin E (-ve). This varies between 12 V and 29 V d.c. dependent upon the type of radio and its supply.

38. The test set AUDIO/POWER socket (SK10) is connected to one of the radios by a 7-way connector (Para 18.c). The supply at SK10C and SK10E is taken via Pins 88 and 85 to Pins 1 and 2 of the Oscillator/Mixer Unit Assembly.

39. The positive supply passes to the collector of the series regulator (TR1), via D4 which provides reverse polarity protection. The base of TR1 is held constant by the Zener diode (D5) fed from the positive rail by R68. This ensures that over an input voltage range 12 V to 29 V the output at TR1 emitter (Pin 7) will be held within the limits 8.6 V to 10.2 V with a current drain of 30 mA.

40. Capacitor C6 provides a reservoir to smooth the output of TR1. Capacitors C20 and C21 r.f. decouple the input and output lines, preventing any r.f. breakthrough from the radio supply line.

OSCILLATOR/MIXER UNIT

41. This unit mixes the 200 kHz signal produced by TR2 and associated circuits with the signal from the r.u.t. or w.r. to produce a 200 kHz 'side-step'.

42. Transistor TR2 and associated circuit comprise a hybrid Colpitts/crystal oscillator with feedback between base and emitter provided by C7 and C10; the crystal (XL1) and its series trimming capacitors (C8 and C9) are connected between base and earth. C8 is adjusted for an oscillation frequency of 200 kHz  $\pm$  1 Hz. Resistors R69 and R70 set the base biasing conditions.

43. The collector load comprises one of the secondary windings of transformer T1, C3 tuning the winding to approx 200 kHz.

44. The primary of T1 is connected to the balanced mixer circuit (D2, D3, R63, R66, R65 and R64). R64 is adjusted to balance the mixer about earth.

45. The mixer operates in two modes. If the input is from the working radio at SK7 then the frequency will be  $F_s \pm 200$  kHz (where  $F_s$  = frequency of r.u.t.). This signal will be attenuated by R56 to R62 before being applied to the mixer at Pin 5, and the mixer output will be fed out at SK6 via R67.

46. When the signal is applied at SK6 from the r.u.t., ie  $F_s$ , then addition will take place in the mixer and a signal  $F_s \pm 200$  kHz will be produced and fed via R56 to R62 to SK7.

47. The other secondary winding of T1 is used to produce a test signal at TP6.

#### WARBLE TONE GENERATOR

48. The warble tone generator is located on the p.c.b. designated Potentiometer Assembly (Z4/5820-99-639-0990). It provides a signal of 4 mV 375 Hz modulated at 2.5 Hz, at Pins 16 and 19 (T2 secondary). This is used to modulate the transmitter when RX/COMMS check is being carried out (Paras 26-28). SC must be switched to TONE.

49. Transistors TR5 and TR7 are connected in a conventional multivibrator configuration the time constants of the resistance/capacitance coupling being such that the circuit oscillates at a nominal 2.5 Hz. The collector load of TR7 consists of two resistors (R110 and R119) which connect to TP1.

50. Transistors TR4 and TR6 are also connected as a multivibrator with resistance/capacitance elements providing an oscillatory frequency of 375 Hz. However the base supplies for TR4 and TR6 are taken from TP1 via R117 and R118. The potential at TP1 will be varying between approx 9 V and 4 V as TR7 is switched on and off at 2.5 Hz intervals. Thus the amplitude of the 375 Hz signal will be varying at a 2.5 Hz rate producing a 'warbling' tone at TP2.

51. This signal is taken through the filter (R116-C16, R115-C15) to the voltage divider (R122-R123). The output at the slider of R123 is fed via C13 to the base of a.f. amplifier (TR3); R107 and R121 provide the base bias. TR3 is connected as an emitter follower and its output is taken from R120 via C11 and R114 to the primary of the output transformer (T2).

52. The secondary of T2 is connected to output Pins 16 and 19. Preset resistor R123 is adjusted so that when Pins 16 and 19 are loaded with 150  $\Omega$ , the potential across them is 4.0 mV.

53. Diodes (D8, D9, D10 and D11) connected in series with the emitters of TR6, TR4, TR7 and TR5, protect the base emitter junction against transient voltages during switching.

#### R.F. LOAD UNIT

54. The r.f. load unit houses two power attenuators. Each attenuator has an input impedance of 50  $\Omega$  and a nominal loss of 10.1 dB when terminated by 50  $\Omega$ . The power rating of each attenuator is a maximum of 75 W for 15 min. The v.s.w.r. of each load is better than 1.2:1.

55. The assembly consists of three aluminium tubes held together by heat conducting fins. Two of the tubes are used to house the resistors and are filled with silicone oil. The third tube is used as an expansion chamber, to allow for the change of volume of oil with temperature. The oil is retained by a piston which moves in the expansion chamber in sympathy with the volume of oil. The whole assembly is sealed and must not be opened.

#### METERING CIRCUITS

56. Meter M1 is a basic 0-100  $\mu$ A f.s.d. moving coil instrument, with its glass protected against damage by a robust grille. A diode (D12) is connected across the movement and its series resistor (R124), to guard against damage by overvoltage.

57. When the meter is used to CHECK SUPPLY the meter (+ve) terminal is connected via R102 to the 9 V positive supply rail and meter negative terminal to earth (Para 33).

58. R.F. power measurement is described in Paras 21 to 25. During this test the meter is shunted by R105.

59. When RX/COMMS check is selected R105 is disconnected and the meter is shunted by R103 and R104. R104 is adjusted during calibration of the fixed attenuation of the test set to give a GOOD/BAD junction deflection of the meter.

#### COAXIAL SWITCH UNIT

60. The Coaxial Switch Assembly contains a 5-pole changeover switch, a potential divider (R6, R11 and R12), two r.f. rectifiers (D1 and D6) and their reservoir/bypass capacitors (C1, C2, C4 and C5). (See Paras 21 to 25). One position is for r.f. power measurement and the other for receiver/communications checks.

#### STEPPED ATTENUATOR UNIT (Part 2, Fig 2003)

61. This unit consists of two switches (SE (10 dB steps) and SD (1 dB steps)) contained in a cast aluminium unit. The attenuator has a characteristic impedance of 50  $\Omega$  and a maximum loss of 110 dB (ten steps of 10 dB plus ten steps of 1 dB). Resistor R34 protects the attenuator in the event of the r.u.t. being accidentally switched to transmit during receiver testing.

3861/Tels

END of Part 1

CONDITIONS OF RELEASE			
1.		3.	
2.		4.	

TEST KIT, CONDITION, CLANSMAN RADIO

TECHNICAL HANDBOOK - FAULT FINDING AND REPAIR DATA

CONTENTS

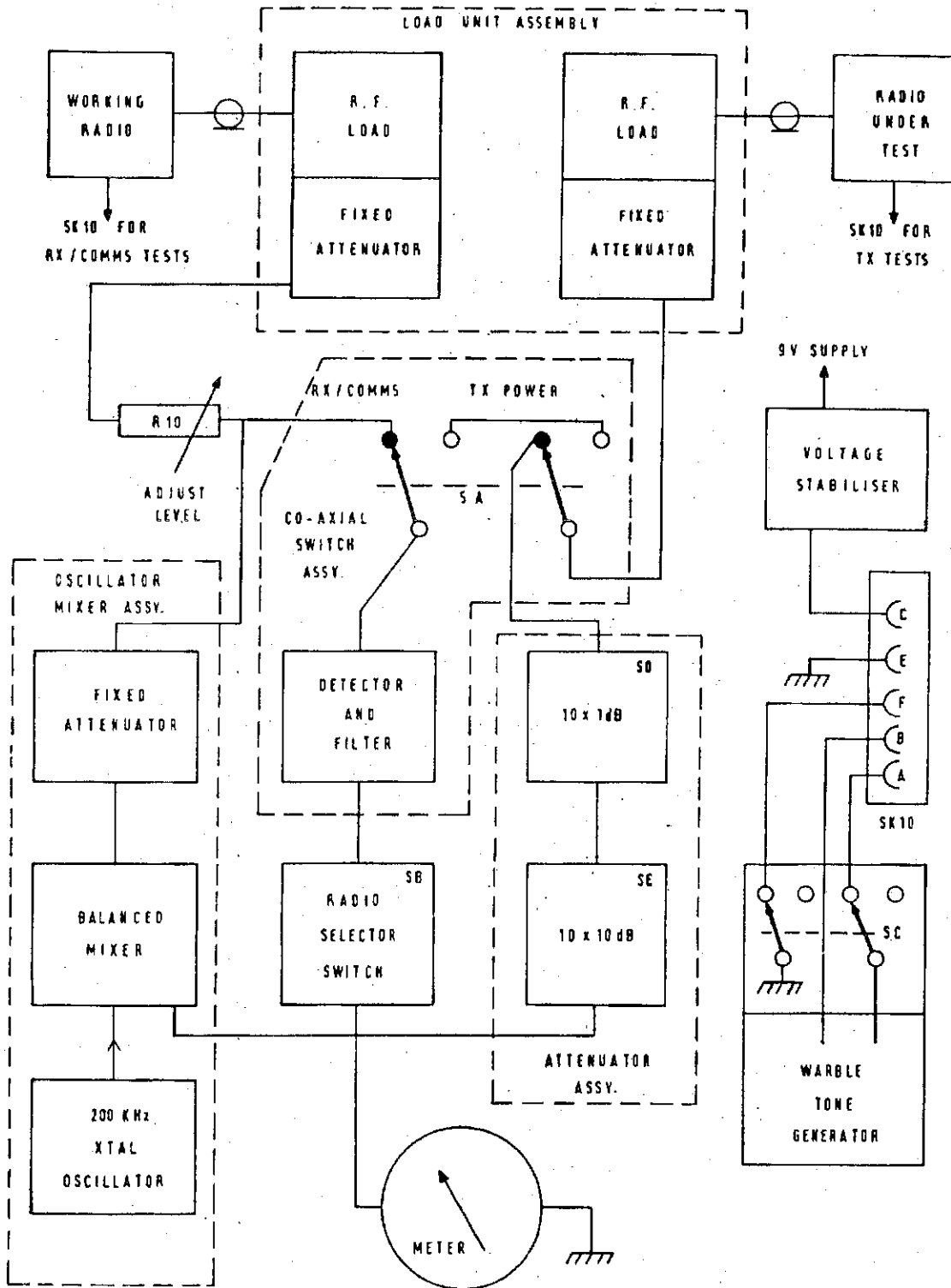
TABLES

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Fig 2501 - Block diagram

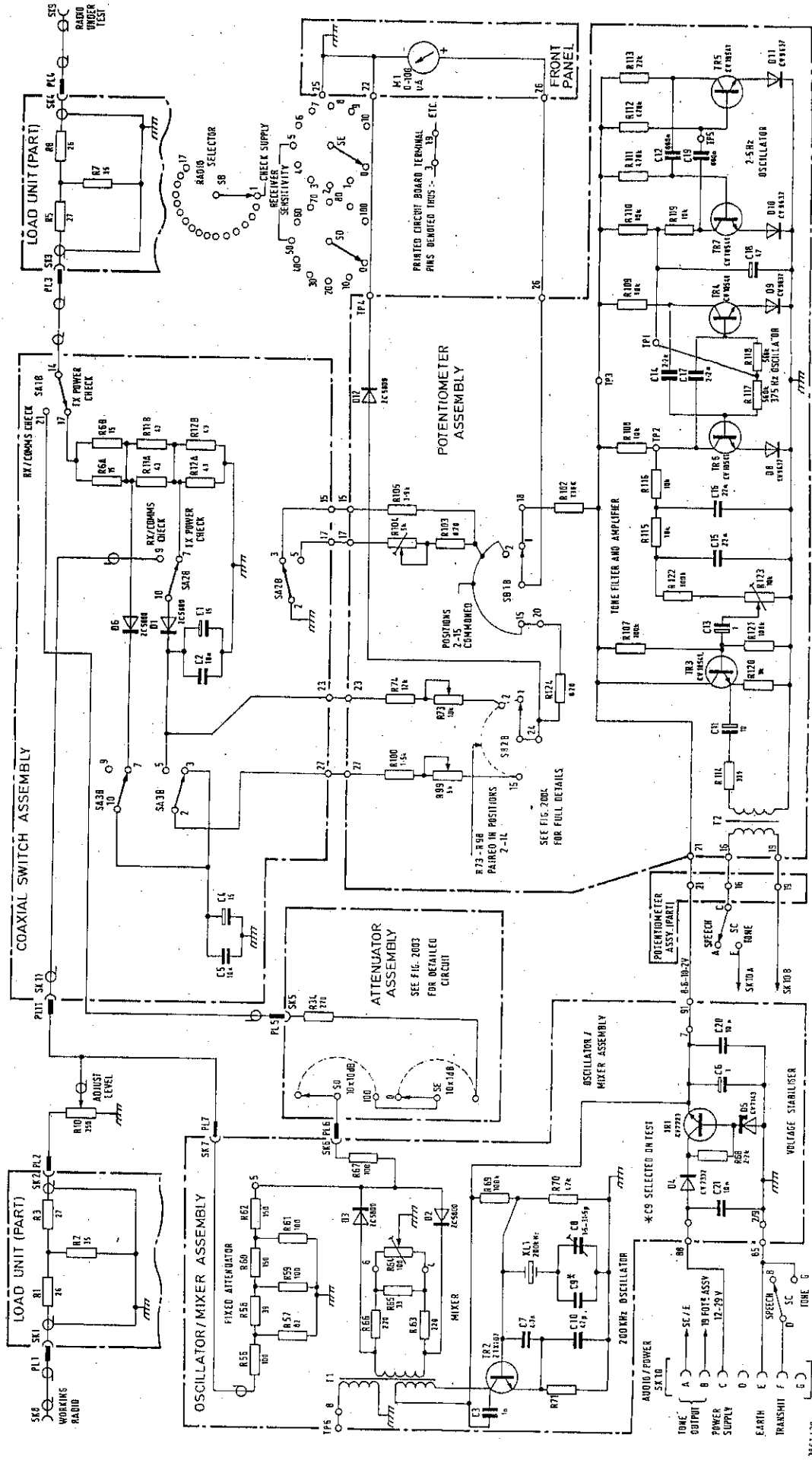
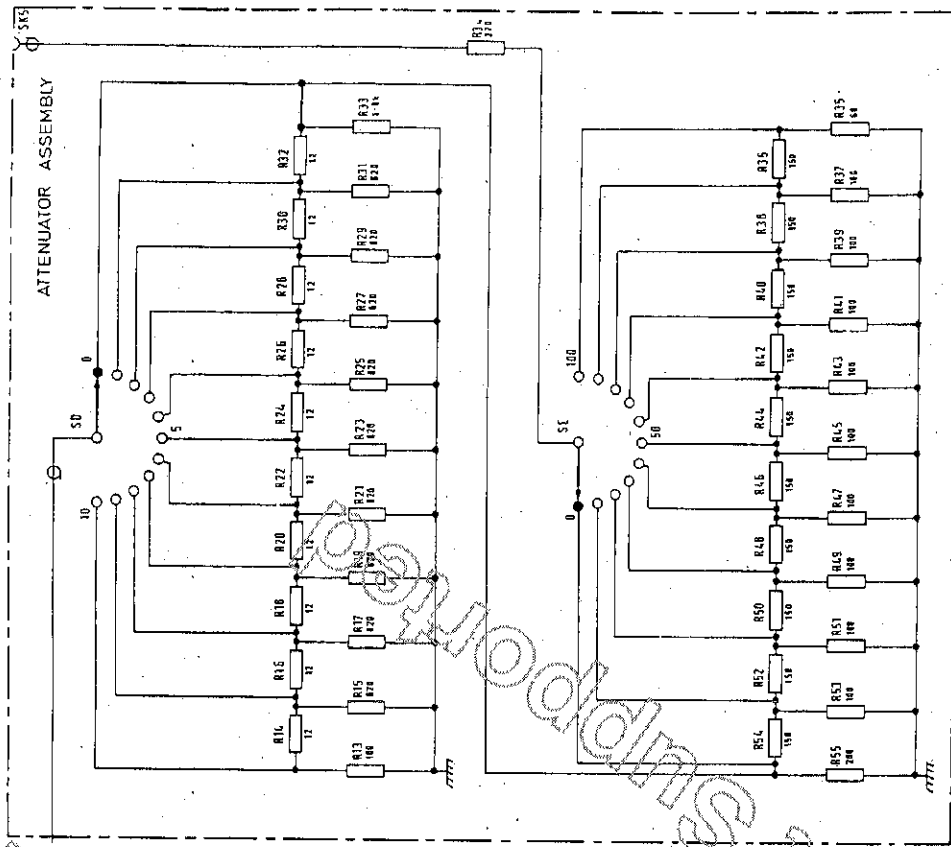
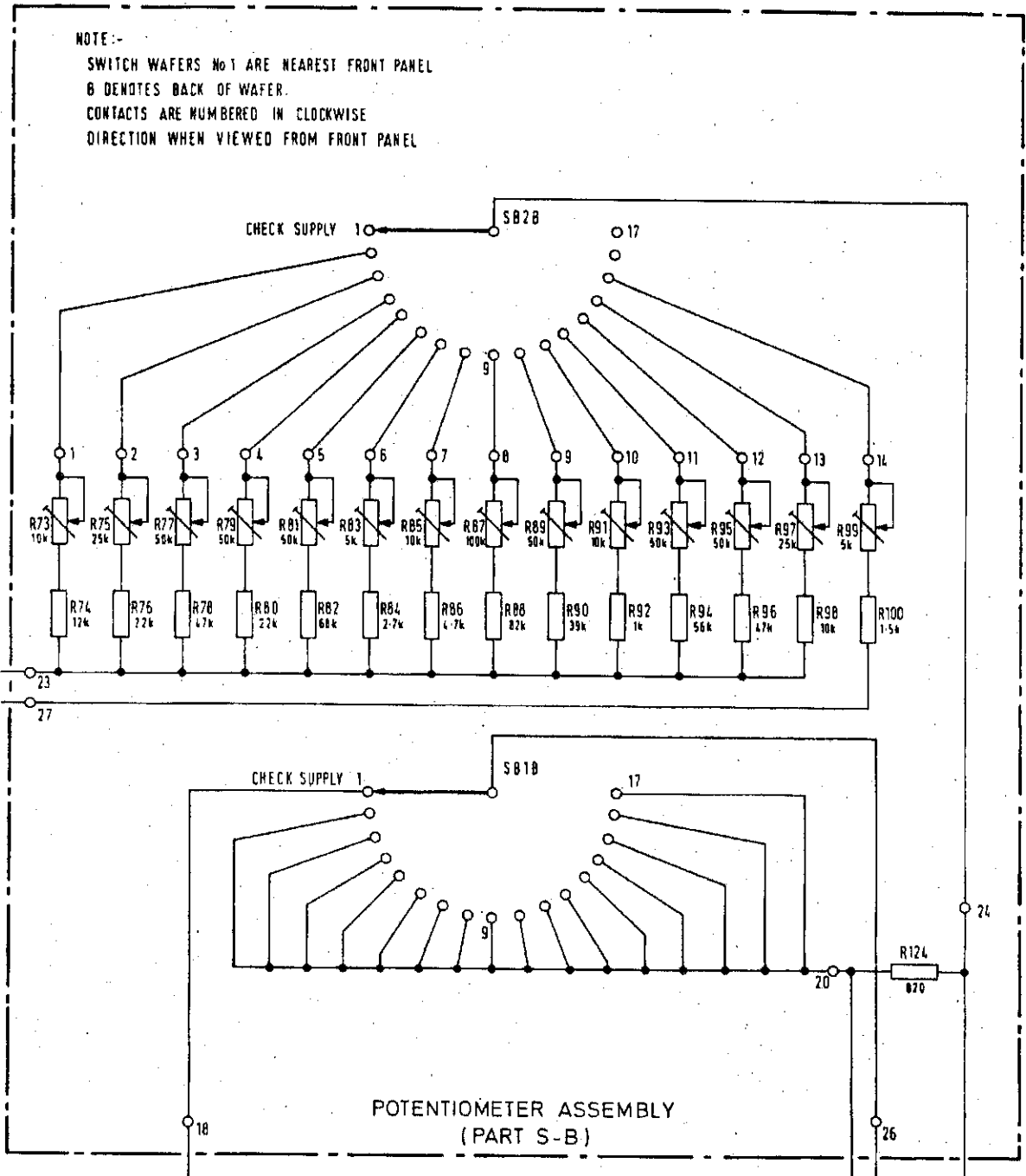


Fig 2502 - Main circuit diagram



3861/70

Fig 2503 - Attenuator Assembly; circuit diagram



3851/31

Fig 2504 - Potentiometer Assembly; circuit diagram

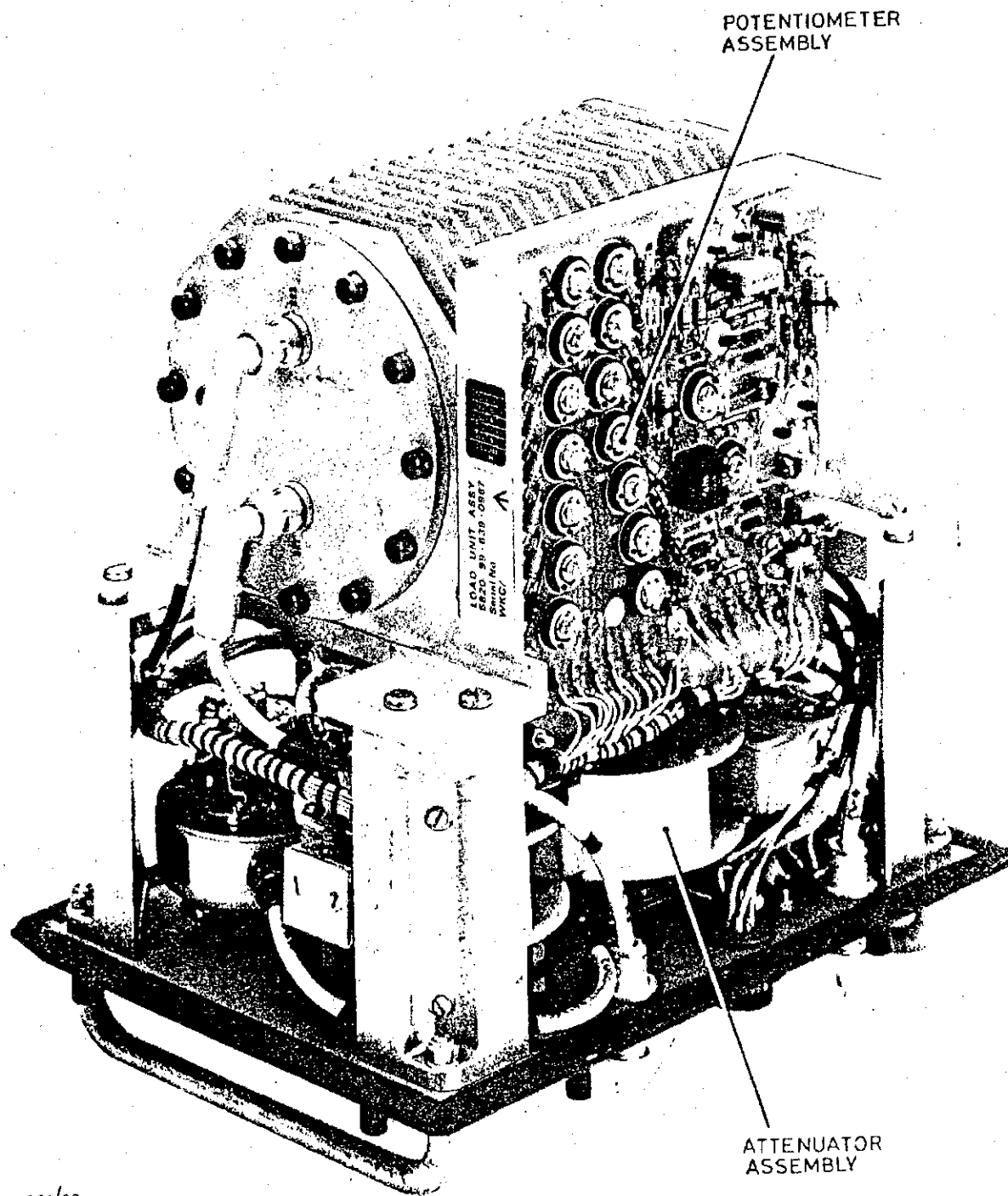
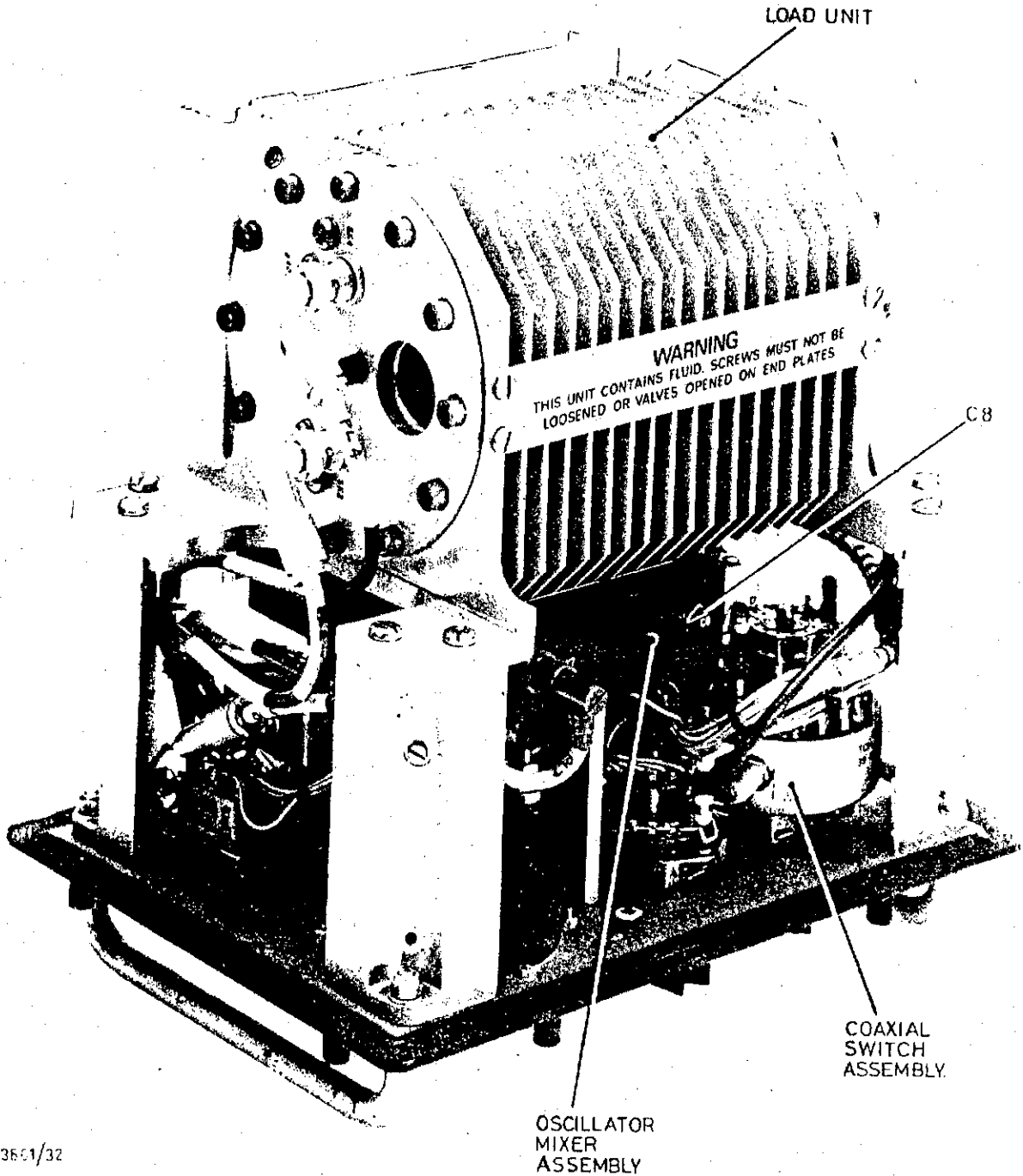
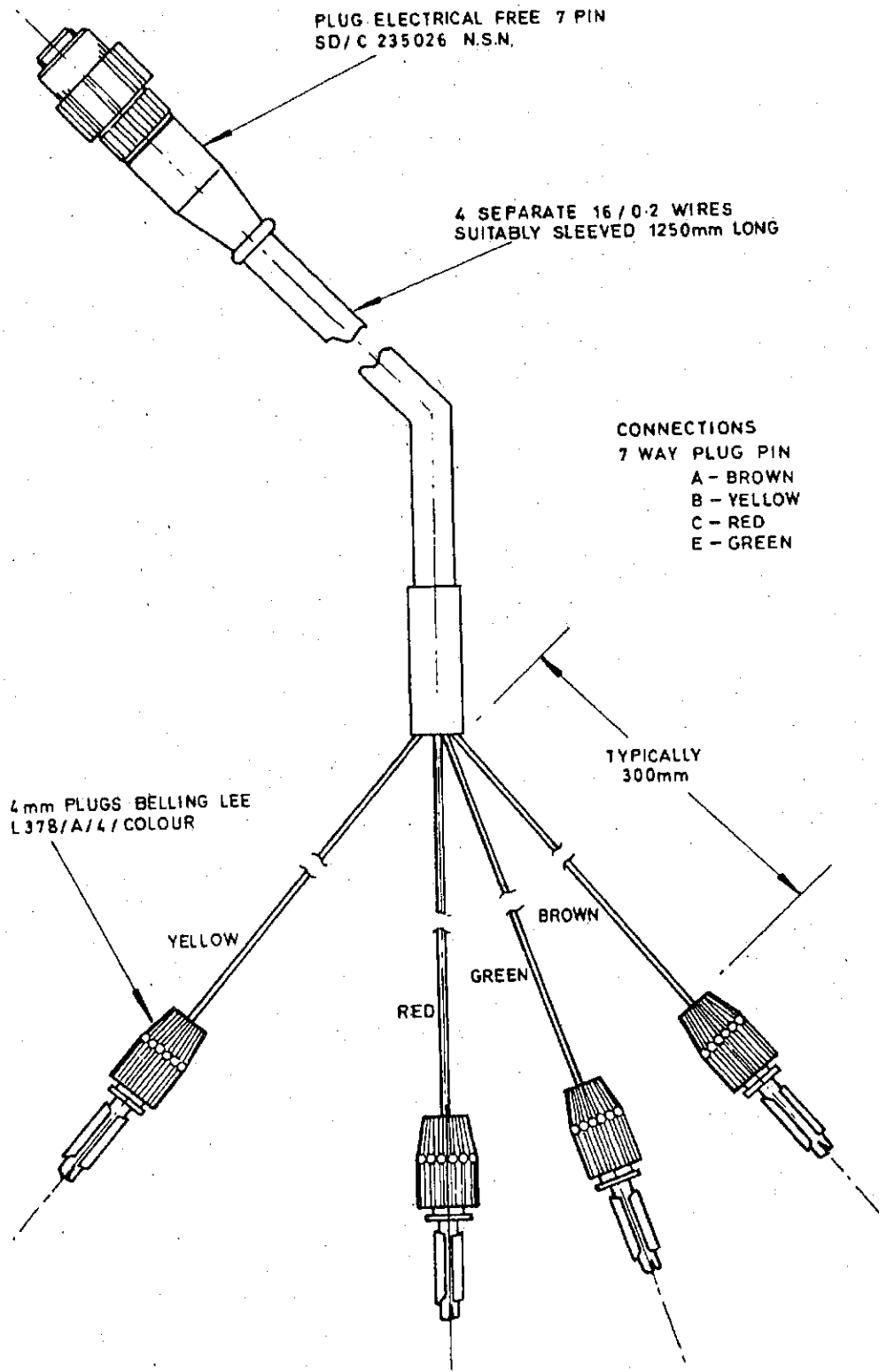


Fig 2505 - Construction, internal view with p.e.c.



3661/32

Fig 2506 - Construction, internal view



3861/26

Fig 2507 - Connector, 7-way plug to 4 mm plugs  
(local manufacture)



FAULT LOCATION DATA

1. Table 2501 lists faults and probable causes based on the specification tests. It is assumed that testing has been carried out sequentially and has given satisfactory results up to the test which fails. Supporting test data is given in Tels M 664.

Table 2501 - Fault location data

Test No (1)	Test result (2)	Suspect (3)
1	No indication on meter	D.C. input supply (Pins 88, 85) D.C. regulator output (Pins 91, 85) LL 8.6 V UL 10.2 V Meter circuits
	Below orange sector	D.C. regulator output ll 8.6 V R 102. Meter.
	Above orange sector	D.C. regulator output LL 10.2 V R102. Meter.
2	No indications Positions 2 to 15	Coaxial lead SK9 to PL4 Load Unit Assembly (SK4 and SK3) Coaxial Switch Assembly, SB2B, SB1B, R124
	No indications Positions 2 to 14	Coaxial Switch Assembly
	No indication Position 15	Coaxial Switch Assembly SB2 Position 15
	All indications high or low	SA2B, R105
	Some positions high/low	Potentiometers require adjustment
3	Indication high/low	Load Unit Assembly Coaxial lead from SK9 to PL4
4	Indication high/low	Cable Assembly
5	No indication or Indication high/low	Coaxial lead from SK8 to PL1 Load Unit Assembly SK1 and SK2 R10, Coaxial lead from R10 to PL11 Coaxial Switch Assembly R103, R104
6	Attenuation low/high	Coaxial leads from SK8 to PL1 and from SK9 to PL4 Load Unit Assembly SK1 and SK2, SK3 and SK4 Oscillator/Mixer Unit Assembly SK7 and SK6 Attenuator Assembly (not at 0 dB)

(continued)



Table 2501 - cont

Test No (1)	Test result (2)	Suspect (3)
7	Output out of limits	R 123 requires adjustment.
	Waveform incorrect	Tone oscillator (part of Potentiometer Assembly)
	High resistance between Pins E and F	SC, SK10 wiring
8	Frequency out of limits	C8 requires adjustment

Table 2502 - Fault finding test information

Assembly (1)	Testing information (typical figures) (2)
Load Unit Assembly	<p>Input at SK4, 1 V r.m.s. at 1000 Hz Output at SK3 (loaded with 50 <math>\Omega</math>) LL 290 mV UL 335 mV</p> <p>Input at SK1, 1 V r.m.s. at 1000 Hz Output at SK2 (loaded with 50 <math>\Omega</math>) LL 290 mV UL 335 mV</p>
Oscillator/Mixer	<p>Input, Pins 88 (SK10-C) (+ve) and Pin 85 (SK10-E) (-ve), LL 15 V UL 29 V d.c. Output, Pin 91 (+ve) and Pin 85 (-ve) LL 8.4 UL 10.4 V d.c.</p>
	<p>Frequency at TP6, LL 199.990 kHz UL 200.010 kHz d.c. input 24 V</p>
	<p>Input SK7, 30 MHz, 1 V r.m.s. Output SK6, 30.2 MHz, selective level meter UL 2.2 mV LL 0.7 mV Output SK6, 200 kHz, selective level meter 0.5 mV</p>
Potentiometer Assembly	<p>Connect 150 <math>\Omega</math> load between pins 16 and 19. Connect d.v.m. on a.c. range across the resistor, it should indicate LL 3 mV UL 5 mV</p>
	<p>Disconnect Leads 25 and 26 to meter and connect them to the multimeter set to its 50 <math>\mu</math>A range. Connect a d.c. supply between Leads 23 (+ve) and 25 (-ve). With SB and d.c. inputs as shown below it should be possible to set the potentiometer to produce a meter current of 40 <math>\mu</math>A.</p>

(continued)

Table 2502 - cont.

Assembly (1)	Testing information (typical figures) (2)				Remarks
	SB posn	Adjust preset	D.C. input V		
			LL	UL	
	2	R73	0.86	1.05	
	3	R75	1.4	1.7	
	4	R77	3.45	4.2	
	5	R79	2.55	3.1	
	6	R81	4.2	5.15	
	7	R83	0.32	0.4	
	8	R85	0.67	0.82	
	9	R87	6.0	7.37	
	10	R89	2.8	3.4	
	11	R91	0.39	0.47	
	12	R93	3.57	4.4	
	13	R95	3.1	3.8	
	14	R97	1.1	1.35	
	15	R99	0.31	0.39	Input to Lead 27
Attenuator Assembly	100 dB section: 0 to 70 dB in 10 dB steps $\pm$ 1 dB per step. 10 dB section: 0 to 10 dB in 1 dB steps $\pm$ 0.1 dB per step.				
Coaxial Switch Unit	<p>a. SA in TX POWER CHECK position. D.V.M. loaded with 4.7 k<math>\Omega</math> connected between Pin 23 and chassis. Inject 1000 Hz 5 V to PL3. D.V.M. should indicate LL 2.3 V UL 2.9 V a.c.</p> <p>b. As a. but d.v.m. connected to Pin 27, LL 4.8 V UL 6.0 V a.c.</p>				
	SA to RX/COMMS check. D.V.M. and 4.7 k $\Omega$ load to Pin 23 and chassis. Inject 1000 Hz 5 V to SK11, temporarily connect Pins 15 and 26 of SA. D.V.M. should indicate LL 5.8 V UL 7.2 V.				

Table 2503 - FORWARD coding

Note...

This list of Assembly Codes must be used in conjunction with Mgmt J 021 Part 4.

Assembly Code (1)	Designation (2)
0100	Case of Lid Assembly
0200	Front Panel Assembly
0300	Oscillator/Mixer Unit Assembly
0400	Load Unit Assembly
0500	Attenuator Assembly
0600	Coaxial Switch Assembly
0700	Potentiometer assembly

3861/Tels

END of Part 2

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CONDITIONS OF RELEASE

1

2

3

4

TEST SET, CONTROL BOXES RADIO, CLANSMAN HARNESS  
TECHNICAL HANDBOOK - DATA SUMMARY

NOTE

These Pages 1 to 5/6, Issue 3 dated Jul 96 (3 leaves), supersede Pages 1 to 4, Issue 2 dated Jul 79 (2 leaves). Fig 2 and Para 3 have been amended.

CONTENTS

Para

- 1 Equipment identity
- 2 Purpose
- 3 Brief description
- 4 Physical data
- 5 Climatic range
- 6 Transportation data
- 7 Packaging data
- 8 Electrical data
- 11 Power requirements
- 12 Maintenance
- 14 Associated publications

Fig

- 1 Test set front panel . . . . . 2
- 2 View of lid showing leads, connectors and TEKCS . . . . . 3

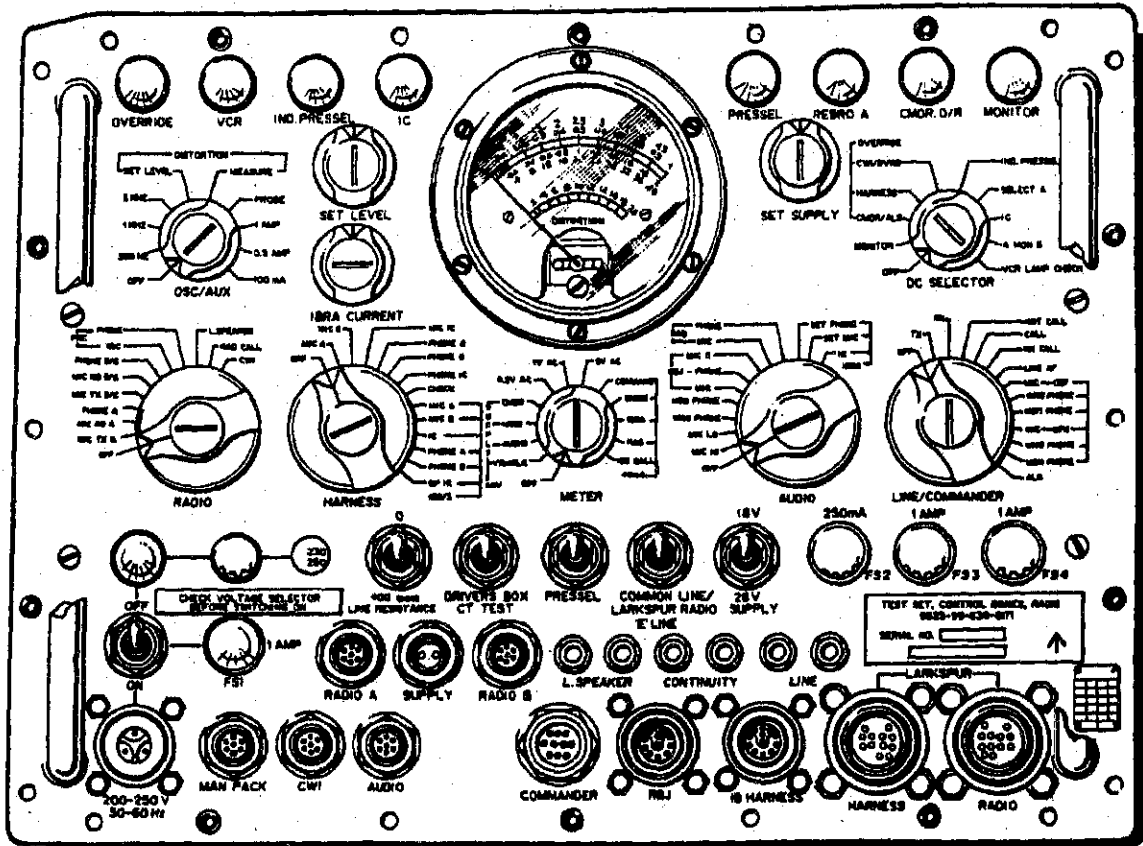


Fig 1 Test set front panel

**EQUIPMENT IDENTITY**

1 Test Set, Control Boxes Radio, Clansman Harness Z4/6625-99-630-6171

**PURPOSE**

2 The Test Set, Control Boxes Radio, Clansman Harness (CBTS) is designed to perform diagnostic and specification tests on Clansman radio control harness items and is intended for deployment at Field workshop level (either in the workshop or in the electronic repair vehicle).

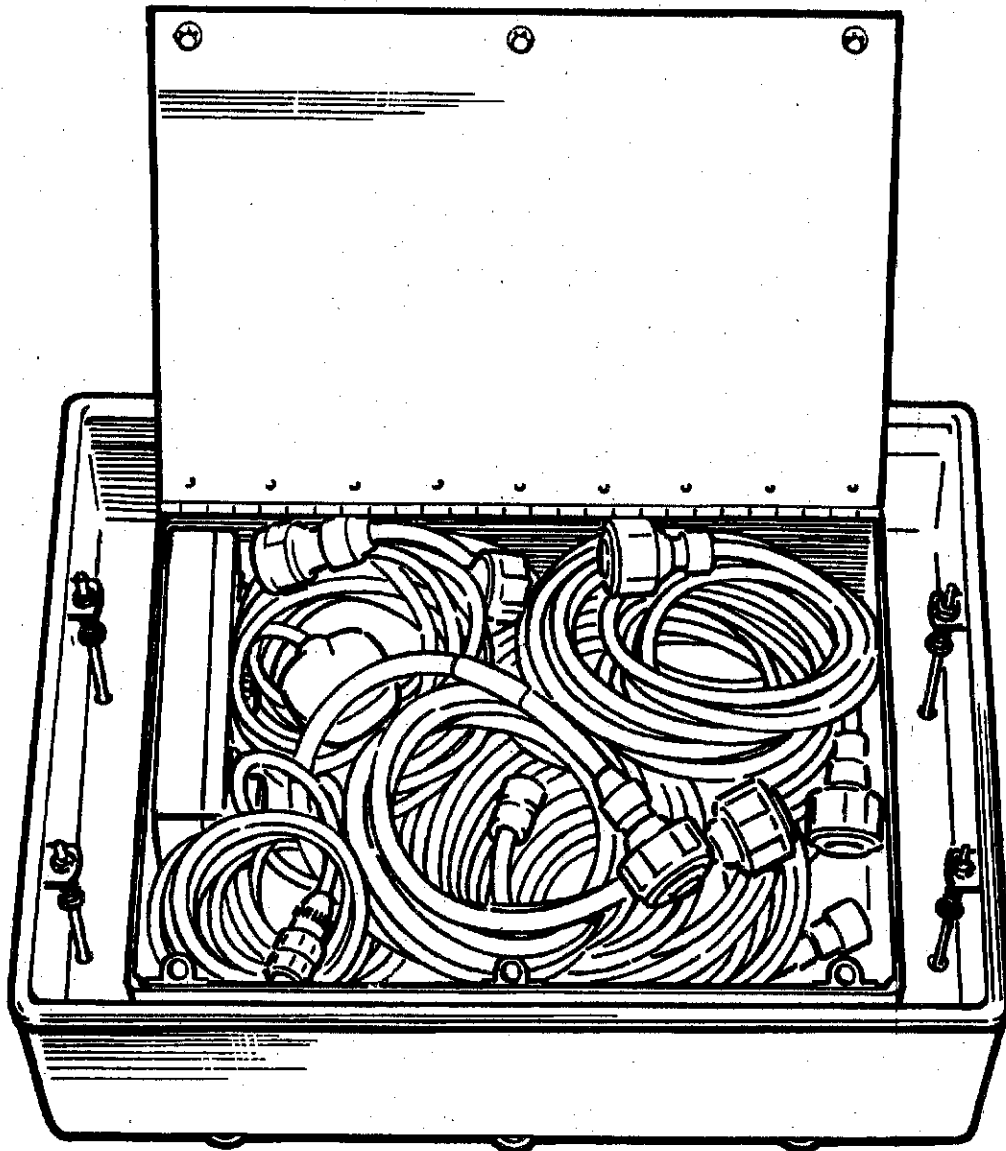


Fig 2 View of lid showing leads, connectors and TEKCS

### BRIEF DESCRIPTION

3 The test set is a mains operated equipment contained in a standard RAE case. All CBTS accessories (leads, connectors and Test Equipment Kit, Communication System) are carried in the lid. The selection and distribution of the test set facilities is achieved by front panel rotary switches. A measure of self-testing is built into the equipment. The test set provides the following facilities:-

3.1 Power requirements for the harness box under test.

3.2 Continuity testing of audio, radio and harness circuits within a harness box.

3.3 Functional and specification testing of amplifiers in a harness box.

3.4 Means of testing command current functions in interconnecting boxes IB2, IB3.

3.5 Initiation of DC functions to harness boxes.

3.6 Indication, by lamps, of harness box functions.

3.7 Use of the test set front panel meter for diagnostic test within a harness box.

3.8 Use of Test Equipment Kit, Communication System (TEKCS), in conjunction with CBTS, to test CPU(ANR) Ripple Current Attenuator (RCA) circuit.

#### PHYSICAL DATA

4 Height : 309 mm (12.6 in.)  
Width : 442 mm (17.4 in.)  
Depth : 302 mm (11.9 in.)  
Weight : 19.5 kg (43 lb)

#### CLIMATIC RANGE

5 The operating temperature range is -5 to +55°C.

#### TRANSPORTATION DATA

6 The equipment will withstand altitude conditions up to 30,000 feet, relative air density 0.370. It may be exposed to temperatures ranging from -40 to +70°C.

#### PACKAGING DATA

7 NYA.

#### ELECTRICAL DATA

8 Test frequencies:-

		<u>Output level</u>	<u>Output impedance</u>
8.1	300 Hz ± 10%	2.5V ± 10%	Less than 20Ω
8.2	1 Hz ± 10%	2.5V ± 5%	
8.3	3 Hz ± 10%	2.5V ± 5%	

9 DC outputs:-

- 9.1 +15.5V  $\pm 2\%$ , preset at 600mA, fused at 1A.  
9.2 0 to 3V )  $\pm 5\%$ , switched and variable at 600mA, fused at 1A.  
0 to 13V )

NOTE

Output 9.2 is electrically added to 9.1 to provide the required voltage for the box under test.

10 AC voltmeter:-

- 10.1 Frequency response: 300Hz to 3kHz  $\pm 0.5\text{dB}$   
10.2 Ranges: 5V  $\pm 5\%$  FSD  
1V  $\pm 5\%$  FSD  
0.2V  $\pm 5\%$  FSD  
10.3 Distortion filter: Rejection at 1kHz is greater than 50dB.  
10.4 Current limit circuit: Maximum short circuit, 30mA  $\pm 20\%$  at 16V.

POWER REQUIREMENTS

- 11 200-250V, 50-60Hz, fused at 1A.

MAINTENANCE

12 In-built test facilities include a check of oscillator output and distortion filter performance.

13 User maintenance is restricted to replacement of fuses, knobs, lamps, lamp covers, leads and connectors. Replacement of PECs and discrete components is to be carried out at nominated workshops only.

ASSOCIATED PUBLICATIONS

- 14 EMER: Tels L 800  
CES: Army Code No. 43800  
IPC: Army Code No. 61401



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CONDITIONS OF RELEASE			
1.		3.	
2.		4.	

CLANSMAN RADIO CONTROL HARNESS

TECHNICAL HANDBOOK - DATA SUMMARY

Note: These Pages 1-4, Issue 2 supersede Pages 1-4, Issue 1 dated Jun 75.  
Five new boxes have been added.

EQUIPMENT IDENTITY

See Table for designations, part numbers and abbreviations.

PURPOSE

Control system for installations containing up to three radio sets. An installation may be built up with Clansman radio control harness items appropriate to the required facilities. The following facilities are available:

- Intercommunication, with or without pressel operation, independent of installed radio sets.
- Intercommunication between parked vehicles.
- Remote control.
- Manual rebroadcast, local and remote.
- Automatic rebroadcast, local and remote.
- Break-in on rebroadcast.
- Larkspur radio/Clansman harness interface.
- Clansman radio/Larkspur harness interface.

BRIEF DESCRIPTION

The major part of the Clansman radio control harness comprises sealed units of cast light-alloy construction. Transistors, integrated circuits and printed wiring boards are employed. Conventional relays and switches provide function control and selection. Any required communication control system may be formed by the requisite combination of units. In most systems, units are interconnected by standard 12-way cables terminated in Pattern 10<sup>4</sup> double density plugs to form a harness ring.

PHYSICAL DATA

See Table.

CLIMATIC RANGE

	<u>Temperature</u>	<u>Humidity</u>	<u>Pressure</u>
Operation:	-40 °C to +52 °C	100 % at a maximum of	Altitudes up to
Storage:	-40 °C to +65 °C	30 °C	2450 m (8 000 ft)

TRANSPORTATION DATA

May be carried at altitudes up to 2600 m (25 000 ft).

Note: This page 2 Issue 3, May 94 supersedes Page 2 Issue 2, Nov 80.

PACKAGING DATA

DEF standard 1234A BPS NYA.

OPERATIONAL DATA

See Table.

POWER REQUIREMENTS

IB2, IB3, ALS, IBRA, RAB, RLB: 28 V d.c nominal from vehicle supply.

Other harness items, where applicable: 18 V d.c nominal from IB2, IB3 or RLB.

Current consumption: Depends on harness configuration.

ASSOCIATED EQUIPMENT

Clansman audio accessories (Tels C 740).

MAINTENANCE

Unit repair

Identification of faulty harness boxes, units and interconnecting cables using the Harness Installation Test System (Tels M 670) and Test Set Audio, Radio Audio Accessories (Tels M 650). Replacement of complete boxes and units. Replacement of knobs, lamps, lamp-covers and fuses of units requiring seal testing. Replacement of sub-assemblies and certain discrete components of units not requiring seal testing. Repair of all interconnecting cables.

Field repair

Fault finding and specification testing using the Harness box test set (Tels M 680). Replacement of sub-assemblies and certain discrete components. Some sub-assemblies must be back-loaded for repair, others may be disposed of locally.

Base repair

Central repair of back-loaded sub-assemblies. Refurbishing and rebuilding of complete harness units.

ASSOCIATED PUBLICATIONS

Illustrated parts catalogue:	Army code No:	61266
User handbook (Clansman harness):	Army code No:	61172
User handbook (SP70 harness):	Army code No:	NYA.

Table

Designation, Part number (and abbreviation)	Dimensions in millimetres (inches)	Weight kg (lb)	Operational data
Interconnecting box, 2 radio 5820-99-117-6250 (IB2)	120 x 290 x 165 (4.7 x 11.5 x 6.5)	3.9 (8.6)	Supplies 18 V d.c. connects as many as two local and one remote radio sets to the harness. Contains an intercommunication amplifier. Provides local and remote intercommunication and radio control facilities. May interface with remote operators or other harnesses. Controls local or remote, manual or automatic rebroadcast with break-in.
Interconnecting box, 3 radio 5820-99-117-6110 (IB3)	104 x 224 x 150 (4.1 x 8.8 x 5.9)	2.04 (4.5)	Supplies 18 V d.c. and connects as many as three local radio sets to the harness. Contains an intercommunication amplifier. May interface with remote operators or other harnesses.
Control, communication system crew box, 2 set 5895-99-117-4911 (CB2)	89 x 165 x 124 (3.5 x 6.5 x 4.9)	1.16 (2.6)	General purpose control box. Controls A set, B set and intercommunication with OVER-RIDE, MONITOR and LIVE IC facilities are available.
Control, communication system crew box, 3 set 5895-99-117-4910 (CB3)	99 x 224 x 150 (3.9 x 8.8 x 5.9)	1.7 (3.75)	Control box for 3 radio installation. Controls A set, B set, C set and intercommunication with OVER-RIDE. Provides a selective MONITOR facility.
Control, communication system commanders box, fixed 5895-99-117-4909 (CBF)	89 x 165 x 125 (3.5 x 6.5 x 4.9)	1.25 (2.75)	Always used with the Commanders personal unit. Provides LIVE IC and INDEPENDENT PRESSEL facilities. Connects the centralized warning indicator to the harness.
Control, communication system commanders personal unit 5820-99-117-5043 (CPU)	56 x 137 x 124 (2.2 x 5.4 x 4.9)	0.45 (1.0)	Normally used with the Commanders box, fixed. Controls A set, B set and intercommunication with OVER-RIDE. Provides a MONITOR facility. Connection to the Commanders box, fixed is by 10-way cable terminated in pattern 105 sockets. When used with the Radio lines box, the set selection switch controls radio, line and intercommunication.
Interconnecting box, drivers box 5820-99-117-5042 (DB)	89 x 165 x 124 (3.5 x 6.5 x 4.9)	1.1 (2.5)	Provides NORMAL, LIVE IC and OVER-RIDE facilities only. May connect the Tank telephone to the harness. May be connected via the Rotary base junction of a turreted vehicle to the Drivers box selector.
Interconnecting box, drivers box selector 5820-99-117-5041 (DBS)	89 x 165 x 124 (3.5 x 6.5 x 4.9)	1.16 (2.6)	When used with the Drivers box, the facilities of A set and B set operation, and intercommunication with A set monitor are provided. A warning lamp indicates selection of the intercommunication facilities.
Modification kit, electronic equipment. Modified tank telephone 5820-99-117-5044 (TT mod kit)	80 x 120 x 100 (3.15 x 4.7 x 3.9)	0.85 (1.87)	Part of tank telephone conversion kit (5965-99-620-5671). Replaces part of the Larkspur tank telephone assembly. Connects the Clansman tank telephone handset to the harness and provides a tone-call facility.
Interconnecting box, harness adaptor 5820-99-117-6249 (IBHA)	97 x 165 x 135 (3.8 x 6.5 x 5.3)	1.16 (2.6)	A vehicle installed unit which allows a Clansman manpack radio (PRC 320 with RCLU, PRC 351/352) to be connected to the harness, giving full vehicle radio facilities.
Interconnecting box, radio adaptor 5820-99-117-6248 (IBRA)	97 x 165 x 124 (3.8 x 6.5 x 4.9)	1.5 (3.3)	Adapts a Clansman radio (vehicle or manpack) for use with the Radio control harnesses, types A and B. Intercommunication and call facilities are provided only when used with a Clansman vehicle radio.
Radio adaptor box 5820-99-117-6109 (RAB)	97 x 168 x 124 (3.8 x 6.6 x 4.9)	1.36 (3.0)	Adapts a Larkspur vehicle radio for use with the Clansman radio control harness.
Audio extension lead 5820-99-117-6142 (AEL)	10 m long (394 long)	0.8 (1.75)	Permits short-range remote operation (with the monitor facility when available) from any Clansman radio or harness box audio socket.
Control, communication system, set combining box 5895-99-117-6108 (SCB)	89 x 165 x 128 (3.5 x 6.5 x 5.0)	0.68 (1.5)	Enables direct control of any two Clansman radios from one operating position. A monitor facility is provided.
Control, radio set remote combining unit 5820-99-117-6111 (RCU)	82 x 168 x 123 (3.2 x 6.6 x 4.8)	0.91 (2.0)	Enables remote control of any two Clansman radios from one operating position, using morse (h.f. radios only) or voice. Morse side-tone is provided by an oscillator. MONITOR, CALL and inter-communication facilities are provided.

(continued)

Table (cont)

Designation, Part number (and abbreviation)	Dimensions in millimetres (inches)	Weight kg (lb)	Operational data
Remote personal unit 5820-99-117-6144 (RPU)	55 x 137 x 140 (2.2 x 5.4 x 5.5)	0.45 (1.0)	Enables remote control of a Clansman radio, using Clansman headset when the Remote control handset cannot be used. CALL and intercommunication facilities are provided.
Amplifier, a.f. loudspeaker 5820-99-117-6143 (ALS)	103 x 224 x 161 (4.1 x 8.8 x 6.3)	2.27 (5.0)	Drives up to four local or remote loudspeakers, either from the Clansman harness intercommunication or radio channels, or from a local or remote Clansman manpack radio. It can be adapted for use with an Induction loop system by internal adjustment.
Loudspeaker, p.m., vehicle mounting 5965-99-117-6263 (LSV)	92 x 157 x 142 (3.6 x 6.2 x 5.6)	2.04 (4.5)	Can be driven directly from a Clansman vehicle radio or harness box audio socket in a quiet environment. For greater output, up to four can be driven from the Amplifier, a.f., loudspeaker.
Loudspeaker, p.m., free standing 5965-99-117-6264 (LSF)	115 x 186 x 217 (4.5 x 8.5 x 7.3)	3.18 (7.0)	A portable unit which can be driven directly from a Clansman vehicle radio or harness box audio socket and gives a talk back facility when used with Clansman audio equipment. For greater output, it can be connected to a loudspeaker socket of the Amplifier, a.f., loudspeaker. Up to four can be connected in parallel to the loudspeaker terminals of the Amplifier, a.f. loudspeaker using a maximum of 100 m of field cable.
Key telegraph, manual 5805-99-117-6903 (KTM)	80 x 185 x 85 (3.1 x 7.3 x 3.3)	0.8 (1.75)	Enables keying of Clansman h.f. radios. Can be connected to the audio socket of any Clansman h.f. radio or harness box. Clansman audio equipment may be connected to the key.
Amplifier intercommunication box (AIB)	118 x 171 x 197 (4.6 x 6.7 x 7.75)	2.73 (6.0)	Enables members of the gun detachment working outside and at the rear of an SP gun turret to receive and acknowledge the Commanders orders.
Loudspeaker tee box (LST)	82 x 165 x 124 (3.2 x 6.5 x 4.9)	0.91 (2.0)	Allows one or two amplifier intercommunication boxes to be connected to the SP gun harness.
Interconnecting box 12 way (IB12)	82 x 165 x 124 (3.2 x 6.5 x 4.9)	0.91 (2.0)	When connected into the SP gun harness ring provides two spur outlets to extend the harness through turret slip rings into the hull.
Radio lines box (RLB)	120 x 290 x 165 (4.7 x 11.4 x 6.5)	2.25 (4.95)	Supplies 18 V d.c. and is the main controlling unit for the SP gun communications system. Contains an intercommunication amplifier. Provides AMDATS information from either radio or line from AMDATS socket. Provides 'Gun Ready' signalling.
Telephone adaptor box (TAB)	89 x 165 x 124 (3.5 x 6.5 x 4.9)	1.16 (2.6)	Controls the connection of external telephone equipment to the harness. Also acts as an interconnecting box for the line circuit.

END

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CLANSMAN RADIO CONTROL HARNESS

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

Errata

Note: This Page 0 must be filed immediately in front of Page 1, Issue 2, dated Jan 78.

1. The following amendments must be made to the regulation.
2. Page 14, Test 34, column RADIO (S4):
  - Delete: 'Phone B'
  - Insert: 'Phone B/C'
3. Page 20
  - a. Test 8, column RADIO (S4):
    - Delete: 'Mic TX B'
    - Insert: 'Mic TX B/C'
  - b. Test 9, column RADIO (S4):
    - Delete: 'Phone B'
    - Insert: 'Phone B/C'
4. Page 27, Test 13, column DC SELECTOR (S6):
  - Delete: /
  - Insert: 'OFF'
5. Page 31:
  - a. Test 15, column Remarks:
    - Delete: 'Harness OVERRIDE lamp illuminated'
    - Insert: 'Harness and CMDR OVERRIDE lamps illuminated'
  - b. Test 16, column Remarks:
    - Delete: 'and CMDR'
6. Page 41, Test Conditions: Cable No:
  - Delete: '3'
  - Insert: '2'

T&R/8/2896/M/2 MAG

Errata

Note: This Page 01 must be filed immediately in front of Page 1, Issue 2, dated Jan 78.

(The following amendments must be made to the regulation).

7. Page 26, Test 10, column Remarks:

Insert: 'OVERRIDE lamp illuminated'.

8. Page 50, Test 13, column LINE/COMMANDER (S5):

Delete: existing symbol:

Insert: 'Rx'

9. Page 54, Test 3, column METER (S3):

Delete: ' / '

Insert: '5V AC'

2896/Tels

CLANSMAN RADIO CONTROL HARNESS

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

Errata

Note: This Page 02 must be filed immediately in front of Page 1, Issue 2, dated Jan 78.

10. The following amendments are to be made to the regulation.

11. Page 13,

Test 21, column 'RADIO S4', under 'MIC Tx':

Insert: 'B/C'

Test 21, column 'HARNESS S8', under 'IB 2/3':

Insert: 'MIC B'

12. Page 14, under test 37:

Insert the following note:

'If Tels L 807 Mod Instr No 2 (strike off 1) has been carried out, the lower limit, on tests 26 and 31, will be reduced to 0.4 V'.

2896/Tels

CLANSMAN RADIO CONTROL HARNESS

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

Errata

Note: This Page 03 is to be filed immediately in front of Page 1, Issue 2 dated Jan 78.

(The following amendments must be made to the regulation.)

13. Page 8, Para 16. c.:

a. Line 2:

Delete: '-3 dB'

Insert: '-4 dB'

b. Line 3:

Delete: '0.707A'

Insert: '0.63A'

14. Page 41, Table 15, Test 3, under REMARKS:

Insert: 'Freq response and distortion test, paras 15 and 16'.

2896/Tels

Errata

Note: This Page 04 is to be filed immediately in front of Page 1, Issue 2 dated Jan 78.

15. Page 23:

- a. Test 2:
  - (1) Column, HARNESS (S8):  
Delete: 'MIC A'  
Insert: 'MIC IC'.
  - (2) Column, AUDIO (S9):  
Delete: 'MIC LO'  
Insert: 'MIC HI'.
  - (3) Column, Working (1S1):  
Delete: '✓'  
Insert: 'IC<sub>A</sub>'.
- b. Test 3, column, AUDIO (S9):  
Delete: '✓'  
Insert: 'MIC LO'.
- c. Test 8, column, Specification Min:  
Delete: '2.25V'  
Insert: '1.85V'.

16. Page 26:

- a. Test 2:
  - (1) Column, HARNESS (S8):  
Delete: 'MIC A'  
Insert: 'MIC IC'.
  - (2) Column, AUDIO (S9):  
Delete: 'MIC LO'  
Insert: 'MIC HI'.
  - (3) Column, Set Selector (1S1):  
Delete: '✓'  
Insert: 'IC'.
- b. Test 3, column, AUDIO (S9):  
Delete: '✓'  
Insert: 'MIC LO'.
- c. Test 6, column, Specification Min:  
Delete: '2.25V'  
Insert: '1.85V'.

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Errata

Note: This Page 05 is to be filed immediately in front of Page 1, Issue 2 dated Jan 78.

(The following amendments must be made to the regulation).

17. Remove and destroy Pages 3-6, Issue 2 dated Jan 78.
18. Insert new Pages 3-6b, Issue 3 dated Mar 81.
19. Remove and destroy Pages 13-16, Issue 3 dated Feb 78.
20. Insert new Pages 13-16, Issue 4 dated Mar 81.
21. Remove and destroy Pages 23-24, Issue 3 dated Feb 78.
22. Insert new Pages 23-24, Issue 4 dated Mar 81.
23. Remove and destroy Pages 55-57, Issue 2 dated Jan 78.
24. Insert new Pages 55-67, Issue 1 dated Mar 81 (Page 55 is Issue 3).

2896/Tels

CLANSMAN RADIO CONTROL HARNESS

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

Errata

Note...

This Page 06 is to be filed immediately in front of Page 1, Issue 2 dated Jan 78.

(The following amendments must be made to the regulation).

25. Page 24, Table 6:

a. Test 15, Specification column:

Delete: '1.125 V 1.375 V'

Insert: '1.7 V 2 V'

b. Test 16:

(1) METER (S3) column:

Delete: '1 V AC'

Insert: '5 V AC'

(2) Specification column:

Delete: '0.72 V 0.88 V'

Insert: '1.6 V 2 V'

2896/Tels



CLANSMAN RADIO CONTROL HARNESS  
TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

Errata

Note...

This Page 0 must be filed immediately in front of Page 1, Issue 2,  
dated Jan 78.

- 1 The following amendments must be made to the regulation.
- 2 Page 23, Test 4, Column HARNESS (S8)

Delete: MIC C  
Insert: MIC IC

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CONDITIONS OF RELEASE	
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**CLANSMAN RADIO CONTROL HARNESS AND  
CLANSMAN RADIO CONTROL HARNESS (ANR)**

**TECHNICAL HANDBOOK -- FIELD AND BASE REPAIRS**

ERRATA

**NOTE**

This page 08 is to be filed immediately in front of page 1, issue 6, dated Apr 95.

1. The following amendments must be made to the regulation.
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CLANSMAN RADIO CONTROL HARNESS AND  
CLANSMAN RADIO CONTROL HARNESS (ANR)

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

ERRATA

NOTE

This Page 09 must be filed immediately in front of Page 1, Issue 6 Amdt 1, dated Jun 97.

- 1 The following amendments must be made to the regulation.
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- 3 Insert new Pages 1, 12, 17 - 21, 27, 31, 54 and 58 Issue 6 Amdt 1, dated Jun 97.

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CLANSMAN RADIO CONTROL HARNESS AND  
CLANSMAN RADIO CONTROL HARNESS (ANR)

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

ERRATA

NOTE

This Page 10 must be filed immediately in front of Page 1, Issue 6 Amdt 1, dated Jun 97.

- 1 The following amendments must be made to the regulation.
- 2 Remove and destroy Pages 6 - 11, 30, 70 and 71 Issue 6 dated Apr 95 and page 12 and 27 Issue 6 Amdt 1 dated Jun 97.
- 3 Insert new Pages 6 - 12, 27, 30 and 70 - 73 Issue 6 Amdt 2, dated Aug 00.

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1.		3.	
2.		4.	

CLANSMAN RADIO CONTROL HARNESS AND  
CLANSMAN RADIO CONTROL HARNESS (ANR)

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

**Note:-** These Pages 1 - 71 Issue 6 dated April 95 supersede Pages 1-67 issues and dates various. The regulation has been reissued at Issue 6 and has been amended throughout. Amendment 1 changed pages 1, 12, 17-21, 27, 31, 54 & 58 June 97.

This regulation should be read in conjunction with EMER Tels L802 which contains Figures and Tables to which reference is made.

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GENERALIntroduction

1 This regulation details the diagnostic and specification testing of the main items comprising the Clansman Radio Control Harness or the Gun Control Harness. The ANR variants are also detailed. All tests for each item are included under the appropriate main cross-page heading.

2 The Test set, control boxes, radio, Clansman harness, (CBTS) which is described in Tels M 682, provides all the facilities required for the comprehensive testing of the Clansman harness boxes concerned.

3 Reference should be made to T & M N 330 and T & M N 360 which describe the drying and sealing equipments.

Scope of Field Repairs

4 The repair of the Clansman Radio Control Harness or Gun Control Harness at Field level is limited to replacement of faulty assemblies and/or faulty discrete components where they do not form part of assemblies and pec.

5 Centrem repairs are applicable to the combined pec 2/pec 3 assembly of the Interconnecting Box 2-radio and the combined pec 2/pec 3 assembly (ANR) of the Interconnecting Box 2-radio (ANR) only. Full details are contained in Tels L 806.

CAUTION

To prevent distortion of pin alignment during any maintenance activity, the correct mating item MUST be inserted into the fixed double density socket.

Field repair equipment

6 The equipment required for Field repairs is listed in Table 1.

Table 1 - Field repair equipment

Item	Catalogue No	Designation	Purpose
1	Z4/6625-99-630-6171	Test set, control boxes, radio, Clansman harness	Diagnostic and specification tests
2	FI/5180-99-139-3817	Tool kit, telecommunications technician	-
3	9150-99-910-0510	XG271 silicon grease (4 oz tube)	Gasket sealing

7 The Test set, control boxes radio, Clansman harness is a mains operated equipment contained in a standard RAE case. All associated leads and connectors are carried in the lid.

8 The basic design includes a transistorised audio oscillator providing a selection of any one of three frequency outputs which may be routed through the relevant circuitry of a harness box under test. The signal returning from the harness box is applied, via an appropriate matching circuit, to a meter amplifier and the level of the test signal is indicated on a front panel meter. The selection and distribution of the test facilities is achieved by front panel rotary switches. A measure of self-testing is built into the equipment.

9 The CBTS provides the following facilities:-

- a Power requirements for the harness box under test.
- b Dynamic testing of audio, radio and harness circuits within a harness box.
- c Functional and specification testing of amplifiers in a harness box.

- d Means of testing command current functions initiated by harness boxes under test.

Note: Selection of a dc function causes the appropriate front panel lamp to be illuminated.

- e Indication by lamps of harness box dc functions.
- f The test set may also be used for diagnostic tests within a harness box.

### GENERAL REPAIR INSTRUCTIONS

10 The following CBTS check sequence must be carried out before testing commences:-

- a Check that the mains supply MAINS SELECTOR (1S14) is correctly set.
- b Connect power lead to CBTS (Item 1 Table 31), and set ON/OFF switch 1S7 to ON.
- c Set METER switch 1S3 to 5V AC, and HARNESS switch 1S8 to CHECK. Remainder to OFF.
- d Set OSC/AUX switch 1S1 to 1kHz and note the level indicated on the front panel meter. This should be  $2.5V \pm 5\%$ .
- e Repeat para 10d for the 300Hz and 3kHz positions of the OSC/AUX switch.
- f Set OSC/AUX to SET LEVEL.
- g Adjust SET LEVEL control for fsd on meter.
- h Switch OSC/AUX to MEASURE. The meter should indicate less than 5% distortion.
- j Rotate DC SELECTOR switch (1S6) and check that in each position, except CWI/DVRS OVERRIDE, the appropriate lamp is illuminated. Operation of the PRESSEL (1S10) should illuminate the PRESSEL lamp.

### Dismantling

11 The dismantling procedure for each of the Clansman boxes is described in its entirety, although the extent of dismantling will depend on the location of any fault.

### Re-assembly

12 Unless otherwise stated, re-assembly of the harness boxes is in reverse order to the dismantling sequence.

13 In all cases, upon re-assembly of each harness box, the sealing gasket must be lightly smeared with XG271 grease and correctly located before the box base plate is secured.

### Frequency response and distortion test

14 Those harness boxes undergoing specification tests which contain amplifier circuits must be subjected to a frequency response and distortion test as detailed in Para 15 and 16.

### Distortion Test

- 15 a Connect the box under test as detailed in the appropriate table.
- b With the controls as indicated in the relevant test, set OSC/AUX to SET LEVEL.
- c Adjust SET LEVEL control for fsd.
- d Switch OSC/AUX to MEASURE.
- e Note meter indication, which MUST be less than 10% distortion.
- f Reset OSC/AUX to 1kHz.

### Frequency Response

- 16 a Where a frequency response test is called for in the appropriate table, note the result obtained at 1kHz. Call this A.
- b Repeat the test with OSC/AUX set to 300Hz. The result shall be within the limits of 0 to -6dB relative to 1kHz, ie A to 0.5A.
- c Repeat the test with OSC/AUX set to 3kHz. The result shall be within the limits of +3 to -4dB relative to 1kHz, ie 1.414A to 0.63A.

### Power Supplies

17 When setting up the supply conditions for individual boxes in accordance with the test conditions detailed in Tables 2 - 29 set all rotary switches to OFF then proceed as follows:-

- a 18V
  - (1) Set METER switch on CBTS to HRNS.
  - (2) Set SUPPLY switch to 18V.
  - (3) Adjust SET SUPPLY control on CBTS until the meter indicates 18V.
- b 28V
  - (1) Set METER switch on CBTS to VEHICLE.
  - (2) Set SUPPLY switch to 28V.
  - (3) Adjust SET SUPPLY control on CBTS until the meter indicates 28V.

### Diode Tests

18 Table 2 - 29 indicate those harness boxes where diode tests are required. In these cases, the procedure is as follows:-

- a Connect Cable No 11 (Table 31 refers) between the LINE terminals of the CBTS and the remote terminals of the box under test, ensuring correct polarity.

- b Set METER switch on CBTS to DIODE.
- c Meter on CBTS shall indicate zero.
- d Reverse polarity of cable connections.
- e Meter on CBTS indicates between 15 and 30mA.

19 Serial No 1 of Tables 3 (IB2/IB2 (ANR)) and 4 (IB3/IB3 (ANR)) call for the testing of diodes associated with radio/harness plugs and sockets. The method of testings is as given in Para 18 except that Cable No 11 is used as a probe at the relevant pins of the plugs and sockets concerned.

#### Diagnostic Tests

20 The procedure for testing ac and dc levels in a harness box under test is described in Paras 21 to 26.

21 When testing ac levels, input conditions are indicated in the appropriate table.

- a Set the METER switch on CBTS to the appropriate ac range.
- b Set the OSC/AUX switch to PROBE.
- c Connect 2-way connector (Item 9, Table 31) to the CWI socket on CBTS.

22 Using the 2-way connector as a probe, the meter will indicate levels of appropriate ac voltages.

23 It should be noted that under the conditions set out in Paras 21 and 22, the CBTS meter is indicating emf values and the results may differ from those given for specification testing in relevant tables.

24 The diagnostic test results should be used only as a guide to assist in fault location.

25 When testing dc levels:-

- a Set the METER switch on CBTS to AUDIO.
- b Connect single-way connector (Item 10, Table 31) to the AUDIO socket.

26 Using the single-way connector as a probe, the meter will indicate levels of appropriate dc voltages.

Note:- The dc levels given in the diagnostic tables are typical values only and actual results may differ quite considerably.

27 Where diagnostic test results are not included, the appropriate specification test results for the relevant harness box should be used.

#### DC Continuity

28 To check dc continuity, the following procedure should be used:-



- a Set METER switch to COMMAND.
- b Connect 2-way lead (Item 11, Table 31) to CONTINUITY terminal.
- c Short circuit the free end of the 2-way lead and note the meter indication. Due to current limiting, this indication will not be fsd.
- d The lead may now be used to check continuity by comparing the test result with that obtained in c.

#### Drying, Sealing and Seal Testing

29 The sachet type desiccators (Desiccator Silica-gel, sachet, style DS2, 4440-99-014-2574) are to be replaced before equipments are sealed. At Field level the equipments are to be pressurised to 8 lbf/in<sup>2</sup> and subjected to a 'bubble' test. At Base level the equipments are to be dried, sealed and seal tested in accordance with Table 30.

#### Earth Bonding Resistance Tests

29a Following repair or modification of a unit the bond resistance must be checked. Ensuring bond resistance is correct will guarantee that units fitted into installations will meet EMC and Tempest requirements.

The Test Set Bonding Resistance Z4/6625-99-786-5771 should be used to measure bond resistance.

The procedure is as follows;

Measure the bond resistance between unit Harness connector shells and the earth point on the base casting. Limits should be less than 0.025 ohms for all connectors. In practice typical values of 0.005 ohms resistance can be achieved and every effort should be made to attain this by discreet tightening of connectors.

Where an earth braid is fitted to the unit under test, a test should also be made from the connector shells to the end of the earth braid. Test limits are as above.

5820-99-117-6250 INTERCONNECTING BOX 2 RADIO (IB2)  
AND 5820-99-125-4663 INTERCONNECTING BOX 2 RADIO (ANR) (IB2 (ANR))

Reference is made to Tels L 802; Fig 2501, 2502, 2522, 2523, 2541 and Table 2501.

Note:- The IB2 is protected with a 1A fuse and the IB2 (ANR) is protected by a 2A fuse fitted in the fuse holders.

PEC EXTENSION CABLE ASSEMBLIES

30 To facilitate diagnostic testing, quantity 2 edge-connector extension assemblies (Item 12, Table 31) are provided with the CBTS. The assemblies should be connected between the edge-connectors in the IB2/IB2 (ANR) and the IB2 pec 2/pec 3 sub assembly or IB2 (ANR) pec 2/pec 3, ensuring correct polarity of the START and FINISH symbols. Note that it may be necessary to remove pec 3/pec 3 (ANR) to ensure correct mating of one of the extension assemblies. The pec 2 and pec 3/pec 3 (ANR) connecting wires are long enough to allow pec 3/pec 3 (ANR) to be swung clear.

DISMANTLING

- 31 a Unscrew the six 5 mm captive socket head screws and washers securing the two halves of the box.
- b Carefully separate the box and place bottom half to one side.
- c Access to 1TS1 - 1TS56 for test purposes is now possible.

Removal of pec 2/pec 3 and sub/assembly or pec 2/pec 3 and sub-assembly (ANR)

- 32 a Remove the eight 4 mm nuts and washers securing the pec 2/pec 3 sub assembly or pec 2/pec 3 sub-assembly (ANR) to the main assembly.
- b With great care, ease the pec 2/pec 3 sub assembly or pec 2/pec 3 sub-assembly (ANR) from its two edge-connectors and lift clear.

Removal of pec 6

- 33 a Carry out the procedure detailed in Paras 30 and 31.
- b Remove the four 3 mm sub-assembly securing screws and washers and lift pec 6 clear.

Removal of pec 4

- 34 a Carry out the procedure detailed in Paras 30 and 31 and locate pec 4 which is adjacent to 1TM1, 1TML2.
- b With an appropriate spanner, unscrew and remove the two pillars holding the edge-connector located above pec 4.
- c Carefully swing edge-connector clear and remove and retain the washers located between the connector and the pillar securing holes (See Para 39a).
- d Remove the nuts on terminals 4TS1, 4TS2 and carefully lift pec 4 clear.

35 To replace a pec 4, unsolder the leads connected to 4TS3, 4TS4 and 4TS4 and resolder to the appropriate tags on the replacement assembly.

Removal of pec 5/pec 7 sub-assembly

36 a Carry out procedure detailed in Paras 30 and 31 and locate pec 5/pec 7 sub-assembly (Fig 2541 refers).

b Remove the three 3 mm screws and washers securing the sub-assembly to the main case and lift clear.

37 To replace a pec 5/pec 7 sub-assembly, unsolder the inter-connection wiring and resolder to the appropriate tag on the replacement assembly.

Discrete components

38 To gain access to any discrete component, it is first necessary to remove pec 2/pec 3 or pec 2/pec 3 (ANR) (Para 32 refers). The extent of further dismantling will depend upon which components it is required to locate.

a Access to 1TML1, 1TML2, 1S5 and 1SK2. Remove sub-assembly pec 4 as detailed in Para 34.

b Access to 1SK1, 1PL1, 1PL2 and 1T1. Remove LH edge-connector for pec 2/pec 3 or pec 2/pec 3 (ANR).

c Access to 1R8, 1Z, 1S3, 1RLA, 1R7, 1PL3, 1T4 and the fuseholder. Remove sub-assembly pec 6 as detailed in Para 33.

d Replacement of unserviceable edge-connectors for assembly pec 2/pec 3 or pec 2/pec 3 (ANR) entails carefully unsoldering the 28 connections to each connector.

RE-ASSEMBLY

39 a Attention is drawn to the washers mentioned in Para 34c. Ensure that these are replaced when re-assembling the edge connectors.

b Extreme care must be taken when replacing the pec 2/pec 3 or pec 2/pec 3 (ANR) assembly to ensure correct alignment of both edge connectors before pressure is applied to firmly locate the assembly.

40 If it has been necessary to remove the component layout plate from the pec 2/pec 3 assembly or pec 2/pec 3 assembly (ANR), upon replacement of the plate, ensure correct orientation by aligning 1TML1, 1TML2 engraved on the plate with 1TML1, 1TML2 on the box.



TESTING AND ADJUSTMENTS

Specification Tests

41 Table 3 details the specification tests for the IB2/IB2 (ANR). For the IB2 (ANR) only using a resistance meter, measure resistance between 1SK1/S and 1SK3/C limits LT1 ohm.

Diagnostic tests

42 Table 2 gives additional details for the diagnostic testing of the IB2/IB2 (ANR)

Table 2 - Diagnostic tests, IB2/IB2 (ANR)

Test conditions:-

- a Table 3. Test as indicated below.
- b Para 20.

DC levels (See Para 25)

Table 3 Test	Test Point	Result
2	1FS1	28V
2	PEC 2 pin 41	0V
2	18V line	18V
2	PEC 7 pin 4	19V
12	PEC 3/PEC 3 (ANR) pin 9	12V ) )
12	PEC 3/PEC 3 (ANR) pin 10	4V ) RRB, REM or CALL
12	PEC 3/PEC 3 (ANR) pin 11	16-17V
12	PEC 3/PEC 3 (ANR) pin 12	16-17V

For IB2 (ANR) only, measure DC voltage at connector 1SK3 Pin C. Result 18V.

AC levels (See Para 21)

- a Set HARNESS (CBTS) to IB 2/3 OP IC.
- b Set METER (CBTS) to required ac range.
- c Connect Cable No 9.



Table 3 Test	Test Point	Result
5	PEC 2 pin 40	0.8V
5	PEC 3/PEC 3 (ANR) pin 3	0.8V
5	PEC 3/PEC 3 (ANR) pin 4	GT 3V
25	PEC 2, TP 8	0.02V ) Pressel operated
25	PEC 2, TP 6	GT 0.15V ) "
25	PEC 2, TP 9	3.0V ) "

Adjustment of IC amp pre-set gain control (3R11)

**Note:** The following procedure should only be necessary after the replacement of pec 2/3 assembly or pec 2/3 assembly (ANR), 1T1 and 1T3.

43 With the pec 2/3 assembly or pec 2/3 assembly (ANR) extended (see Para 32) and conditions as in Table 2 Test 5, adjust 3R11 for an indication of  $3V \pm 10\%$  on the CBTS meter.

Table 3 - Specification tests, Interconnecting Box 2 Radio and Interconnecting Box 2 Radio (ANR)

Test conditions:

- a Test 1 is applied before any connection is made to the IB2/IB2 (ANR). The IB2 (ANR).
- b Test 2 onwards is applied with IB2/IB2 (ANR) supply ON/OFF set to ON.
- c Connect Cable No 2 between power socket of the test set and power socket of the IB2/IB2 (ANR).
- d Set the supply to 28V according to Para 17.
- e Set IB2/IB2 (ANR) volume controls to maximum.
- f In some instances, involving operation of the CBTS pressel, a meter (ME1) indication may be obtained before operation of the pressel. This is an unloaded indication, and should be ignored.

- Notes: 1 Cable Nos refer to Table 31.
- 2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF										SPECIFICATION		REMARKS				
		METER (S3)	OSC/AUX (S1)	RADIO (S4)	HARNESS (S8)	AUDIO (S9)	LINE/COMMANDER (S5)	PRESSEL (S10)	SET SELECTOR (1S1)	SYSTEM (1S2)	MANUAL REBRO (1S3)	AUTO-MANUAL (1S4)	MIN		MAX			
1	Diodes 4D1 (1TML 1 and 2) 6 D1 (1PL1) 6D3 (1PL2) (Fig 2501 refers)																See Para 19.	
2	Drain current	VEHICLE	0.5 AMP	OFF	OFF	OFF	OFF	OFF	A	N	BK/IN	AUTO				200mA		
Connect cable No 6 between CBTS (IB HARNESS) and 1SK1 (HARNESS) of IB2/IB2 (ANR)																		
3	Harness supply voltage	HRNS	OFF	#	#	#	#	#	#	#	#	#	#	#	17.25V	18.75V		Adjust supply to a) 23V b) 30V. Harness supply voltage should be within the limits of Test 3. Reset supply to 28V. Freq response and distortion test - Paras 15 and 16.
4	Harness supply regulation	#	#	#	#	#	#	#	#	#	#	#	#	#	17.25V	18.75V		
5	IC Amplifier	5V AC	1KHz	#	IB2/3 IC	#	#	#	#	#	#	#	#	2.10V				
Connect cable No 4 between respective A radio plugs																		
6	Radio A TX command	COMMAND	#	MIC TX A	IB2/3 MIC A	#	#	#	ON	LRB	#	#	#	8mA	12mA		Pressel lamp lit	

Table 3 - (Contd)

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF				IB2/IB2 (ANR)				SPECIFICATION		REMARKS			
		METER (S3)	OSC/AUX (S1)	RADIO (S4)	HARNESS (S8)	AUDIO (S9)	LINE/COMMANDER (S5)	PRESSEL (S10)	SET SELECTOR (IS1)	SYSTEM (IS2)	MANUAL REBRO (IS3)		AUTO-MANUAL (IS4)	MIN	MAX
7	Harness mic A to radio A mic, LRB, harness bk/in	5V AC	1kHz	MIC TX A	IB2/3 MIC A	OFF	OFF	ON	A	LRB	BK/IN	AUTO	1.0V	-	Pressel lamp lit
8	LRB harness bk/in, manual O/R	1V AC	#	#	#	#	#	ON	#	#	TX A	MANUAL	-	0.1V	Pressel lamp lit
9	Harness mic A to radio A mic, RRB, harness bk/in	5V AC	#	#	#	#	#	ON	#	RRB	BK/IN	AUTO	1.0V	-	Pressel lamp lit
10	B remote, harness control of radio A	#	#	#	#	#	#	ON	B	REM	#	#	1.0V	-	Pressel lamp lit Note reading
11	IC remote, harness control of A radio	#	#	#	#	#	#	ON	I	#	#	#	As for Test 10	-	Pressel lamp lit
12	CALL, harness control of A radio	#	#	#	#	#	#	#	CALL	#	#	#	As for Test 10	-	Pressel lamp lit
13	Harness mic B to mic A, LRB Harness bk/in	#	#	#	IB2/3 MIC B	#	#	ON	A	LRB	#	#	1.0V	-	Pressel lamp lit
14	Radio phone A to harness phone A	#	#	PHONE A	IB2/3 PHONE A	#	#	OFF	#	N	#	#	2.25V	2.65V	Pressel lamp lit
Reconnect cable No 4 between respective B radio plugs															
15	Radio B TX command	COMMAN D	#	MIC TX B/C	IB2/3 MIC B	#	#	ON	B	LRB	#	#	8mA	12mA	Pressel lamp lit
16	Remote operation, harness break-in	#	#	#	#	#	#	ON	#	REM	#	#	8mA	12mA	Pressel lamp lit
17	Radio B TX command	#	#	#	#	#	#	ON	A	#	#	#	8mA	12mA	Pressel lamp lit
18	Harness mic B to radio mic B	5V AC	#	#	#	#	#	ON	B	LRB	#	#	1.0V	-	Pressel lamp lit
19	RRB, harness bk/in	#	#	#	#	#	#	ON	#	RRB#	#	#	1.0V	-	Pressel lamp lit Note reading
20	A remote, harness control of radio B	#	#	#	#	#	#	ON	A	REM	#	#	1.0V	-	Pressel lamp lit Note reading
21	IC remote, harness control of B radio	5V AC	1kHz	MIC TX 'B/C'	IB2/3 MIC B	OFF	OFF	ON	I	REM	BK/IN	AUTO	As for Test 19	-	Pressel lamp lit

NOTE: 'If Teis 807 Mod Instr No 2 (Strike off 1) has been carried out, the lower limit, on Tests 26 and 31 of 0.4v. The IBZ (ANR) unit always has a lower limit on Tests 26 and 31 of 0.4V'.

Table 3 (Contd)

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF					IB2/IB3 (ANR)					REMARKS	
		METER (S3)	OSC/AUX (S1)	RADIO (S4)	HARNESS (S8)	AUDIO (S9)	LINE/COMMANDER (S5)	PRESSEL (S10)	SET SELECTOR (S11)	SYSTEM (S12)	MANUAL REBRO (S13)		AUTO-MANUAL (S14)
22	CALL, harness control of B radio	#	#	#	#	#	ON	CALL	#	#	#	As for Test 20	Pressel lamp lit
23	Harness mic to radio B mic LRB manual	5V AC	1KHZ	MIC TX B/C	IB2/3 MIC B	OFF	OFF	A OR B	LRB	BK/IN	MANUAL	1.0V	Pressel lamp lit
24	Radio phone B to harness phone B	#	#	PHONE B/C	IB2/3 PHONE B	#	OFF	B	N	#	AUTO	2.25V 2.65V	
Connect Cable No 5 between respective audio sockets.													
25	DC supply to audio	AUDIO	#	MIC TX B/C	OFF	#	#	#	#	#	#	17.25V 18.75V	
26	Audio mic to radio B mic	5V AC	#	#	IB2/3 MIC B	MIC LO	ON	#	#	#	#	1.0V (0.4V)	Pressel lamp lit See Note Page 18
27	Radio B TX command	COMMAND	#	#	#	OFF	ON	#	#	#	#	8mA 12mA	Pressel lamp lit Note reading
28	LRB auto, local break-in	#	#	#	#	#	ON	#	LRB	#	#	As Test 27	Pressel lamp lit
29	RRB auto, local break-in B radio TX command	#	#	#	#	#	ON	#	RRB	#	#	As Test 27	Pressel lamp lit
30	REM operator B radio local break-in	#	#	#	#	#	ON	#	REM	#	#	8mA 12mA	Pressel lamp lit
31	RRB Auto, local break-in Audio mic to radio B mic	5V AC	#	#	#	MIC LO	ON	#	RRB	#	#	1.0V (0.4V)	Pressel lamp lit Note reading See Note Page 18
32	Radio B phone to audio wkg phone	#	#	PHONE B/C	IB2/3 PHONE B	WKG PHONE	OFF	#	N	#	#	2.25V 2.65V	Note reading. A/LOCAL (Check volume control
33	Radio B phone o audio mon phone	#	#	#	#	MON PHONE	#	#	#	#	#	As Test 32	Check B/REM/OTE volume control
34	LRB phone to audio mon phone	5V AC	1KHZ	PHONE B/C	#	MON PHONE	OFF	#	LRB	BK/IN	AUTO	As Test 32	
35	RRB phone to audio wkg phone	#	#	#	#	WKG PHONE	#	#	RRB	#	#	As Test 32	
36	REM phone to audio wkg phone	#	#	#	#	#	#	#	REM	#	#	As Test 32	
Reconnect Cable No 4 to respective A radio plugs													



Table 3 - (Contd)

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF										IBZ/IBZ (ANR)				SPECIFICATION		REMARKS
		METER (S3)	OSCAUX (S1)	RADIO (S4)	HARNESS (S8)	AUDIO (S9)	LINE/COMMANDER (S5)	PRESSE L (S10)	SET SELECTOR (IS1)	SYSTEM (IS2)	MANUAL REPRO (IS3)	AUTO-MANUAL (IS4)	MIN	MAX				
37	Audio mic to radio A mik TX command	COMMAND	#	MIC TX A	IB 2/3 MIC A	OFF	#	ON	A	N	#	#	8mA	12mA	Pressel lamp lit			
38	LRB manual, radio A, TX command	COMMAND	1KHz	MIC TX A	OFF	MIC LO	OFF	A	LRB	LRB	MANUAL	8mA	12mA					
39	LRB auto, local break-in audio mic to Radio A	5V AC	#	#	IB 2/3 MIC A	#	#	ON	#	#	BK/IN AUTO	As Test 31			Pressel lamp lit			
40	Radio A phone to audio wkg phone	#	#	PHONE A	IB 2/3 PHONE A	WKG PHONE	#	OFF	#	N	#	As Test 32						
41	LRB, radio A phone to audio wkg phone	#	#	#	#	#	#	#	#	LRB	#	As Test 32						
Disconnect Cable No 4. Connect Cable No 11 between respective line terminals (ensure correct polarity).																		
42	RRB, audio break-in	COMMAND	#	OFF	IB 2/3 MIC A	OFF	TX	ON	#	RRB	#	8mA	12mA	Pressel lamp lit				
43	Remote, CALL out	5V AC	OFF	#	#	#	RX CALL	OFF	CALL	REM	#	1.0V	-					
44	RRB, CALL	#	#	#	#	#	#	#	CALL	RRB	#	0.75V	-					
45	RRB, CALL command current	COMMAND	#	#	#	#	TX	#	CALL	#	#	15mA	-					
46	Remote CALL IN	IB2 CALL	#	#	#	#	OFF	#	I	REM	#	15mA	-					
47	Remote CALL IN, with line 4	#	#	#	#	#	#	#	#	#	#	15mA	-	Line resistance switch 1S2 on CBTS to 4000 Switch off after test				
48	Call oscillator to audio wkg phone	1V AC	#	#	#	WKG PHONE	CALL	#	#	#	#	200mV	-	Note reading				
49	Call oscillator to audio mon phone	#	#	#	#	MON PHONE	#	#	#	#	#	As Test 48						
50	CALL OUT, sidetone to audio wkg phone	5V AC	OFF	OFF	OFF	WKG PHONE	OFF	OFF	CALL	RRB	BK/IN AUTO	1.0V	-	Note reading				
51	CALL OUT, sidetone to audio mon phone	#	#	#	#	MON PHONE	#	#	CALL	#	#	As Test 50						
52	RRB, Manual, remote audio TX command	COMMAND	1KHz	#	#	OFF	TX	#	B	#	TX B	8ma	12mA					
Disconnect Cable No 11. Reconnect Cable No 6.																		

Table 3 (Contd)

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF										IB2/IB2 (ANR)				SPECIFICATION		REMARKS
		METER (S3)	OSC/AUX (S1)	RADIO (S4)	HARNESS (S8)	AUDIO (S9)	LINE/COMMANDER (S5)	PRESSE L (S10)	SET SELECTOR (IS1)	SYSTEM (IS2)	MANUAL REBRO (IS3)	AUTO-MANUAL (IS4)	MIN	MAX				
53	Harness IC to audio	5V AC	1KHz	OFF	IB2/3 OP/IC	MON PHONE	OFF	OFF	I	N	BKJIN	AUTO	1.0V	-	Freq response and distortion tests Paras 15 and 16 refer.			
54	Harness OVR, IC to mon	#	#	#	#	#	#	#	A	#	#	#	2.26V	-	DC SELECTOR switch to HARNESS OVERRIDE lamp lit. Switch off after test.			
Disconnect Cables No 5 and 6. Reconnect Cables No 4 (B radio) and 11.																		
55	RRB, manual, radio B mic to remote mic	#	#	MIC RB B/C	OFF	OFF	LINE AF	#	B	RRB	TX B (REM)	MANUAL	2.26V	-				
56	RRB, manual, remote mic	#	#	MIC TX B/C	#	#	RX	#	#	#	TX A (LOCAL)	#	2.26V	-				
Repeat Test 3, 5, 10, 14, 20, 24, 54 (Less frequency response and distortion tests) with Cable No 6 connected to HARNESS 19K2 of the IB2/IB2 (ANR).																		

5820-99-117-6110 INTERCONNECTING BOX 3 RADIO (IB3)  
AND 5820-99-842-2189 INTERCONNECTING BOX 3 RADIO (IB3 (ANR))

Reference is made to Tels L802; Fig 2508, 2529, 2547 and Table 2507.

Note: The IB3 is protected by a 1A fuse and the IB3 (ANR) is protected by a 2A fuse fitted in the fuse holders.

DISMANTLING

44 a Place the IB3/IB3 (ANR), face down, on a flat surface.

b Unscrew the four 5 mm captive socket head screws securing the base plate. Lift the base plate clear.

Removal of pec 2

45 a Unscrew and remove the five 4 mm screws and washers securing pec 2.

b Carefully lift the pec clear of the box.

Removal of plate electronic circuit 3

46 To remove plate electronic circuit 3 carry out the procedure detailed in Paras 44 and 45 and proceed as follows:-

a Unscrew the four M3 captive screws and washers securing plate 3.

b Carefully lift plate electronic circuit 3 clear.

Removal of pec 4

47 To remove pec 4, carry out the procedure detailed in Para 46 and proceed as follows:-

- a Unscrew and remove the two 5 mm nuts and washers securing pec 4.
- b Carefully lift pec 4 clear.

Discrete components

48 To gain access to discrete components, carry out the procedure detailed in Paras 44 to 47.

TESTING AND ADJUSTMENTSSpecification tests

49 Table 5 details the specification tests for the IB3/IB3 (ANR).

Diagnostic tests

50 Table 4 gives the additional details for the diagnostic testing of the IB3/IB3 (ANR).

Adjustment of IC amp pre-set gain control (2R7)

Note: The following procedure should only be necessary after the replacement of either pec 2 or plate electronic circuit 3.

51 With pec 2 removed (see Para 45) and conditions as in Table 5 Test 4, adjust 2R7 for an indication of  $3V \pm 10\%$  on the CBTS meter.

Table 4 - Diagnostic tests, IB3/IB3 (ANR)

Test conditions:-

- a Para 20.
- b Table 5 Test 2.

DC levels (see Para 25)

Test point	Result
PEC 2 pin 2	25.6V
PEC 2 pin 3	20.0V
PEC 2 pin 17	20.0V
PEC 2 pin 18	15.2V
PEC 2 pin 19	16.8V
PEC 3 pin 2	25.6V
PEC 3 pin 5	20.0V
PEC 3 pin 6	20.0V

Table 5 - Specification tests, Interconnecting Box 3 Radio (IB3) and Interconnecting Box 3 Radio (ANR) (IB3 (ANR))

Test conditions:

a Test 1 is applied before any connection is made to the IB3/IB3 (ANR).

b Set the supply to 28V according to Para 17.

Notes: 1 Cable Nos refer to Table 31.

2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	METER (S3)	OSC/AUX (S1)	RADIO (S4)	HARNESS (S8)	LINE/COMMANDER (S5)	PRESSEL (S10)	SPECIFICATION		REMARKS
								MIN	MAX	
1	Diodes 2D1 (1PL1), 2D4 (1PL2), 2D5 (1SK172/3/4) and 2D6 (1PL3). Fig 2508 refers.	NO CONNECTION TO IB3								See Para 19
Connect Cable No 6 between IB HARNESS socket of the CBTS and 1SK1 Harness socket of the IB3; connect cable No 2 between supply socket of CBTS and 28V plug 1PL4 of IB3/IB3 (ANR). Switch IB3 power on.										
2	Harness supply voltage	HRNS	OFF	OFF	OFF	OFF	OFF	18V	22V	
3	Harness supply regulation	#	#	#	#	#	#	As Test 2		Adjust supply (Para 17) to a) 23V, b) 30V. Upon completion, re-set to 28V.
4	IC Amplifier	5V AC	1kHz	#	IB 2/3 IC	#	#	2.1V		Freq response and distortion test, Para 15 and 16
Connect cable No 11 between LINE terminals of CBTS and the IB3/IB3 (ANR).										
5	IC amplifier at line terminal	#	#	#	OB IC	LINE AF	#	2.1V		
Disconnect line cable No 11; connect cable No 4 between A Radio of CBTS and A radio of IB3										
6	Radio A TX command	COMMAND	OFF	MIC TX A	IB 2/3 MIC A	OFF	ON	8mA	12mA	Press lamp on. CBTA is lit.
7	Radio A phone to harness phone	5V AC	1kHz	PHONE A	IB 2/3 PHONE A	#	OFF	2.25V	2.65V	
Reconnect cable no 4 between respective B radio plugs										
8	Radio B TX command	COMMAND	OFF	MIC TX B/C	IB 2/3 MIC B	#	ON	8mA	12mA	Press lamp on. CBTA is lit.
9	Radio B phone to harness phone	5V AC	1kHz	PHONE B/C	IB 2/3 PHONE B	OFF	OFF	2.25V	2.65V	
Reconnect cable No 4 between B radio (CBTS) and C radio (IB3/IB3 (ANR)). connect harness cable No 6 to ACTIC socket 1SK3										

Table 5- (Cont'd)

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF							SPECIFICATION		REMARKS
		METER (S3)	OSC/AUX (S1)	RADIO (S4)	HARNES (S8)	LINE/COMMANDER (S9)	PRESSEL (S10)	MIN	MAX		
10	Radio C TX command	COMMAND	OFF	MIC TX B/C	IB2/3 MIC B	#	ON	8mA	12mA	Pressel lamp on CBTS is lit	
11	Radio C phone to harness phone	5V AC	1kHz	PHONE B/C	IB2/3 PHONE B	#	OFF	2.25V	2.65V		
Repeat Test 2, 4 (less frequency response and distortion tests), 6 and 7.											
Repeat Test 2, 4 (less frequency response and distortion tests), 6 and 7, 8 and 9 with cable No 6 connected to 1SK2 of the IB3.											
Repeat Test 2, 4 (less frequency response and distortion tests), 6 and 7, 10 and 11 with cable No 6 connected to 1SK4 of the IB3.											

5895-99-117-4911 CREW BOX 2 SET (CB2) AND  
5895-99-417-3716 CREW BOX 2 SET (ANR) (CB2 (ANR))

Reference is made to Tels L802; Fig 2503, 2524, 2542 and Table 2502 refer.

DISMANTLING

- 52 a Place the CB2/CB2 (ANR) face down on a flat surface.
- b Unscrew the four 5 mm captive socket head screws and washers securing the base plate. Lift base plate clear.

Removal of pec 2/pec 2 (ANR)

- 53 a Remove the four 4 mm pan headed screws and washers securing pec 2/pec 2 (ANR).
- b Carefully lift pec 2/pec 2 (ANR) clear of the box. Replacement of pec 2/pec 2 (ANR) entails transferring the electrical connections from the faulty item to the replacement.

Discrete components

- 54 With removal of pec 2/pec 2 (ANR) all discrete components are accessible.

TESTING AND ADJUSTMENTS

Specification Tests

55 Table 6 details the specification test for CB2/CB2 (ANR). For CB2 (ANR) only, using a resistance meter measure resistance between 1SK1/S and 1SK3/C. Measure resistance between 1SK1/S and 1SK4/C. Limits LT 1 ohm.

Diagnostic Tests

56 Reference is made to Table 6.  
For CB2 (ANR) only. Measure DC voltage at connectors 1SK3/C and 1SK4/C. Result 18V.

Table 6 - Specification tests, Crew Box 2 set (CB2) and Crew Box 2 Set (ANR) (CB2 (ANR))

Test conditions:

- a Connect Cable No 6 between IB HARNESS socket of the test set and 1SK1 Harness socket of CB2/CB2 (ANR).
- b Connect Cable No 5 between Audio socket of the test set and 1SK3 Audio socket of the CB2/CB2 (ANR).
- c Set supply to 18V according to Para 17.
- d Unless otherwise stated, set CB2/CB2 (ANR) volume controls to maximum.

Notes: 1 Cable Nos refer to Table 31.

2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF						CB2		REMARKS		
		METER (S3)	OSCAUX (S1)	HARNESS (S8)	DC SELECTOR (S6)	AUDIO (S9)	PRESSEL (S10)	WORKING (1S1)	MONITOR (1S2)		SPECIFICATION MIN MAX	
1	Supply to audio socket	AUDIO	OFF	OFF	OFF	OFF	OFF	A <sub>b</sub>	OFF	15V	-	
2	Audio mic to harness mic A	5V AC	1kHz	MIC IC	#	MIC LO	#	A <sub>b</sub>	#	0.9V	1.85V	Presset lamp lit. Freq response and distortion, Para 15 and 16
3	Audio mic to harness mic B	#	#	MIC B	#	MIC LO	#	B <sub>A</sub>	#	As Test 2		Presset lamp lit.
4	Audio mic to harness mic IC	0.2V AC	#	MIC IC	#	#	#	IC <sub>A</sub>	#	100mV		Presset lamp lit Note reading
5	Audio mic to override	#	#	#	#	#	#	O/R	#	As Test 4		OVERRIDE lamp illuminated
6	Audio mic to LIVE IC	#	#	#	#	#	#	IC <sub>A</sub>	LIVE IC	50mV		
7	Audio mic to LIVE IC + M	#	#	#	#	#	#	#	LIVE IC + M	As Test 6		
8	Harness A phone to audio working	5V AC	#	PHONE A	#	WKG PHONE	#	A <sub>b</sub>	OFF	1.85V	2.65V	Note reading. Check working volume control
9	Harness A phone to audio monitor phone	#	#	#	#	MON PHONE	#	#	#	As Test 8		
10	Harness B phone to audio phone	#	#	PHONE B	#	#	#	B <sub>A</sub>	#	As Test 8		
11	Harness IC phone to audio phone	#	#	PHONE IC	#	#	#	IC <sub>A</sub>	#	As Test 8		
12	Harness B phone to audio mon A	5V AC	1kHz	PHONE B	OFF	MON PHONE	OFF	A <sub>b</sub>	ON	2.25V	2.65V	Note reading. Check monitor volume control



Table 6 - (Contd)

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF					CB2			REMARKS	
		METER (S3)	OSCAUX (S1)	HARNESS (S9)	DC SELECTOR (S6)	AUDIO (S8)	PRESSEL (S10)	WORKING (1S1)	MONITOR (1S2)		SPECIFICATION MIN MAX
13	Harness A phone to audio min B	5V AC	1kHz	PHONE A	OFF	MON PHONE	OFF	B <sub>a</sub>	ON	As Test 12	
14	Harness A phone to audio mon IC <sub>a</sub>	#	#	#	#	#	#	IC <sub>a</sub>	#	As Test 12	
15	Harness IC phone to audio mon IC <sub>a</sub>	#	#	PHONE IC	#	#	#	#	LIVE IC	1.7V	Note reading
16	Harness A phone to audio mon LIVE	5V AC	#	PHONE A	#	#	#	B <sub>a</sub>	LIVE IC + M	1.6V	
17	Harness IC phone to audio mon LIVE	5V AC	#	PHONE IC	#	#	#	OR	#	1.5V	OVERRIDE lamp illuminated
18	Harness IC phone to audio min, OR	#	#	#	#	WKG PHONE	#	OR	OFF	As Test 8	OVERRIDE lamp illuminated
19	Harness IC phone to audio mon harness O/R	#	#	#	HARNESS OVERRIDE	MON PHONE	#	A <sub>a</sub>	#	As Test 15	
Repeat Test 1, 2 (less frequency response and distortion tests), 3, 4, 5, 8, 9, 10 and 11 with Cable No 8 connected to 18K2 of the CB2/CB2 (ANR)											
Repeat Test 1, 2 (less frequency response and distortion tests), 3, 4, 5, 8, 9, 10 and 11 with Cable No 5 connected to 18K4 of the CB2/CB2 (ANR)											

5895-99-117-4910 CREW BOX 3 SET (CB3) AND  
5895-99-234-2743 CREW BOX 3 SET (ANR) (CB3(ANR))

Reference is made to Tels L802; Fig 2509, 2530, 2548 and Table 2508.

DISMANTLING

- 57 a Place the CB3/CB3 (ANR) face down on a smooth flat surface.
- b Unscrew and remove the four 5 mm socket head captive screws and washers securing the base plate.
- c Lift the base plate clear and place to one side.

Removal of pec 2/pec 2 (ANR)

- 58 a Remove the six 4 mm pan headed screws and washers securing the pec 2 assembly.
- b Lift pec 2/pec 2 (ANR) clear using thumb hole provided.

Discrete components

59 With removal of pec 2/pec 2 (ANR) all discrete components are accessible.

TESTING AND ADJUSTMENTS

Specification Tests

60 Table 7 details the specification tests for the CB3/CB3 (ANR).

For CB3 only. Using a resistance meter. Measure resistance between pin S of Harness and ACTIC connectors (1SK1,2,5 and 6) and pin C of audio connectors (1SK3 and 4). Limits LT 1 ohm.

Diagnostic Tests

61 Reference is made to Table 7.  
For CB3 (ANR) only. Measure voltage at connectors 1SK3/C & 1SK4/C. Result 18V.

Table 7 - Specification tests, Crew Box 3 set (CB3) and Crew Box 3 Set (ANR) (CB3(ANR))

Test conditions:

- a When performing C radio tests, note that radio B on CBTS equates to radio C on the CB3/CB3 (ANR).
- b Connect Cable No 6 between IB HARNESS socket of the test set and 15K1 HARNESS socket of CB3/CB3 (ANR).
- c Connect Cable No 5 between AUDIO socket of the test set and 15K3 AUDIO socket of CB3/CB3 (ANR).
- d Set supply to 18V, according to Para 17.
- e Unless otherwise stated, set volume controls on CB3 /CB3 (ANR) to maximum.

Notes: 1 Cable Nos refer to Table 31.  
2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF										CB3			REMARKS
		METER (S3)	OSC/AUX (S1)	HARNESS (S8)	AUDIO (S9)	DC SELECTOR (S6)	PRESSEL (S10)	SET SELECTOR (1S1)	MONITOR A (1S2)	MONITOR B (1S3)	MONITOR C (1S4)	MIN	MAX		
1	DC supply to audio socket	AUDIO	OFF	OFF	OFF	OFF	A	OFF	OFF	OFF	12V	-			
2	Audio mic to harness mic A	5V AC	1KHZ	MIC IC	MIC LO	#	A	#	ON	A	#	#	0.8V	Freq response and distortion test, Paras 15 and 16. Pressel lamp lit	
3	Audio mic to harness mic B	#	#	MIC B	MIC LO	#	B	#	ON	B	#	#	As Test 2	Pressel lamp lit	
4	Audio mic to harness mic IC O/R	#	#	MIC IC	MIC HI	#	O/R	#	OFF	O/R	#	#	1.0V	Override lamp on CBTS illuminated	
5	Audio mic to harness mic IC	#	#	#	#	#	I	#	ON	I	#	#	1.0V	Pressel lamp lit	
6	Harness phone A to audio wkg phone	#	#	PHONE A	WKG PHONE	#	A	#	OFF	A	#	#	1.85V	Note reading. Operate WORKING volume control	
7	Harness phone A to audio mon phone	#	#	#	MON PHONE	#	#	#	#	#	#	#	As Test 6		
8	Harness phone B to audio wkg phone	#	#	PHONE B	WKG PHONE	#	B	#	#	B	#	#	As Test 6		
9	Harness phone IC to audio wkg phone	#	#	PHONE IC	#	#	IC	#	#	IC	#	#	As Test 6		
10	Harness override	5V AC	1KHZ	PHONE IC	WKG PHONE	OFF	O/R	OFF	OFF	O/R	OFF	OFF	As Test 6	Override lamp illuminated	
11	Harness phone B to audio mon	#	#	PHONE B	MON PHONE	#	A OR C	#	#	A OR C	#	#	1.0V	Operate MONITOR volume control	

Table 7 - (Contd)

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF				CB3				SPECIFICATION		REMARKS	
		METER (S3)	OSC/AUX (S1)	HARNESS (S8)	AUDIO (S9)	DC SELECTOR (S6)	PRESSEL (S10)	SET SELECTOR (S11)	MONITOR A (S12)	MONITOR B (S13)	MONITOR C (S14)		MIN
12	Harness phone IC to mon phone harness O/R	5V AC	1kHz	PHONE IC	MON PHONE	HARNESS OVERRIDE	OFF	C	OFF	ON	OFF	As Test 6	Operate MONITOR Volume Control
13	Harness phone A to audio mon phone	#	#	PHONE A	#	OFF	OFF	#	ON	OFF	#	1.0V	1.5V
Disconnect Cable 6 from 1SK1 Harness socket. Connect to 1SK5 (Active socket).													
14	Harness phone C to audio mon	#	#	PHONE B	#	#	#	A	OFF	#	ON	1.0V	1.5V
15	Audio mic to harness mic IC	#	#	MIC B	MIC LO	#	ON	C	#	#	OFF	As for Test 2	
16	Harness phone C to audio wkg phone	#	#	PHONE B	WKG PHONE	#	OFF	#	#	#	#	As Test 6	
Repeat Test 1, 2 (less frequency response and distortion tests), 3, 4, 5, 6, 8 and 9 with Cable No 6 connected to 1SK2 of the CB3/CB3 (ANR)													
Repeat Test 1, 2 (less frequency response and distortion tests), 4, 5, 6, 9, 14, 15 and 16 with Cable No 6 connected to 1SK6 successively of the CB3/CB3 (ANR)													
Repeat Test 1, 2 (less frequency response and distortion tests), 6 and 7 with Cable No 5 connected to 1SK4 of the CB3/CB3 (ANR)													

5895-99-117-4909 COMMANDER'S BOX FIXED (CBF) AND  
5820-99-701-0870 COMMANDER'S BOX FIXED (ANR) (CBF(ANR))

Reference is made to Tels L802; Fig 2504, 2525, 2544 and Table 2503.

DISMANTLING

- 62 a Place the CBF or CBF (ANR), face down, on a smooth flat surface.
- b Unscrew and remove the four 5 mm captive socket head screws and washers securing the base plate.
- c Lift base plate clear and place to one side.

Removal of pec 2/pec 3 assembly

- 63 a Unscrew and remove the two left-hand 3 mm screws and washers which secure pec 2.
- b Unscrew and remove the two right-hand 3 mm screws and washers which secure pec 3.

Note: The lower right-hand screw is longer than the other.

- c Carefully lift the pec 2/pec 3 assembly, complete with spacer bars, clear of the box.
- d Pec 2 and pec 3 may now be removed from the spacer bars. Note the difference between the upper and lower spacer bars.

Removal of pec 4

64 Pec 4 is revealed when the pec 2/pec 3 assembly has been lifted clear. Unscrew and remove the two 3 mm screws and washers securing the pec 4 and lift the assembly clear.

Discrete components

65 With pec 4 removed, all discrete components are accessible.

RE-ASSEMBLY

- 66 a Replace pec 4 and secure.
- b Position pec 2 and pec 3 on the lugs of the upper spacing bar, (para 63d refers).
- c Attach, but do not tighten, each pec to the tapped 3 mm centre lugs of the spacer bar using one 6 mm long 3 mm screw and washer for each board.
- d Repeat c with the lower spacer bar, ensuring that the lugs on the bar are uppermost, and the single lug on the underside of the bar is to the right-hand side.

e Align the four corner securing holes of the pec 2/pec 3 assembly. Secure the assembly and spacer bars to the box with our 3 mm screws and washers, ensuring that the longest screw (Para 63b) is positioned in the lower right-hand securing hole of pec 3.

f Tighten the two 3 mm screws referred to in Para 66c.

### TESTING AND ADJUSTMENTS

#### Specification Tests

67 Table 8 details the specification tests for the CBF and CBF (ANR).

#### Diagnostic Tests

68 Table 9 gives the additional details required for diagnostic testing of the CBF and CBF (ANR).

For CBF(ANR) only. Using a resistance meter. Measure resistance between 1SK1/S and 1PL1/H. Limits LT 1 ohm.

Table 8 - Specification tests, Commander's Box Fixed (CBF) and Commander's Box Fixed (ANR) (CBF(ANR))

Test conditions:

- a Connect Cable No 6 between HARNESS socket 1SK1 of CBF/CBF (ANR) and JB HARNESS socket of CBTS.
- b Connect Cable No 8 between COMMANDER plug of CBF/CBF (ANR) and COMMANDER plug of CBTS.
- c Set supply to 18V in accordance with Para 17.
- d Unless otherwise stated, set volume controls on CBF/CBF (ANR) to maximum.

- Notes:
- 1 Cables Nos refer to Table 31.
  - 2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF										CBF		REMARKS
		METER (S3)	OSC/AUX (S1)	HARNESS (S8)	LINE COMMANDER (S5)	DC SELECTOR (S6)	PRESSEL (S10)	IND PRESSEL (S12)	NORMAL/LIVE IC (S11)	SPECIFICATION MIN	SPECIFICATION MAX			
1	DC supply	CMDR	OFF	OFF	MIC CBF	OFF	OFF	OFF	N	17.25V				
2	Commander's mic to harness mic B	5V AC	1kHz	MIC B	#	#	ON	#	#	2.0V			Pressel lamp lit	
3	Commander's mic to harness mic A	#	#	MIC A	#	SELECT A	ON	#	#	2.0V			Pressel and Rebro lamps lit	
4	Commander's mic to harness mic IC	#	#	MIC IC	#	IC	ON	#	#	1.0V			Pressel and IC lamp lit	
5	As Test 4, LIVE IC	#	#	#	#	#	OFF	#	LIVE IC	1.0V			IC lamp lit	
6	Harness phone B to Cmdr's wkg phone	#	#	PHONE B	CBF PHONE	OFF	#	#	N	2.25V	2.75V		Operate WORKING VOL control	
7	Harness phone B to Cmdr's mon phone	#	#	#	CBF MON PHONE	#	#	#	#	As Test 6				
8	Harness phone A to Cmdr's mon phone	#	#	PHONE A	#	MONITOR	#	#	#	As Test 6			Operate MONITOR VOL control	
9	Harness A phone to wkg phone	#	#	#	CBF WKG PHONE	SELECT A	#	#	LIVE IC	2.25V	2.75V		Note reading, call it A.	
10	Harness IC phone to Cmdr's wkg phone	#	#	PHONE IC	#	IC	#	#	N	As Test 9				
11	Harness IC to Cmdr's mon phone harness OVERRIDE	#	#	#	CBF MON PHONE	HARNESS OVERRIDE	#	#	#	-5dB (0.56A)			Down on Test 9	
12	Harness IC phone to mon phone, LIVE IC	#	#	PHONE IC	CBF MON PHONE	OFF	#	#	LIVE IC	As Test 11				
13	Harness B phone to mon phone (A <sub>2</sub> )	#	#	PHONE B	#	A MON B	#	#	N	2.25V	2.65V		Note reading, call it B.	

Table 8 - (Contd)

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF							CBF/CBF (ANR)		SPECIFICATION		REMARKS
		METER (S3)	OSC/AUX (S1)	HARNESS (S8)	LINE COMMANDER (S5)	DC SELECTOR (S6)	PRESSEL (S10)	IND PRESSEL (S12)	NORMAL/ LIVE IC (S11)	MIN	MAX		
14	Harness set phone to mon phone, LIVE IC	5V AC	1kHz	PHONE B	CBF MON PHONE	A MON B	OFF	OFF	LIVE IC	-1.5dB 0.84B	-5dB 0.56B	Down on Test 13	
15	Commander's O/R	#	#	PHONE IC	CBF MON PHONE	GM/R/ALS OVERRIDE	#	#	NORMAL	-1.5dB 0.84A	-5dB 0.56A	Down on Test 9 OVERRIDE and CMDR O/R lamps illuminated	
Connect Cable No 5 between CWI on CBTS and CWI on CBF or CRF (ANR)													
16	CWI	#	#	OFF	CBF MON PHONE	CW/DVRS OVERRIDE	#	#	#	As Test 9		OVERRIDE lamp illuminated Radio switch to CWI Following test Radio switch to OFF	
Disconnect Cable No 5 and re-connect between AUDIO socket on CBTS and IND PRESSEL on CBF or CBF (ANR). Test 17 must not be carried out on CBF (ANR) as IND presel is disconnected.													
17	IND presel	#	#	#	OFF	IND PRESSEL	#	ON	N			IND. PRESSEL and PRESSEL lamps illuminated	
Repeat Test 1, 2, 3, 4, 6, 8, 9 and 10 with Cable No 6 connected to 1SK2 of CBF or CBF (ANR)													



Table 9 - Diagnostic Tests, CBF & CBF (ANR)

Test conditions:-

a Table 8, Test 2

b Para 20

DC levels

TEST POINT	1S1 NORMAL/LIVE IC	RESULT
PEC 2/2 ) PEC 2/18) PEC 3/18)	NORMAL LIVE IC	18.4V 18.4V
1SK3/C	NORMAL LIVE IC	16.0V 16.0V
1SK1/M ) 1SK2/M )	NORMAL LIVE IC	16.0V 16.0V
PEC 4/1	NORMAL LIVE IC	18.4V 18.4V
PEC 4/10	NORMAL LIVE IC	18.4V NIL
PEC 4/3	NORMAL LIVE IC	16.0V 16.0V
PEC 4/6	NORMAL LIVE IC	16.4V NIL
PEC 4/9	NORMAL LIVE IC	16.0V 16.0V
PEC 4/8	NORMAL LIVE IC	16.0V NIL
PEC 4/7	NORMAL LIVE IC	16.0V 16.0V

For CBF (ANR) only, measure DC voltage at connector 1PL1 Pin H. Result 18 V. 1S1 can be set at either normal or live IC.

AC levels (Para 21)

Test point	Result
PEC 2/5	2.0V min
PEC 3/15	2.0V min

5820-99-117-5043 COMMANDER'S PERSONAL UNIT (CPU) AND  
5820-99-894-0515 COMMANDERS PERSONAL UNIT (ANR) (CPU(ANR))

Reference is made to Tels L802; Fig 2505, 2526, 2543 and Table 2504.

DISMANTLING

- 69 a Unscrew the four 3 mm captive socket head screws and washers securing the back cover.
- b Separate the back cover from the equipment.

Removal of pec 2/pec 2 (ANR)

70 Pec 2/pec 2 (ANR) is secured to the CPU/CPU (ANR) casting by three 3 mm screws and washers.

Note Pec 2 (ANR) has a large heat sink fitted to 2D3. Ensure that this is not removed whilst operating, this heat sink can be very hot.

Discrete components

71 Removal of the back cover gives access to all discrete components.

TESTING AND ADJUSTMENTS

Specification Tests

72 Table 10 details the specification tests for the CPU/CPU (ANR).

Diagnostic Tests

73 Table 11 gives the additional details required for the diagnostic testing of the CPU/CPU (ANR).

Table 10 - Specification tests, Commander's Personal Unit (CPU) and Commander's Personal Unit (ANR) (CPU/ANR)

Test conditions:

- a Connect Cable No 5 between the AUDIO sockets of CBTS and the CPU/CPU (ANR).
- b Connect Cable No 8 between the COMMANDER plug of CBTS and 10-way plug of CPU/CPU (ANR).
- c IND PRESSEL lamp 1LP1 is illuminated for the CPU unless otherwise stated. This IND PRESSEL lamp does not light for the CPU (ANR).
- d Commander's dc supply delivered by the test set is 15.5V.

- Notes: 1 Cable No refer to Table 31.  
2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF						CPU/CPU (ANR)		REMARKS
		METER (S3)	OSC/AUX (S1)	AUDIO (S9)	LINE COMMANDER (S5)	OIR (1S1)	PRESSEL (1S2)	SELECT (1S3)	MON (1S4)	
1	Supply to 1SK1 (audio)	AUDIO	OFF	OFF	MIC CPU	OFF	B	OFF	12V	
2	Audio mic to Cdr's mic	5V AC	1kHz	MIC HI	#	#	#	#	3V	Distortion and freq response Para 15 and 16
3	Cdr's phone to audio wkg phone	#	#	WKG PHONE	CPU	#	#	#	2.25V	2.75V
4	Cdr's phone to audio mon phone	#	#	MON PHONE	CPU	#	#	#	As Test 3	
5	DC function	OFF	OFF	OFF	MIC CPU	#	I	#	IC lamp 1LP3	Lamp lights
6	DC function	#	#	#	#	#	A	#	REBRO A lamp 1LP4	
7	DC function	#	#	#	#	#	B	ON	MON lamp 1LP7	
8	DC function	#	#	#	#	#	#	OFF	PRESSEL lamp 1LP2	
9	DC function	#	#	#	#	#	#	#	CDR OIR lamp 1LP5	IND PRESSEL lamp 1LP1 is off.
10										

For CPU (ANR) only. With Cable No 8 connected between the Commander's Plug of CBTS and 10-way plug of CPU (ANR) and Meter S3 in audio position. Measure DC voltage at CPU (ANR) connector 1SK1 pins C and E. Limits LL 12.4V UL 14.1V.

Table 11 - Diagnostic Tests, CPU/CPU (ANR).

Test conditions:

- a Table 10, Test 3
- b Para 20

AC &amp; DC levels

Input		Output	
Test point	Level	Test point	Level
PEC 2/PEC 2 (ANR) Pins 1 and 2	2.5V $\pm$ 10% (AC)	PEC 2/PEC 2 (ANR) Pin 3	GT 3V (AC)
Pec 2 (ANR) Pins 4 and 2	15.5V $\pm$ 10% (DC)	PEC 2 (ANR) Pins 5 and 2	13V $\pm$ 10% (DC)

5820-99-117-5042 DRIVER'S BOX (DB) AND  
5820-99-721-4311 DRIVER'S BOX (ANR) (DB (ANR))

Reference is made to Tels L802; Figures 2506, 2527, 2545 and Table 2505.

DISMANTLING

- 74 a Place the DB/DB (ANR) face down, on a smooth flat surface.
  - b Unscrew and remove the four 5 mm socket head captive screws and washers securing the base plate.
  - c Lift base plate clear and place to one side.

Removal of pec 2/pec 2 (ANR)

- 75 a Unscrew and remove the four No 4 mm screws and washers securing pec 2/pec 2 (ANR).
  - b Carefully lift pec 2/pec 2 (ANR) clear of the box.

Discrete components

- 76 With the removal of pec 2/pec 2 (ANR), all discrete components are accessible.

TESTING AND ADJUSTMENTSSpecification Tests

- 77 Table 12 details the specification tests for the DB/DB (ANR). For DB (ANR) only. Using a resistance meter, measure resistance between 1SK1/S and 1SK3/C. Measure resistance between 1SK1/S and 1SK4/C. Limits LT 1 ohm.

Diagnostic Tests

- 78 Reference is made to Table 12.

For DB(ANR) only. Measure DC voltage at Connectors 1SK1/C and 1SK3/C. Result 18V.

Table 12 - Specification tests, Driver's Box (DB) and Driver's Box (ANR) (DB(ANR))

Test conditions:

- a Set supply to 18V in accordance with Para 17.
- b Connect Cable No 5 between the AUDIO sockets of CBTS and the DB/DB (ANR).
- c Connect Cable No 6 between the IB HARNESS sockets of CBTS and the DB/DB (ANR).

- Notes: 1 Cable Nos refer to Table 31.  
2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF							DB/DB (ANR)		SPECIFICATION		REMARKS
		METER (S3)	OSC/AUX (S1)	HARNESS (S8)	AUDIO (S9)	PRESSEL (S10)	CT (S11)	SELECTOR (15T)	MIN	MAX			
1	DC supply to AUDIO socket	AUDIO	OFF	OFF	OFF	OFF	OFF	NORM	12V	-			
2	Audio mic to harness mic IC	5V AC	1kHz	MIC IC	MIC HI	ON	#	#	1.0V	-	Presel lamp ill. Note reading. Distortion and freq response Para 15 and 16		
3	Audio mic to harness mic IC	#	#	#	#	ON	ON	#	50% of Test 2	-	Of Test 2.		
4	Audio mic to harness mic IC	#	#	#	#	OFF	OFF	LIVE IC	40%	60%	OVERRIDE lamp illuminated.		
5	Audio mic to harness driver's OVERRIDE	#	#	#	#	#	#	O/R	As Test 2	-	Note reading. Operate volume control.		
6	Harness phone to audio phone	#	#	PHONE IC	WKG PHONE	#	#	NORM	2.25V	2.65V			
7	Harness phone to audio phone	#	#	#	MON PHONE	#	#	#	As Test 6				

5820-99-117-5041 DRIVER'S BOX SELECTOR (DBS)

Reference is made to Tels L802; Fig 2507, 2528, 2546 and Table 2506.

DISMANTLING

79 a Place the DBS, face down, on a smooth flat surface.

b Unscrew the four 5 mm socket head captive screws and washers securing the base plate.

c Lift the base plate clear.

Removal of pec 2

80 a Unscrew and remove the four 4 mm screws and washers securing pec 2.

b Carefully lift pec 2 clear of the box.

Discrete components

81 With the removal of pec 2, all discrete components are accessible.

TESTING AND ADJUSTMENTS

82 Table 13 details the specification tests for the DBS.

Diagnostic Tests

83 Reference is made to Table 13.

Table 13 - Specification tests, Driver's Box Selector (DBS)

Test conditions:

- a Set supply to 18V in accordance with Para 17.
- b Set DBS to 1. Connect Cable No 6 between CBTS IB Harness SKT and DBS RBJ SKT (1SK3). Observe that DBS lamp is illuminated.
- c Repeat with DBS set to 1<sub>A</sub>.
- d Disconnect cable from RBJ of DBS and reconnect to Harness SKT (1SK1) of DBS. Ensure that DBS lamp is illuminated. Connect second Cable No 6 between RBJ socket of DBS to RBJ socket of CBTS.

Notes: 1 Cable Nos refer to Table 31.

2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF						DBS SET SELECTOR	SPECIFICATION		REMARKS
		METER (S3)	OSCAUX (S1)	HARNESS (S8)	AUDIO (S9)	DC SELECTOR (S6)	PRESSEL (S10)		MIN	MAX	
1	RBJ mic to harness mic A	5V AC	1kHz	MIC A	MIC RBJ	OFF	ON	A	1.0V	-	Reading only when Prestel operated. Prestel lamp lit.
2	RBJ mic to harness mic B	#	#	MIC B	#	#	ON	B	1.0V	-	As above.
3	RBJ mic to harness mic IC	#	#	MIC IC	#	#	OFF	I	0.5V	-	
4	RBJ mic to harness mic IA	#	#	#	#	#	#	I <sub>A</sub>	0.5V	-	
5	RBJ mic to harness mic IA	#	#	#	MIC E	#	#	#	0.425V	-	
6	RBJ mic to harness mic IA	#	#	#	#	#	ON	#	0.25V	-	Remarks as Test 1.
7	RBJ mic to harness mic IA	#	#	#	#	#	ON	I	0.25V	-	Remarks as Test 1.
8	RBJ mic to harness mic driver's override	#	#	#	RBJ MIC	CW/DVRS	OFF	A	0.5V	-	OVERRIDE lamp illuminated.
9	Harness phone A to RBJ phone	#	#	PHONE A	RBJ PHONE	OFF	#	#	2.25V	2.75V	
10	Harness phone B to RBJ phone	#	#	PHONE B	#	#	#	B	2.25V	2.75V	
11	Harness phone IC to RBJ phone	#	#	PHONE IC	RBJ PHONE	OFF	OFF	I	2.25V	2.75V	
12	Harness phone IC to RBJ phone	#	#	#	#	#	#	I <sub>A</sub>	0.45V	1.4V	

Table 13 - (Contd)

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF							REMARKS	
		METER (S3)	OSC/AUX (S1)	HARNESS (S8)	AUDIO (S9)	DC SELECTOR (S6)	PRESSEL (S10)	DBS SET SELECTOR		SPECIFICATION MIN MAX
13	Harness phone A to RBJ phone	0.2V AC	1kHz	PHONE A	RBJ PHONE	OFF	OFF	A	0.08V 0.12V	
14	Harness phone IC to RBJ phone harness override	5V AC	#	PHONE IC	#	HARNESS OVERRIDE	#	A	2.25V 2.75V	
Repeat Test 1, 2, 3, 8, 9, 10 and 11 with Cable No 6 connected to DBS socket 1SK2.										



5820-99-117-6249 INTERCONNECTING BOX HARNESS ADAPTOR (IBHA)

Reference is made to Tels L802; Fig 2510, 2531, 2550 and Table 2509.

DISMANTLING

- 84 a Place the IBHA face down, in a smooth flat surface.
- b Unscrew the four 5 mm socket head captive screws and washers securing the base plate.
- c Lift the base plate clear.

Removal of pec 2

- 85 a Unscrew and remove the four 4 mm screws and washers securing pec 2.
- b Carefully lift pec 2 clear.

Removal of Bracket Assembly 3

- 86 a Carry out procedure detailed in Para 84 and 85.
- b Unscrew and remove the three 4 mm captive screws and washers securing assembly 3.
- c Lift assembly 3 clear.

Discrete components

87 With the removal of assembly 3, all discrete components are accessible.

TESTING AND ADJUSTMENTS

Specification Tests

88 Table 14 details the specification tests of the HAB.

Diagnostic Tests

89 Table 15 gives the additional details required for diagnostic testing of the IBHA.

Table 14 - Specification tests, Interconnecting Box Harness Adaptor (IBHA)

Test conditions:

- a Connect Cable No 2 between CBTS supply socket and 1PL2 28V of HAB.
- b Connect Cable No 5 between CBTS MANPACK and 1SK1 PRC of HAB.
- c Connect Cable No 4 between CBTS RADIO A and 1PL1 Harness of HAB.
- d Connect Cable No 11 between line terminals of CBTS and HAB ensuring correct polarity.
- e Set SUPPLY to 28V in accordance with Para 17.

- Notes: 1 Cable Nos refer to Table 31.  
2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF							SPECIFICATION		REMARKS
		METER (S3)	OSC/AUX (S1)	RADIO (S4)	LINE/COMMANDER (S5)	PRESEL (S10)	MIN	MAX			
1	Diode test (TML1-TWL2)										
2	Current drain	5V AC	1 AMP	OFF	OFF	OFF				400mA	Para 18 refers.
3	PRC to VRC phone	#	1kHz	PRC PHONE	#	#			2V		Freq response and distortion Test Para 15-16.
4	VRC mic to Line	COMMAND	#	MIC RB A	TX	ON			5mA	12mA	Read from 40mA scale on CBTS
5	Continuity, 1SK2 - 1PL2, Pins A and B										Para 28 refers.

Table 15 - Diagnostic Tests, HAB

Test conditions:

- a Table 14, Test 3.
- b Para 20.

DC levels

TEST POINT	RESULT
PEC 2, Pin 6	17V
PEC 3, D1	As Above

AC levels

TEST POINT	RESULT
PWX 2, Pins 3 and 4	600mV
PEC 2, Pins 5 and 4	20mV
PEC 2, Pins 9 and 10	20mV
PEC 2, Pins 7 and 8	4V

5820-99-117-6109 RADIO ADAPTOR BOX (RAB)

Reference is made to Tels L802; Fig 2511, 2532, 2551 and Table 2510.

DISMANTLING

- 90 a Place the RAB, face down, on a smooth flat surface.
- b Unscrew the four 5 mm socket head captive screws and washers securing the base plate.
- c Lift the base plate clear.

Removal of pec 2/pec 5 assembly

- 91 a Unscrew and remove the four 4 mm screws and washers securing pec 2/pec 5 sub-assembly.
- b Carefully lift the assembly clear.
- c Pec 5 is secured to pec 2 by four 3 mm screws and washers.

Removal of pec 4

- 92 a Remove the two 5 mm nuts and washers securing pec 4 to 1TML1, 1TML2 and lift pec 4 clear.

Removal of Assembly 3

- 93 a Carry out procedure detailed in Paras 90 and 91.
- b Unscrew and remove the three 4 mm screws and washers securing assembly 3 to the main case. Lift assembly 3 clear.

Discrete components

- 94 With the removal of assembly 3, all discrete components are accessible.

TESTING AND ADJUSTMENTS

Specification Tests

- 95 Table 16 details the specification tests of the RAB.

Diagnostic Tests

- 96 Table 17 gives the additional details required for diagnostic testing of the RAB.

Table 16 - Specification tests, Radio Adaptor Box (RAB)

Test conditions:

- a Set supply to 28V according to Para 17.
- b Connect Cable No 2 between CBTS POWER socket and RAB supply plug 1PL1.
- c Connect Cable No 7 between CBTS LARKSPUR RADIO and RAB radio plug 1PL2.
- d Connect Cable No 4 between CBTS RADIO A plug and RAB HARNESS plug 1PL3.

Notes: 1 Cable Nos refer to Table 31.

2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF										RAB AUTO/REM (1S1)	SPECIFICATION		REMARKS	
		METER (S3)	OSC/AUX (S1)	RADIO (S4)	AUDIO (S8)	LINE COMMANDER (S5)	LARKSPUR RADIO E (S13)	PRESSEL (S10)	MIN	MAX						
1	Current drain	VEHICLE	1 AMP	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	AUTO	250mA			
2	Clansman mic to Larkspur mic	5V DC	1KHz	MIC RB A	RAB MIC	#	RAB	#	#	ON	ON	#	0.5V	1.25V		
3	Larkspur phone to Clansman mic	#	#	MIC TX A	RAB PHONE	#	#	#	#	OFF	OFF	#	0.6V	1.8V		
4	RAB CALL	#	OFF	RAB CALL	OFF	#	OFF	#	#	#	#	#	1.5V			
Connect respective line terminals using Cable No 11, ensuring correct polarity																
5	Rebro Larkspur to Clansman	COMMAND	#	MIC TX A	#	#	#	#	#	ON	ON	#	6mA	12mA		
6	Rebro Clansman to Larkspur	5V AC	#	OOF	#	RX	#	OFF	#	OFF	OFF	#	PRESSEL lamp illuminated (CBTS)			
7	VCR	VEHICLE	#	#	#	OFF	#	OFF	#	#	#	#			Adjust SET SUPPLY until VCR lamp is illuminated and read voltage: Min 23V Max 24.7V	
8	Continuity 1PL2 to 1SK2 Pins A, B, C, D, E, G, J and M	Not connected														
9	Continuity 1SK1 to 1PL1 Pins A and B	Not connected														
10	Continuity between 1PL3/D and 1SK2/M, 1PL3/E and 1SK2/G	Not connected														



Table 17 - Diagnostic Tests, RAB

Test conditions:

a Table 16, Test 2

b Para 20

DC levels

Test point	Result
PEC 2/7 ) PEC 2/13 ) PEC 3/8 ) PEC 5/3 )	16.8V
PEC 3/6 ) PEC 5/8 )	24.0V
PEC 3/7 ) PEC 5/7 )	17.0V
PEC 2/11 PEC 2/15	26.0V 16.8V with 1S1 to REMOTE

AC levels

Test point	Result
PEC 2/3 ) PEC 2/5 )	0.8V
PEC 5/4 ) PEC 5/5 )	2.4V
PEC 2/2 ) PEC 2/8 )	0.6V with 1S1 to REMOTE



5820-99-117-6248 INTERCONNECTING BOX RADIO ADAPTOR (IBRA)

Reference is made to Tels L802; Fig 2515, 2536, 2554 and Table 2514.

DISMANTLING

97 a Place the IBRA, face down, on a smooth flat surface.

b Remove the four 5 mm captive socket head screws and washers securing the base plate.

Removal of pec 2/pec 5 assembly

98 a Remove the two 4 mm screws and washers securing pec 3 to the main frame.

b Remove the two 4 mm screws and washers securing pec 2 and pec 3 to the main frame and lift the combined pec 2/pec 3 assembly clear.

c Pec 2 is secured to pec 3 by two 4 mm screws, nuts and washers.

Removal of assembly 4

99 a Remove pec 2/pec 3 assembly.

b Remove the three 4 mm screws and washers securing assembly 4 to the main frame and lift the assembly clear.

Discrete components

100 Removal of assembly 4 gives access to all discrete components.

TESTING AND ADJUSTMENTS

Specification Tests

101 Table 18 details the specification tests of the IBRA.

Diagnostic Tests

102 Table 19 gives the additional details required for diagnostic testing of the IBRA.

Table 18 - Specification tests, Interconnecting Box Radio Adaptor (IBRA)

Test conditions:

- a Set supply to 28V according to Para 17.
- b Connect Cable No 3 between CBTS SUPPLY socket and 1PL2 28V of IBRA.
- c Connect Cable No 7 between CBTS LARKSPUR HARNESS and 1SK2 HARNESS of IBRA.
- d Connect Cable No 4 between CBTS RADIO A and 1PL1 VRC of IBRA.

- Notes: 1 Cable Nos refer to Table 31.  
2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF					IBRA VRC/PRC (151)	SPECIFICATION		REMARKS
		METER (S3)	OSC/AUX (S1)	RADIO (S4)	AUDIO (S9)	PRESSEL (S10)		MIN	MAX	
1	Current drain	VEHICLE	1 AMP	OFF	OFF	OFF			300mA	
2	Larkspur mic to VRC mic	5V DC	1kHz	MIC TX A	IBRA SET MIC	#	VRC	1.0V	1.5V	
3	VRC Tx command current	COMMAND	OFF	#	#	ON	#	8mA	12mA	Read from 40mA scale on CBTS
4	VRC Rebro (IBRA current)	IBRA	#	OFF	#	OFF	#			Set IBRA CURRENT control fully anti-clockwise; rotate slowly - REBRO lamp illuminated between 2-7mA and extinguished between 12-25mA
5	VRC phones	5V AC	1kHz	PHONE A	IBRA SET PHONE	#	#	2.0V	2.5V	
6	IC	#	#	OFF	IBRA IC	#	#	2.2V	3.2V	Distortion and freq test, Paras 15 and 16
Connect Cable No 5 between CBTS MANPACK and PRC 1SK1 PRC of IBRA										
7	PRC mic to Larkspur	0.2V AC	#	PRC MIC	IBRA SET MIC	#	PRC	25mV	75mV	
8	PRC phone to Larkspur phone	5V AC	#	PRC PHONE	IBRA SET PHONE	#	#	2.0V	4.0V	
9	PRC presel	#	#	#	#	ON	#	IND PRESSEL lamp illuminate		Para 28 refers
10	Continuity, 1PL2-1SK3 Pins A and B									

Table 19 - Diagnostic Tests IBRA

Test conditions:-

- a Table 18, Test 1 and 8.
- b Para 20.

DC levels

Test point	Result
4D1	16.8V

AC levels

Test point	Result
PEC 2 Pin 5	0.75V
PEC 2 Pin 2	not less than 2.5V

5895-99-117-6108 SET COMBINING BOX (SCB)

Reference is made to Tels L802; Fig 2512, 2533, 2549 and Table 2511.

DISMANTLING

- 103 a Place the SCB, face up, on a smooth flat surface.
- b Unscrew the four 5 mm socket head captive screws and washers securing the base plate and lift base plate clear.

Discrete components

- 104 All discrete components are accessible upon removal of base plate.

TESTING AND ADJUSTMENTS

Specification Tests

- 105 Table 20 details the specification tests for the SCB.

Diagnostic Tests

- 106 Reference is made to Table 20.



Table 20- Specification tests, Set Combining Box (SCB)

Test conditions:

- a Connect Cable No 5 between th (+ ve) radio socket, 1SK1 of SCB and MANPACK socket of CBTS.
- b Connect second Cable No 5 th audio socket 1SK3 of SCB and Audio socket of CBTS.

Notes: 1 Cable Nos refer to Table 31.

- 2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF					SCB		REMARKS
		METER (S3) 0.2V AC	OSC/AUX (S1) 1 kHz	RADIO (S4) PRC MIC	AUDIO (S9) MIC HI	PRESSEL (S10) OFF	WORKING (IS1) LEFT (+ ve)	MONITOR (IS2) OFF	
1	Audio mic to set mic	#	#	#	#	#	#	75mV -	
2	Set phone to Audio working phone	#	#	PRC PHONE	WKG PHONE	#	#	40 mV	Note reading
3	Set phone to Audio monitor phone	#	#	#	MON PHONE	#	#	As Test 2	
4	Set phone to Audio monitor phone (MON ON)	#	#	#	#	#	RIGHT	As Test 2	
5	Presael	#	#	#	#	ON	LEFT (+ ve)	IND Presael and Presael lamp illumination	
Change Cable No 5 to RH radio socket 1SK2 of SCB									
6	Set phone to Audio monitor phone (MON ON)	#	#	#	#	OFF	#	As Test 2	
Repeat Test 1,2,4,5, and 6. For LEFT read RIGHT, for RIGHT read LEFT									
Repeat Test 1, 2, 3, and 5 with AUDIO connection at 1SK4 of SCB.									
7	Continuity 1SK1 pin C - 1SK3 and 4 pin C								
									Para 28 refers

5820-99-117-6111 REMOTE COMBINING UNIT (RCU)

Reference is made to Tels L802; Fig 2513, 2534, 2553 and Table 2512.

DISMANTLING

107. a Place the RCU, face down, on a smooth flat surface.

b Unscrew the four 5 mm socket head captive screws and washers securing the base plate and lift base plate clear.

Removal of pec 2

108 a Unscrew and remove the four 4 mm screws and washers securing pec 2.

b Lift pec 2 clear.

Discrete components

109 Upon removal of pec 2, all discrete components are accessible.

TESTING AND ADJUSTMENTS

Specification Tests

110 Table 21 details the specification tests for the RCU.

Diagnostic Tests

111 Table 22 gives the additional details required for diagnostic testing of the RCU.

Table 21 - Specification Test, Remote Combining Unit (RCU)

Test conditions:

- a Connect Cable No 5 between the AUDIO of CBTS and AUDIO socket 15K1 of (RCU).
- b Connect Cable No 11 between LINE terminals of CBTS and REMOTE A terminals of RCU.
- c Set volume controls to max.

Notes: 1 Cable Nos refer to Table 31.

2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF				RCU			REMARKS	
		METER (S3)	OSC/AUX (S1)	AUDIO (S9)	LINE COMMANDER (S5)	PRESSEL (S10)	SELECT (1S1)	SYSTEM (1S2)		SPECIFICATION MIN MAX
1	Diode Test (TML 1-2, TML 3-4)									Para 18 refers
2	Tx command current	COMMAND	OFF	OFF	Tx	ON	A	VOICE	8 mA	12 mA
3	Tx command current	#	#	#	#	ON	A <sub>0</sub>	#	As Test 2	
4	Call command current	#	#	#	#	OFF	#	CALL	15 mA	
5	Audio mic to REM A	5V AC	1kHz	MIC LO	LINE AF	ON	#	VOICE	0.5V	
6	Morse oscillator	#	OFF	OFF	#	ON	#	MORSE	1.25V	
7	Remote A to wkg phone	#	1kHz	WKG PHONE	Rx	OFF	A	VOICE	0.6V	1.2V
8	Remote A to mon phone	#	#	MON PHONE	#	#	#	#	As Test 7	
9	Remote A to mon phone working B	#	#	#	#	#	B <sub>1</sub>	#	As Test 7 plus 10%	
Change Cable No 11 to remote B, ensuring correct polarity										
10	Remote B to mon phone working A	#	#	#	#	#	A <sub>0</sub>	#	As Test 9	
11	As for Test 2	COMMAND	OFF	OFF	Tx	ON	B	#	As Test 2	
12	As for Test 3	COMMAND	OFF	OFF	Tx	ON	B <sub>1</sub>	VOICE	As Test 2	
13	As for Test 7	5V AC	1kHz	WKG PHONE	Rx	OFF	B	#	As Test 7	
14	As for Test 6	#	#	MON PHONE	#	#	#	#	As Test 7	
15	As for Test 9	#	#	#	#	#	A <sub>0</sub>	#	As Test 9	
Change Cable No 11 to remote A										
16	As for Test 10	#	#	#	#	#	B <sub>1</sub>	#	As Test 9	
Repeat Test 1, 2, 3, 7, 11, 13, and 14 with Cable No 5 connected to 15K2 of RCU										

Table 22 - Diagnostic Tests RCU

Test conditions:-

- a Table 21, Test 5.
- b Para 20.
- c Remove audio cable No 5 (Table 31 refers).

AC levels

Test point	Result
PEC 2 Pins 2, 3	GT 2V
PEC 2 Pins 4, 3	GT 1V
PEC 2 Pins 17, 16	GT 2V
PEC 2 Pins 15, 16	GT 1V

5820-99-117-6144 REMOTE PERSONAL UNIT (RPU)

Reference is made to Tels L802; Fig 2514, 2535, 2553 and Table 2513.

DISMANTLING

- 112 a Unscrew the four 3 mm socket head captive screws and washers securing the back cover.
- b Separate back cover from the equipment.

Removal of pec 2

- 113 a Pec 2 is secured to the casting by three 3 mm screws and washers.

Discrete components

- 114 Upon removal of Pec 2 all discrete components are accessible.

TESTING AND ADJUSTMENTS

Specification Tests

- 115 Table 23 details the specification tests for the RPU.

Diagnostic Tests

- 116 Reference is made to Table 23.

Table 23 - Specification Test, Remote Personal Unit (RPU)

Test conditions:

- a Connect Cable No 11 between LINE terminals of CBTS and REMOTE A terminals of RCU.
- b Connect Cable No 5 between the AUDIO socket 1of test set and 1SK1 of RPU.
- c Set volume control of RPU to max.

Notes: 1 Cable Nos refer to Table 31.

2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF				RPC		SPECIFICATION		REMARKS
		METER (S3)	OSCAUX (S1)	AUDIO (S9)	LINE COMMANDER (S5)	CALL (1S1)	PRESSEL (1S2)	MIN	MAX	
1	Line polarity and diode test	COMMAND	OFF	OFF	Tx	OFF	OFF	-	-	Para 19 (less 18b) refers. After test return cable 11 to its correct polarity connection
2	Tx current	#	#	#	#	#	ON	8 mA	12 mA	Read on 40 mA scale of CBTS
3	Call command current	COMMAND	#	#	#	ON	OFF	15 mA	-	
4	Audio mic to REM A	5V AC	10Hz	MIC LO	LINE AF	OFF	ON	0.5V	-	Distortion and frequency test, Para 15 and 16
5	Morse oscillator	#	#	WKG PHONE	Rx	#	OFF	1.0V	-	Operate volume control

5820-99-117-6143 AMPLIFIER AF LOUDSPEAKER (AAFL)

Reference is made to Tels L802; Fig 2516, 2537, 2555 and Table 2515.

DISMANTLING

117 a Place the AAFL, face down, on a smooth flat surface.

b Unscrew the four 5 mm captive socket head screws and washers securing the base plate and lift base plate clear.

Removal of pec 2

118 a Unscrew and remove the five 4 mm screws and washers securing pec 2.

b Carefully lift pec 2 clear.

Removal of pec 4

119 a Remove the two 5 mm nuts and washers securing pec 4 to terminals 1TML1, 1TML2.

b Lift pec 4 clear.

Removal of pec 5

120 a Remove the two 5 mm nuts and washers securing pec 5 to terminals 1TML3, 1TML4.

Removal of Bracket Assembly 3

121 a Unscrew the two captive 3 mm screws and washers securing assembly 3 to the main case and lift complete assembly clear.

b The heatsink and assembly 3 are secured together by one 3 mm countersunk screw.

Discrete components

122 When the procedures detailed in paras 117 to 121 have been carried out, all remaining discrete components are accessible.

TESTING AND ADJUSTMENTS

Specification Tests

123 Table 24 details the specification tests for the AAFL.

Diagnostic Tests

124 Table 25 details the additional tests required for diagnostic testing of the AAFL.

Table 24 - Specification Test, Amplifier AF Loudspeaker (AAFL)

Test conditions:

- a Set SUPPLY to 28V in accordance with Para 17.
- b Connect Cable No 2 between SUPPLY socket of CBTS and 1PL1 of AAFL.
- c Connect Cable No 11 between TH1, TL2 (L SPEAKER) of CBTS and 1TML3, 1TML4 (LS) of AAFL.
- d Connect second Cable No 11 between TH3, TL4 (LINE) of CBTS and 1TML1, 1TML2 (EXT) of AAFL.
- e Set volume control of AAFL to MINIMUM.
- f Switch AAFL supply switch to ON.

Notes: 1 Cable Nos refer to Table 31.

2 The symbol # indicates that the switch setting remains unchanged from the previous test.

CAUTION: a THE AAFL PRODUCES HIGH LEVEL OUTPUTS WHICH CAN DAMAGE THE CBTS. INSTRUCTIONS GIVEN IN THIS TABLE MUST BE STRICTLY OBSERVED.  
b Because of the potential danger to the CBTS, Test 2-6 are functional only. However, they may be carried out to prove the overall serviceability of the equipment.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF										AAFL SELECT (1ST)	SPECIFICATION MIN MAX	REMARKS			
		METER (S3)	OSCILUX (S1)	RADIO (S4)	HARNESS (S8)	AUDIO (S9)	LINE COMMANDER (S5)	DC SELECTOR (S6)	WKG PHONE	PRC PHONE	PHONE IC				PHONE A	PHONE B	PHONE IC
1	Ext to LS O/P	1V AC	1 kHz	L SPEAKER	OFF	OFF	ALS	OFF	OFF	OFF	OFF	OFF	OFF	OFF	EXT	0.5 V	Operate volume control to MAX. Frequency response test (Para 18), with volume control at max.
SET AAFL VOLUME TO MINIMUM UNLESS OTHERWISE STATED IN REMARKS COLUMN																	
Disconnect both Cables No 11, 1TML2 of CBTS; Connect Cable No 5 between MANPACK (CBTS) and EXT 1SK1 of AAFL. Connect Cable No 5 between AUDIO (CBTS) and LS 1SK4 of AAFL																	
2	Manpack to LS O/P	1V AC	#	PRC PHONE	#	WKG PHONE	OFF	OFF	OFF	OFF	#	#	#	#	#	Not applicable	ADJUST VOLUME CONTROL CAREFULLY, TO PRODUCE 50% FSD MAXIMUM
Disconnect cable No 5 from 1SK1 (EXT) of AAFL; Connect cable No 8 between IB HARNESS (CBTS) and 1SK2 HARNESS of AAFL																	
3	Harness IC to LS O/P	5V AC	#	OFF	PHONE IC	#	PHONE A	#	PHONE B	#	PHONE IC	#	#	#	1	Not applicable	ADJUST VOLUME CONTROL CAREFULLY, TO PRODUCE 50% FSD MAXIMUM
4	Harness A to LS O/P	#	#	#	PHONE A	#	PHONE B	#	PHONE IC	#	PHONE IC	#	#	#	A	Not applicable	ADJUST VOLUME CONTROL CAREFULLY, TO PRODUCE 50% FSD MAXIMUM
5	Harness B to LS O/P	#	#	#	PHONE B	#	PHONE IC	#	PHONE IC	#	PHONE IC	#	#	#	B	Not applicable	ADJUST VOLUME CONTROL CAREFULLY, TO PRODUCE 50% FSD MAXIMUM
6	Harness O/R to LS O/P	#	#	#	PHONE IC	#	PHONE IC	#	PHONE IC	#	PHONE IC	#	#	#	Any	Not applicable	ADJUST VOLUME CONTROL CAREFULLY, TO PRODUCE 50% FSD MAXIMUM
Repeat Test 2 with Cable No 5 connected to 1SK5 and 1SK1 of AAFL																	
Repeat Test 3 to 6 with Cable No 8 connected to 1SK1 and 1SK3 of AAFL.																	

Adjustment of amplifier preset gain control (2R3)

Note:- The following procedure should only be necessary following the replacement of pec 2.

125 With pec 2 removed (see Para 118) and conditions as in Table 24 Test 1, adjust 2R3 for an indication of  $0.65V \pm 10\%$  on the CBTS meter.

Table 25 - Diagnostic Tests AAFL

Test conditions:-

- a Table 24, Test 1 and 2.
- b Para 20.

DC levels

Test point	Result
2TS/3	28V)
2TS/4	28V) With pec 2
2TS/5	18V) connected
2TS/9	18V)
2TS/3	28V)
2TS/4	28V) With pec 2
2TS/5	4V) removed
2TS/9	19V)



5820-99-633-6564 INTERCONNECTING BOX 12-WAY (IB12)

Reference is made to Tels L802; Fig 2559, 2564, 2569 and Table 2524.

DISMANTLING

- 145 a Place the IB12, face down, on a clean flat surface.
- b Unscrew the four 4 mm socket head screws securing the base plate of the box and lift the base plate clear.

Removal of pec 2

- 146 a Remove the two 4 mm slot head screws and washers securing the pec 2 assembly.
- b Carefully lift pec 2 clear of the box.

Discrete components

147 With the removal of pec 2, all discrete components are accessible.

TESTING AND ADJUSTMENTS

Specification Tests

148 Measure the continuity between identical pins of each socket, eg 1SK1/A to 1SK2/A, 1SK3/A and 1SK4/A. Limit LT 0.5 ohm in each case.

Diagnostic Tests

149 Reference is made to Para 148.

5820-99-633-6565 TELEPHONE ADAPTOR BOX (TAB)

Reference is made to Tels L802; Fig 2560, 2565, 2570 and Table 2525.

DISMANTLING

150 a Place the TAB, face down, on a clean flat surface.

b Unscrew the four 4 mm socket head screws securing the base plate and lift the base plate clear.

Removal of pec 2

151 a Remove the four 4 mm slot head screws and washers securing the pec 2 assembly.

b Carefully lift pec 2 clear of the box. Replacement of pec 2 entails transferring the electrical connections from the faulty item to the replacement.

Discrete components

152 With removal of pec 2, all discrete components are accessible.

TESTING AND ADJUSTMENTS

Specification Tests

153 a Check continuity between the following points.

1SK3/K - 1SK3/L  
1SK3/A - 1SK2/A  
1SK3/B - 1SK2/B.

b Table 30 details the specification tests for the TAB.

Diagnostic Tests

154 Reference is made to Para 153.

Table 29 - Specification Tests, Telephone Adaptor Box (TAB)

Test conditions:

- a Set CBTS supply to 18V in accordance with Para 17.
- b Connect Cable No 6 between CBTS IB (HARNESS) and TAB (HARNESS).
- c Connect Cable No 8 between CBTS (RBJ) and TAB (LINES/PHONE).

Notes: 1 Cable Nos refer to Table 31.

2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF							TAB ON/OFF	SPECIFICATION		REMARKS
		METER (S3)	OSC/AUX (S1)	HARNESS (S8)	AUDIO (S9)	DC SELECTOR (S6)	MIN	MAX				
1	Call lamp operation	OFF	OFF	OFF	OFF	CW/DVRS	OFF	OFF	-	-	Call lamp on TAB illuminated	
2	Phone IC to harness phone IC	5V AC	1kHz	PHONE IC	RBJ/PHONE	OFF	ON	ON	2.25V	2.75V		
3	Mic to harness mic IC	#	#	MIC IC	RBJ/MIC	#	#	#	3.0V	4.0V		
4	Telephone supply	AUDIO	OFF	OFF	OFF	#	#	#	18V	18V		

2590-99-741-3626 EMERGENCY CREW CONTROL UNIT (ECCU)

Reference is made to EMER M682.

DISMANTLING

155 a Place the ECCU, face down, on a clean flat surface.

b Unscrew the four 4 mm socket head screws securing the base plate and lift the base plate clear.

Removal of pec 2

156 a Remove the four 4 mm slot head screws and washers securing the pec 2 assembly.

b Carefully lift pec 2 clear of the box. Replacement of pec 2 entails transferring the electrical connections from the faulty item to the replacement.

Removal of Plate assembly

157 a Remove the three pillars securing the plate assembly.

b Carefully lift the plate assembly clear of the box. Replacement of the plate assembly entails transferring the electrical connections from the faulty item to the replacement.

Discrete components

158 With removal of pec 2 and the plate assembly all discrete components are accessible.

TESTING AND ADJUSTMENTS

Specification Tests

159 a Check continuity between the following points.

1SK1/A - 1SK2/A, 1SK1/B - 1SK2/B, 1SK1/C - 1SK2/C,  
1SK1/D - 1SK2/D, 1SK1/E - 1SK2/E, 1SK1/H - 1SK2/H,  
1SK1/K - 1SK2/K, 1SK1/L - 1SK2/L, 1SK1/M - 1SK2/M,  
1SK1/O - 1SK2/O, 1SK1/P - 1SK2/P

b Table 32 details the specification tests for the ECCU.

Diagnostic Tests

160 Reference is made to Para 159.

Table 32 - Specification Tests, Emergency Crew Control Unit (ECCU)

Test conditions:

- a Set CBTS supply to 28V in accordance with Para 17b.
- b Connect Cable No 2 between CBTS (SUPPLY) and ECCU (POWER).
- c Connect Cable No 5 between CBTS (AUDIO) and ECCU (AUDIO).
- d Connect one Cable No 6 between CBTS (RBJ) and ECCU (HARNESS IN).
- e Connect one Cable No 6 between CBTS (IB HARNESS) and ECCU (HARNESS OUT).

Notes: 1 Cable Nos refer to Table 31.

2 The symbol # indicates that the switch setting remains unchanged from the previous test.

TEST	TEST DESCRIPTION	CBTS - Remaining switches to OFF						ECCU		SPECIFICATION		REMARKS
		METER (S)	OSC/AUX (S1)	HARNESS (S8)	AUDIO (S9)	PRESSEL (S10)	ON/OFF	MIN	MAX			
1	DC Supply to Audio socket	AUDIO	OFF	OFF	OFF	CW/DVRS	ON	-	-			
2	Audio to ECCU IC	5V AC	1KHZ	PHONE A IB RANGE	MIC HI	ON	#	12V				PRESSEL lamp illuminated.
3	Audio to ECCU IC	#	#	#	#	OFF	#					Distortion and Frequency test, Para 15 and 16.

Table 30 - Drying , sealing , sealing and leakage tests

Item	Drying		Sealing		Leaking		Item
	Temperature	Duration	Temperature	Pressure	Time constant	Leakage rata	
IB2 & IB2(ANR)	)	)	)	)	MIN 70 hours	MAX 10 cc/hr	IB2 & IB2(ANR)
IB3 & IB3(ANR)	)	)	)	)	MIN 44 hours	MAX 8 cc/hr	IB3 & IB3(ANR)
CB2 & CB2(ANR)	)	)	)	)	MIN 35 hours	MAX 5 cc/hr	CB2 & CB2(ANR)
CB3 & CB3(ANR)	)	)	)	)	MIN 47 hours	MAX 7.5 cc/hr	CB3 & CB3(ANR)
CBF & CBF(ANR)	)	)	)	)	MIN 31 hours	MAX 5.5 cc/hr	CBF & CBF(ANR)
CPU & CPU(ANR)	MIN 50°C	)	MIN 15°C	)	MIN 17 hours	MAX 8 cc/hr	CPU & CPU(ANR)
DB & DB(ANR)	)	24 hours	)	8.0 lbf/in <sup>2</sup> ±5%	MIN 45 hours	MAX 8 cc/hr	DB & DB(ANR)
DBS	)	)	)	)	MIN 51 hours	MAX 7 cc/hr	DBS
IBHA	MAX 60°C	)	MAX 25°C	)	MIN 55 hours	MAX 8 cc/hr	IBHA
RAB	)	)	)	)	MIN 44 hours	MAX 5.3 cc/hr	RAB
IBRA	)	)	)	)	MIN 55 hours	MAX 4.25 cc/hr	IBRA
SCB	)	)	)	)	MIN 41 hours	MAX 4.8 cc/hr	SCB
RCU	)	)	)	)	MIN 29 hours	MAX 6.4 cc/hr	RCU
RPU	)	)	)	)	MIN 17 hours	MAX 4.25 cc/hr	RPU
AAFL	)	)	)	)	MIN 39 hours	MAX 9 cc/hr	AAFL
RLB(ANR)	)	)	)	)	MIN 51 hours	MAX 13 cc/hr	RLB(ANR)
AIB	)	)	)	See Note	N/A	N/A	AIB
LSTB	)	)	)	)	MIN 16 hours	MAX 12 cc/hr	LSTB
IB12W	)	)	)	)	MIN 51 hours	MAX 12 cc/hr	IB12W
ECCU	)	)	)	)	MIN 25 hours	MAX 5 cc/hr	ECCU

NOTE : AIB no longer sealed L807 Mod Instruction No 18 refers.

Table 31.- Cable Assemblies, CBTS

Cable No	Type	Qty	Primary termination	Secondary termination	Purpose	Length
1	3-way connector 5995-99-630-6541	1	3-way pattern 104 socket	-3-way open-ended	CBTS mains plug to ac mains supply	3 m
2	2-way connector 5995-99-630-6547	1	2-way pattern 105 plug	-2-way, pattern 105 socket	CBTS dc socket to IB2/IB2 (ANR) / IB3/IB3 (ANR) / RLB(ANR) supply plug	1.5 m
3	2-way connector 5995-99-630-6544	1	2-way pattern 105 plug	-2-way, pattern 104 socket	CBTS dc socket to IBRA - RAB supply plug	1.5 m
4	7-way connector 5995-99-630-6545	2	7-way pattern 105 socket	-7-way, pattern 105 socket	CBTS radio plugs to IB2/IB2 (ANR) / IB3/IB3 (ANR) / RLB(ANR) radio plugs	1.5 m
5	7-way connector 5995-99-630-6539	2	7-way pattern 105 plug	-7-way, pattern 105 plug	CBTS audio socket to audio socket of euf. Second connector required when testing SCB.	1.5 m
6	12-way connector 5995-99-630-6540	2	12-way, pattern 104 double density plug	-12-way, pattern 104 double density plug	CBTS harness socket to harness socket of e.u.t. Second connector required when testing DBS	1.5 m
7	12-way connector 5995-99-630-6542	2	12-way pattern 104 plug	-12-way, pattern 104 socket	CBTS LARKSPUR HARNESS plug/RADIO socket to IBRA harness socket and RAB radio plug. Second connector required for RAB J1 socket.	1.5 m
8	10-way connector 5995-99-630-6546	1	10-way pattern 105 socket	-10-way, pattern 105 socket	CBF to CPU and CBF(ANR) to CPU(ANR) RLB(ANR) to CPU(ANR)	1.5 m
9	2-way special 5995-99-630-6548	1	7-way pattern 105 plug	-2 flying leads (pins D and E)	CBTS CWI socket to af probe	1.5 m
10	Single special 5995-99-638-3171	1	7-way pattern 105 plug	-1 flying lead (pin C)	CBTS audio socket to dc probe	1.5 m
11	Field telephone cable, twin 5995-99-630-3172	2	4 mm banana plugs with crocodile clips	-4 mm banana plugs	CBTS remote terminals to remote terminals of e.u.t.	1.5 m
12	28-way pec extension cable assembly Nos 1-28 5995-99-630-6556	1	28-way contact board assy	28-way contact board assy	IB2/IB2(ANR), pec to main assembly Nos 1-28	457 mm
13	28-way pec extension cable assembly Nos 29-56 5995-99-630-6559	1	28-way contact board assy	28-way contact board assy	IB2/IB2(ANR), pec to main assembly Nos 29-56	457 mm
14	2-way special 5995-99-611-5082	1	7-way pattern 105 plug	2-way pattern 105 plug	CBTS audio socket to AWDATS socket of RLB(ANR)	1.5 m

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ELECTRICAL AND MECHANICAL  
ENGINEERING REGULATIONS  
(By Command of the Defence Council)

INS 1-18+INDEX  
TELECOMMUNICATIONS  
F 579  
Misc Instr Index

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

MISCELLANEOUS INSTRUCTION INDEX

Misc Instr	Subject	Issue	Date
1	UK/PRC 350 - Change of grease on Control dials	2	Aug 83
2	UK/PRC 350 - Converter and smoothing unit Assembly No. 16	1	May 79
3	SURF 2 W - Issue of additional Test Kit	2	Sep 81
4	SURF 2 W - Ring Sealing Toroidal, on Meter, Arbitrary Scale	1	Apr 81
5	UK/PRC 350 - Synthesiser Assembly 10	1	Jan 84
6	UK/RT 350 - knob turner	1	Jan 84
7	RT 350 Motherboard, Electronic Assembly - fuselink 2LK2	1	Feb 84
8	UK/RT 350 - damage to ferrite cores	1	Feb 84
9	Insulator plates	1	Feb 84
10	Tx audio - noisy ICs	1	Apr 84
11	Interchangeability of CENTREMs	1	Jun 84
12	Battery cassette Mk I	1	Sep 84
13	Addition of a clip assembly on the 1.2 m whip antennas, Mk I, Mk III and Mk IV	1	Mar 87
14	Low noise resistors for use in DC Loop amplifier	1	Apr 87



CONDITIONS OF RELEASE			
1		3	
2		4	

[Redacted]

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

Note...

This Page 1/2, Issue 2 supersedes Page 1, Issue 1 dated Oct 78. The information has been completely revised.

SUBJECT: UK/PRC 350 - change of grease on Control Dials

INFORMATION

1 It has been found that the Control Dials are subject to seizure when using Grease XG 271. Use of Grease XG 250 (Nato S-736 to Def Stan 59-10/2) will overcome this failure.

ACTION

2

2.1 When failure occurs, demand the following items from stores:

<u>Item</u>	<u>COSA Sect</u>	<u>NSN</u>	<u>Designation</u>	<u>Qty per eqpt</u>
1	Z1	5330-99-649-2445	Ring, Sealing, Torroidal	AR
2	-	-	Grease XG 250 (Nato S-736 to Def Stan 59-10/2)	AR

2.2 Remove Control Dial and shaft from the equipment (Tels F 574 Part 1).

2.3 Clean Control Dial and shaft, discard the used Ring, Sealing, Torroidal.

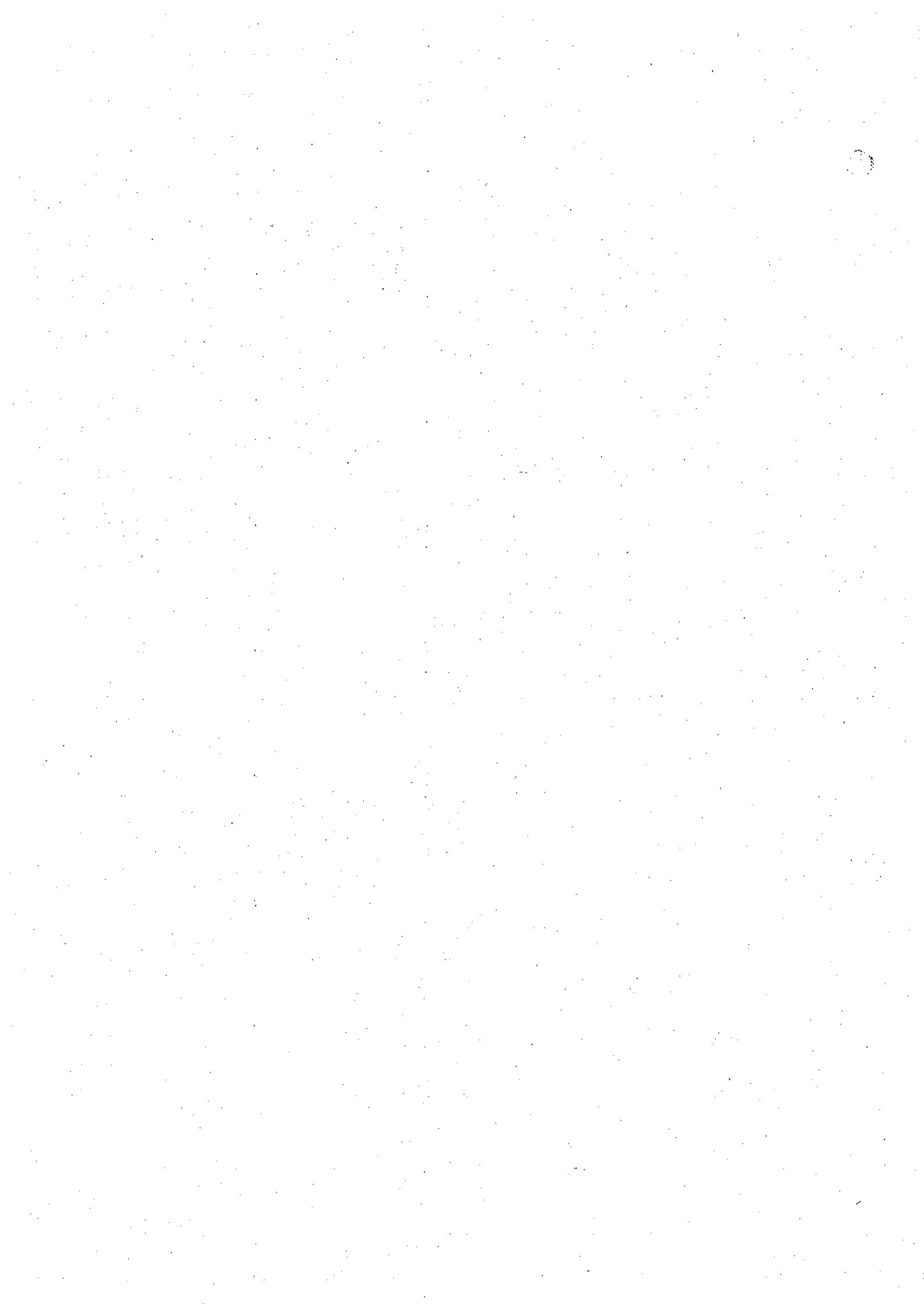
2.4 Lubricate the new Ring, Sealing, Torroidal (Z1/5330-99-649-2445) with Grease XG 250 and fit into the equipment.

2.5 Apply Grease XG 250 to Control Dial shaft and inside the shaft bore.

2.6 Reassemble Control Dial and shaft to the equipment.

42181/EB

END



CONDITIONS OF RELEASE			
1.		3.	
2.		4.	

STATION, RADIO, UK/PRC-350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

SUBJECT: UK/PRC-350 - Converter and smoothing unit assembly No 16  
(Z1/5820-99-622-5138)

INFORMATION

1. Cases have been reported of assembly 16 being received from RAOC stores deficient of the following items:-
  - a. retaining screws for screening can - Qty 3.
  - b. mica insulating washer fitted between TR4 and screening can - Qty 1.
2. When assembly 16 is received with these deficiencies contact LE(A) at the address given below who will organise the issue of the items detailed at paras 1.a. and 1.b.

HQ DGEME EME 8c(2)  
LOGISTIC EXECUTIVE (ARMY)  
PORTWAY  
MONXTON ROAD  
ANDOVER  
HANTS SP11 8HT

T/2581/2 MAG/TELS

END



CONDITIONS OF RELEASE	
1. [REDACTED]	3. [REDACTED]
2. [REDACTED]	4. [REDACTED]

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

Note...

This Page 1, Issue 2 supersedes Page 1, Issue 1 dated Jul 79. The information has been amended.

SUBJECT: SURF 2 W - Issue of additional Test Kit

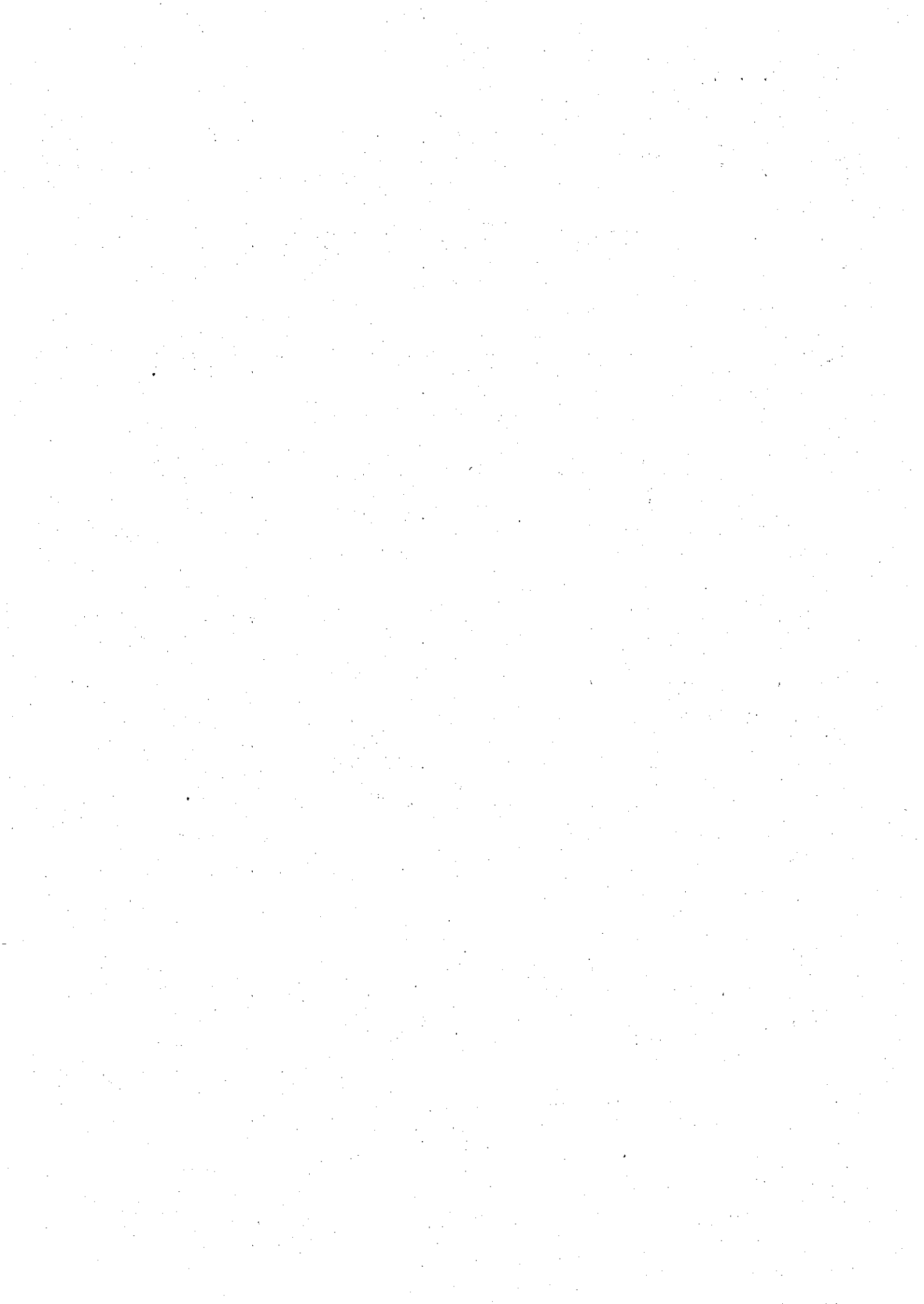
INFORMATION

1. Due to a review of policy, the Test Kit items detailed in F 579 Misc Instr No 3, Issue 1 dated Jul 79 for inclusion in the Voltmeter Set Electronic S 2603 are not now to be issued.
2. Relevant amendment action to F 574, Part 1 has been made.

2581/Tels

END





CONDITIONS OF RELEASE			
1.		3.	
2.		4.	

STATION RADIO UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

SUBJECT: SURF 2 W - Ring Sealing Toroidal, on Meter, Arbitrary Scale.

INFORMATION

1. It has been found necessary to increase the diameter of the ring sealing toroidal, fitted to the meter arbitrary scale. The new sealing ring will be scaled as a spared item.

ACTION

2. If it becomes necessary replace the sealing ring, demand the new ring under the following part number:

<u>Item</u>	<u>COSA Sect</u>	<u>Part No</u>	<u>Description</u>	<u>Qty per eqpt</u>
1	6MT1	5330-99-824-1238	Ring, Sealing Toroidal	1

T/61161/3

END



CONDITIONS OF RELEASE	
1	[REDACTED]
2	[REDACTED]
3	[REDACTED]
4	[REDACTED]

[REDACTED]

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

BY COMMAND OF THE DEFENCE COUNCIL

Sponsor: DGEME

File ref: 61161/3

*Alive Whitmore.*

Publications

Ministry of Defence

Authority: Electronics  
Branch REME

SUBJECT: UK/PRC 350 - Synthesiser 5820-99-110-3478 Assembly 10

INFORMATION

- 1 A considerable number of synthesisers are being received for base repair having had the terminal pins damaged or cut off.
- 2 To avoid costly replacements, units are instructed to exercise great care when removing this unit from its motherboard.

REMOVAL

- 3 The synthesiser should be desoldered from the motherboard using Power Desoldering Set Pace (W3/3439-99-116-6545) (Eng & Misc Y 090/6 refers), and not by cropping the pins.

END





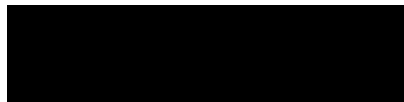
CONDITIONS OF RELEASE	
1	
2	

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

BY COMMAND OF THE DEFENCE COUNCIL

Sponsor: DGEME



File ref: 61161/3

Publications

Ministry of Defence

Authority: Electronics  
Branch REME

SUBJECT: UK/RT 350 - knob turner

INTRODUCTION

1 Difficulties have been encountered with constant turning of the knobs during testing of radios.

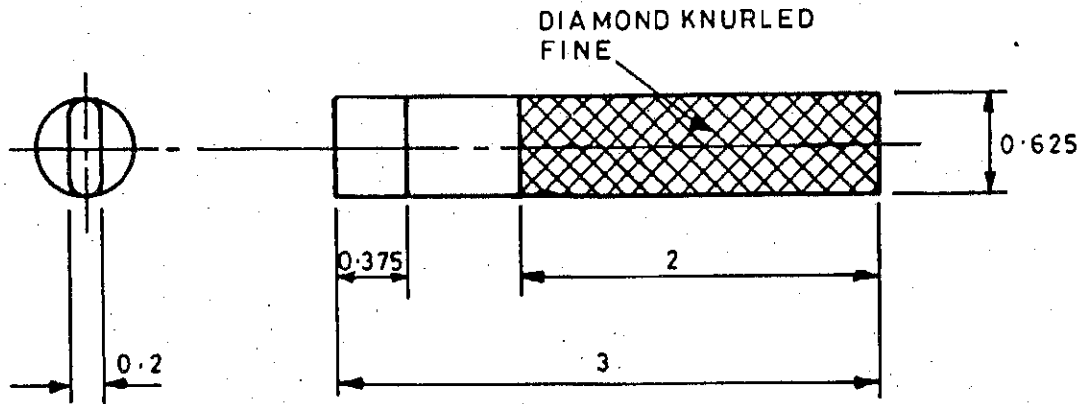
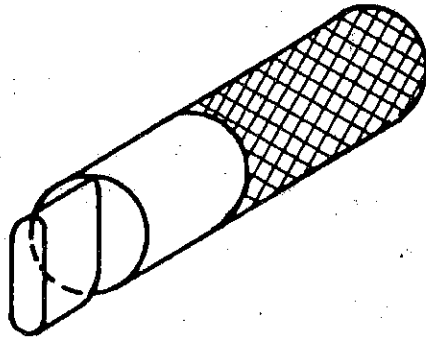
REASON FOR INSTRUCTION

2 To assist in the inspection and testing of UK/RT 351.

ACTION REQUIRED BY UNITS

3 Locally manufacture a tool as detailed in Fig 1, using any suitable material (suggested material: aluminium alloy).





DIMENSIONS IN INCHES

Fig 1 Tool details

END



CONDITIONS OF RELEASE	
1. [REDACTED]	3. [REDACTED]
2. [REDACTED]	4. [REDACTED]

[REDACTED]

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

BY COMMAND OF THE DEFENCE COUNCIL

Sponsor: DGEME

File ref: 61161

Publications

Authority: Electronics  
Branch REME

[REDACTED]  
Ministry of Defence

SUBJECT: RT 350 Motherboard, Electronic Assembly - fuselink 2LK2

INFORMATION

- 1 Replacement of 2LK2, wire link fuse, by a heavier, incorrect gauge of wire can result in damage to the front panel system switch. This is due to reduced protection under fault conditions, ie short circuit on the supply line.
- 2 The p.c.b. marking is incorrect, '40SWG' should read '42SWG'.

ACTION

- 3
  - 3.1 When replacing 2LK2, only the correct gauge of wire, 42 s.w.g. (0.1 mm), is to be used.
  - 3.2 Pending issue of IPC amendments, the NSN is given as follows:  
6145-99-759-9060 Wire, Fuse, 0.1 mm Dia
  - 3.3 Locate and disconnect fuselink 2LK2 on the motherboard.
  - 3.4 Amend the legend '40SWG' to read '42SWG' by gently scraping off the figure 0 and painting the figure 2 in its place using a suitable black paint.
  - 3.5 When the legend is dry, apply a coat of varnish using Varnish, Electrical, Air Drying (Def 32 type 2) or an approved equivalent.
  - 3.6 Reconnect 2LK2 using the fusewire detailed in Sub para 3.2.



EMER AMENDMENTS

4 Tels F 574 Part 1, Page 42, Table D2, path (a), line 7:

Delete: '40 s.w.g.'

Insert: '42 s.w.g.'

END

CONDITIONS OF RELEASE	
1. [REDACTED]	3. [REDACTED]
2. [REDACTED]	4. [REDACTED]
[REDACTED]	

STATION RADIO UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

BY COMMAND OF THE DEFENCE COUNCIL



Ministry of Defence

Sponsor: DGEME

File ref: 42100

Publications

Authority: Electronics  
Branch REME

SUBJECT: UK/RT 350 - damage to ferrite cores

INFORMATION

1

1.1 Third line workshops are receiving an increasing number of Clansman radios that require the replacement of ferrite cores due to damage.

1.2 The damage may be due to units not using the correct trimming tools when making adjustments.

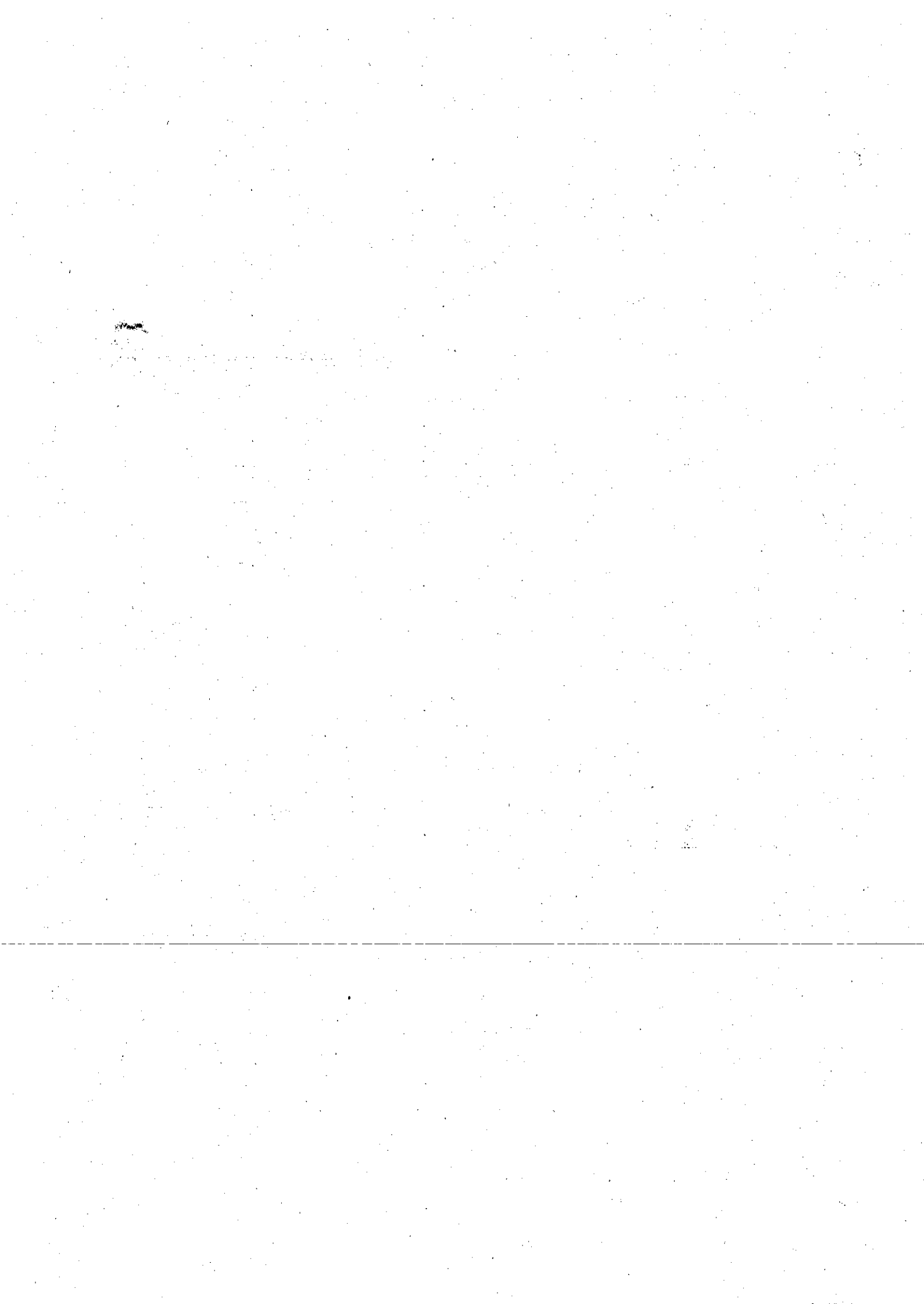
ACTION

2

2.1 Units are to exercise care not to damage ferrite cores when carrying out alignment.

2.2 The correct trimming tool must always be used. Screwdrivers are not to be used.

END



CONDITIONS OF RELEASE

1. [REDACTED]
2. [REDACTED]
4. [REDACTED]

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

BY COMMAND OF THE DEFENCE COUNCIL

Sponsor: DGEME

File ref: 42181

Publications

Authority: Electronics  
Branch REME

[REDACTED]  
Ministry of Defence

SUBJECT: Insulator plates

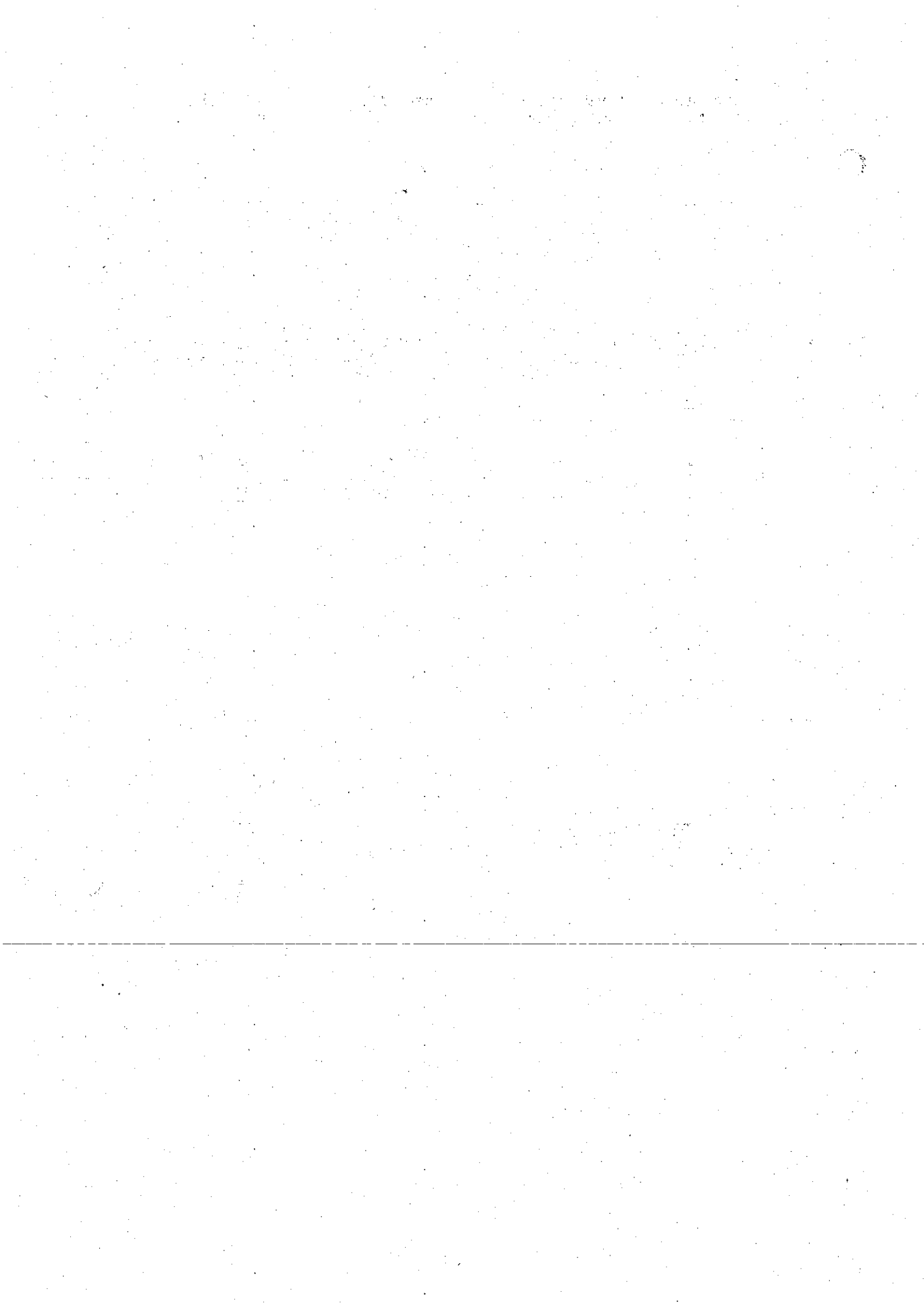
INFORMATION

- 1 There have been made reported cases of CENTREMs being received by base workshops for repair, with the insulator plate, that fits between the CENTREM and the motherboard, missing.
- 2 These insulator plates are in short supply and the deficiency can cause delays in completion of CENTREM repairs.
- 3 The repair policy will be changed such that the insulator plates become field replaceable items.

ACTION

- 4 As an interim measure, all insulator plates are to be retained by field workshops for reuse with the new CENTREM.

END



(By Command of the Defence Council)

CONDITIONS OF RELEASE	
1. [REDACTED]	3. [REDACTED]
2. [REDACTED]	4. [REDACTED]

[REDACTED]

STATION RADIO UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

Sponsor: DGEME

Publications

File ref: 42100

Authority: Electronics  
Branch REME

SUBJECT: Tx audio - noisy ICs

INTRODUCTION

1 Problems have been encountered when trying to meet the specifications due to noisy transmitter audio assemblies. This has been overcome by the use of selected ICs, E3005 and NCY 2644WA in the transmitter audio assembly.

INFORMATION

2 The NSN for the selected version of the E3005 is given as 5962-99-744-6137 and is marked with a green spot. The green spot distinguishes the selected version from the non-selected version, as the manufacturers part number remains the same.

3 The NSN for the selected version of NCY 2644WA is given as 5962-99-744-6138. There is no requirement to mark this further as all versions are selected versions.

INDEX ACTION

4 Enter details of this instruction on the miscellaneous instruction index.

END





(By Command of the Defence Council)

CONDITIONS OF RELEASE	
1.	3.
2.	4.

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

Sponsor: DGEME

Publications

File ref: 42180

Authority: Electronics  
Branch REME

SUBJECT: Interchangeability of CENTREMS

INFORMATION

1 When replacement CENTREMS are fitted, it is essential to carry out the applicable alignment procedure as detailed in Tels F 574 Part 1 prior to any specification testing in order that optimum equipment performance is achieved.

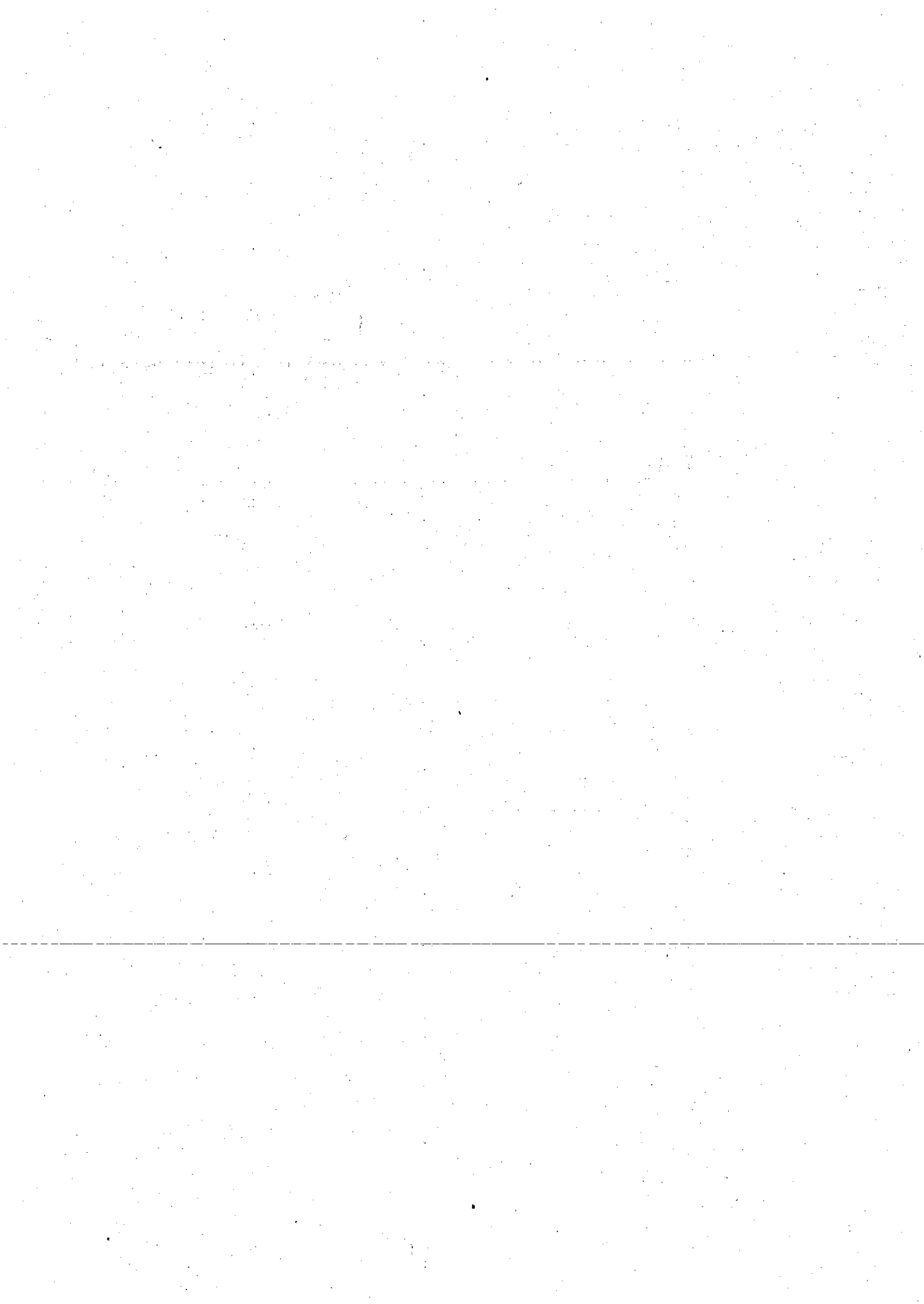
INDEX ACTION

2 Record details of this instruction on the miscellaneous instruction index.

END







CONDITIONS OF RELEASE	
1. [REDACTED]	3. [REDACTED]
2. [REDACTED]	4. [REDACTED]

[REDACTED]

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

Sponsor: DGEME EME 8c(2)

Publications

File ref: 42180

Authority: Electronics  
Branch REME

SUBJECT: Battery cassette 6135-99-661-5088 Mk I

INTRODUCTION

1

1.1 There have been numerous occasions where the battery cassette Mk I has broken apart, separating at the weld between the outer sleeve and the lid, causing the cell carrier to drop out.

1.2 This instruction is designed to prevent further occurrences.

APPLICABILITY

2 All Mk I Battery cassettes.

PRIORITY

3 Immediate

IMPLEMENTATION PLAN

4

4.1 Cassette reinforcement may be implemented by units authorised to carry out field repairs.

4.2 There is no strike off action required.

Action

5 Determine whether the cassette is a Mk I or Mk II. (The Mk II version shows "Mk II" to the right of the Battery polarity symbols, on the side of the sleeve, see Fig 1). The Mk II does not require reinforcement.

Stores, tools and equipment

6

6.1 Stores to be obtained locally

<u>Item</u>	<u>VAOS Sect</u>	<u>NSN</u>	<u>Designation</u>	<u>Qty per eqpt</u>
1	G1	5305-99-121-4832	Screw	2
2	H1	8040-99-943-7791	Araldite	As reqd
3	H1a	8010-99-224-8663	Paint Finishing	As reqd

6.2 Stores to be removed

Nil.

Sequence of operations

7

7.1 Cassette reinforcement procedure

7.1.1 Drill two clearance holes, diameter 3.1 mm, through the outer sleeve of the cassette as detailed in Fig 2.

7.1.2 Drill two holes, diameter 2.2 mm, to a depth of 10 mm into the cell carrier as detailed in Fig 2.

7.1.3 Fill the 3.1 mm diameter clearance holes with Araldite (To prevent the ingress of moisture). Then screw the outer sleeve to the cell carrier, using the two screws referred to in para 6.

7.1.4 Paint over the heads of the two screws using item 3 para 6.

7.2 Cassette repair procedure

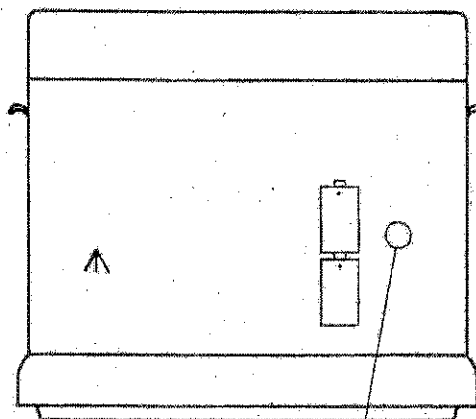
A battery cassette Mk I which has broken sonic welds may be repaired, after embodiment of this instruction, as follows:

7.2.1 Resolder the terminal (If necessary).

7.2.2 Using Araldite, glue the cassette lid onto the cell carrier, at the points where the sonic weld has broken.

EMER AMENDMENTS

8 Nil.

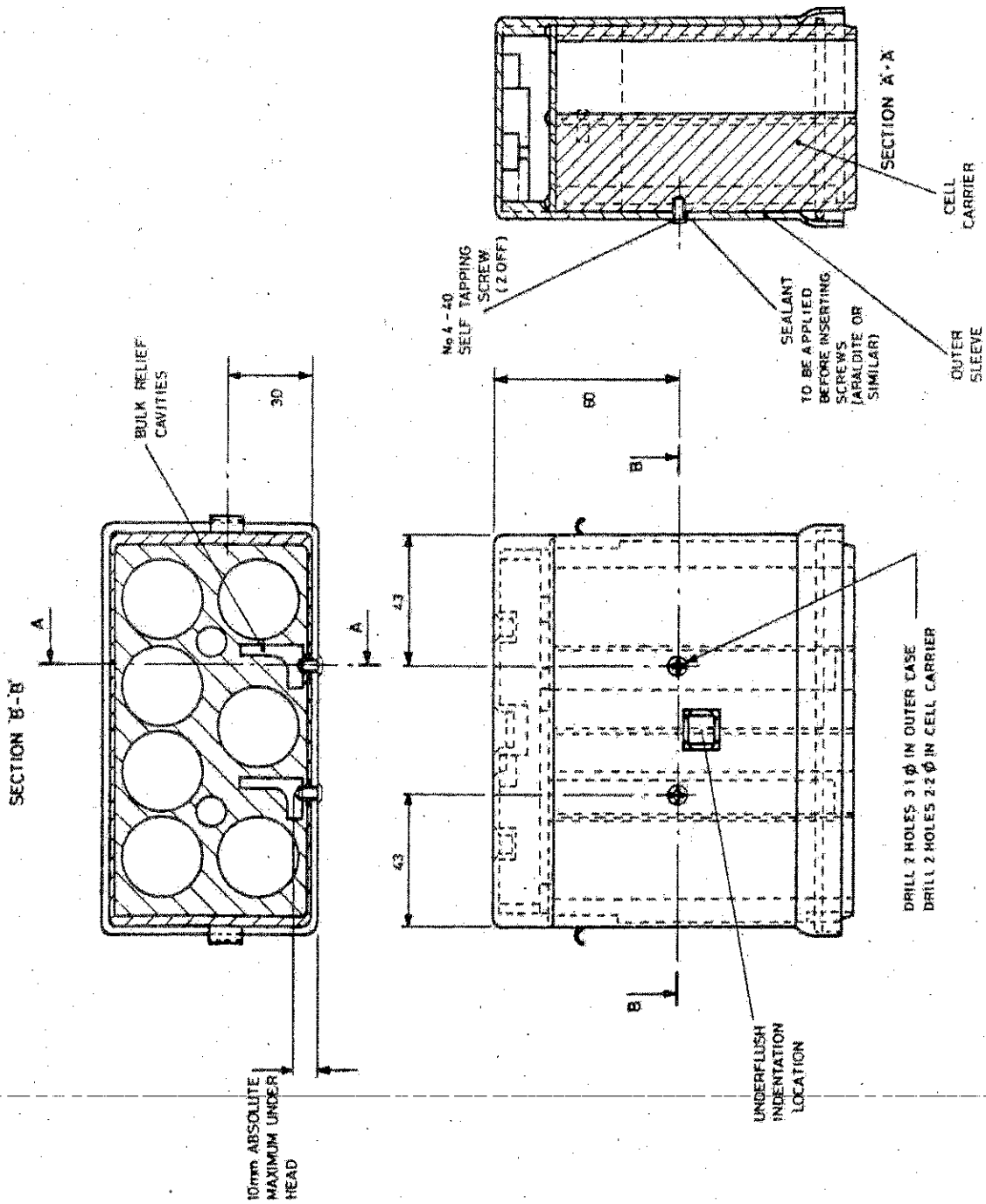


IF MK II APPEARS IN  
THIS AREA THEN MODIFICATION  
IS NOT REQUIRED

95850/2

Fig 1





95850/1

Fig 2

END

CONDITIONS OF RELEASE

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

Sponsor: DGEME

Publications

File Ref: 42180  
(Disk ref: EB/A/V/21 - PE 044)

Authority: Electronics  
Branch REME

SUBJECT: Addition of a clip assembly on the 1.2 metre whip antennas, MK I,  
MK III and MK IV

INTRODUCTION

1 A clip assembly was introduced on the bottom section of the MK IV 1.2 m whip antenna, to ensure that the top section is positively stowed when used as 60 cm whip antenna. This clip assembly can be used as a suitable replacement for the existing clip on the MK I and MK III whip antenna.

APPLICABILITY

- |   |                           |                      |
|---|---------------------------|----------------------|
| 2 | 1.2 m MK IV whip antenna  | NSN 5820-99-633-6375 |
|   | 1.2 m MK III whip antenna | NSN 5820-99-633-6215 |
|   | 1.2 m MK I whip antenna   | NSN 5820-99-620-8025 |

REASON FOR MODIFICATION

- 3 Code 6 - To provide additional facility.

PRIORITY

- 4 Routine.

ESTIMATED TIME REQUIRED

- 5 0.05 man hours.

MODIFICATION IMPLEMENTATION PLAN

6

6.1 This modification may be implemented by units authorised to carry out unit, field or base repairs.

6.2 There are no associated modifications.

Action required by

7

7.1 Units and establishments holding the equipment

7.1.1 Demand stores as required.

7.1.2 On receipt of stores, request the maintenance authority to modify the equipment.

7.2 Units authorised to carry out unit, field or base repair

7.2.1 When requested by units, or during overhaul, if necessary, demand stores and carry out this modification.

7.2.2 Mod strike action is not required.

Stores, tools and equipment

Note...

Refer to Materiel Regulations for the Army Volume 1 Pamphlet 1 Part 1  
Section 10

8

8.1 Stores to be demanded

Stores are to be demanded through normal Ordnance channels quoting this  
EMER as the authority.

<u>Item No.</u>	<u>COSA Sect</u>	<u>NSN</u>	<u>Designation</u>	<u>Qty per eqpt</u>
1	Z99	5820-99-744-5515	Clip Assembly	1

8.2 Tools and equipment

Nil.

Sequence of operation

9 Fully erect the whip antenna.

10

10.1 The MK IV whip antenna NSN 5820-99-633-6375

Fix the clip assembly, NSN 5820-99-744-5515, in a suitable position on the  
bottom section of the antenna by tightening the plastic tie wrap. About  
130 mm and 150 mm from the antenna spigot pin would be an acceptable  
position. Cut short any excess length of the tie wrap.

10.2 The MK III whip antenna NSN 5820-99-633-6215

When the existing clip is damaged and needs to be replaced, remove the  
remaining portion, if any, from the groove of the bottom section of the  
whip antenna and fit the clip assembly NSN 5820-99-744-5515 in the groove,  
by tightening the plastic tie wrap. Cut short any excess length of the  
tie wrap.

10.3 The MK I whip antenna NSN 5820-99-620-8025

When the existing clip is damaged and needs to be replaced. Fit the clip  
assembly NSN 5820-99-744-5515 1 cm above the existing groove on the bottom  
section of the whip antenna by tightening the plastic tie wrap. Cut short  
any excess length of the tie wrap. The remaining portion of the existing  
clip may be removed if required.



TELECOMMUNICATIONS  
F 579 Misc Instr No. 13

ELECTRICAL AND MECHANICAL  
ENGINEERING REGULATIONS

TESTING AFTER EMBODIMENT

11 Nil.

EMER AMENDMENTS

12 Nil.

ATMC No. 02313

END

CONDITIONS OF RELEASE

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

Sponsor: DGEME

Publications

File ref: 61161  
(Disk ref: EB/B/S/31 - PE005)

Authority: Electronics  
Branch REME

SUBJECT: Low noise resistors for use in DC Loop Amplifier

INFORMATION

1 Resistors used on the DC Loop Amplifier were found to generate a high level of noise. The level of noise generated appeared to vary from batch to batch and was not related to any particular value. The specification to which these resistors were purchased did not have any noise measurement parameter and the manufacturer was unwilling to introduce such a parameter. With the exception of 8BR5 and 8BR6 all resistors in Unit 8 were changed to DALE ACI type CMF - 51 resistors with maximum noise limit of  $0.1 \mu\text{V/V}$ .

ACTION

2

2.1 No action is required by unit of field workshops.

2.2 Base wksp are to check against BRIF Misc Instr No. 14.

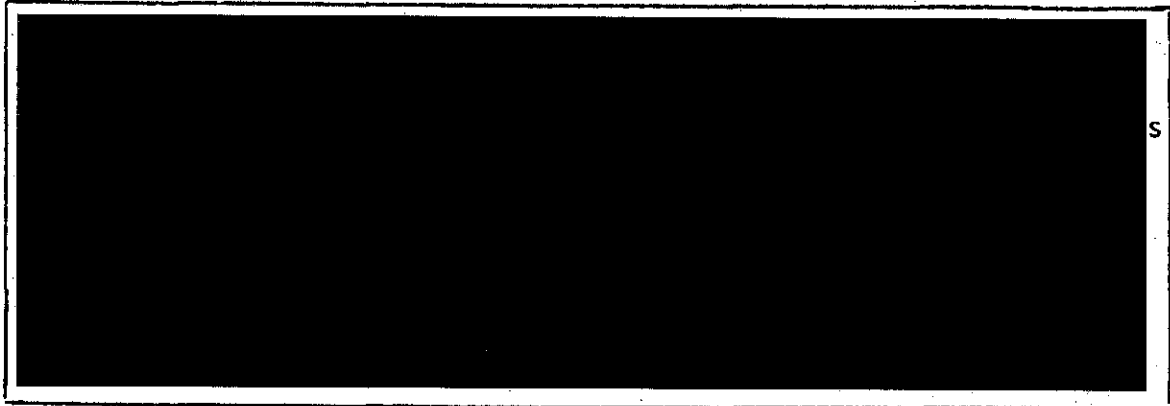
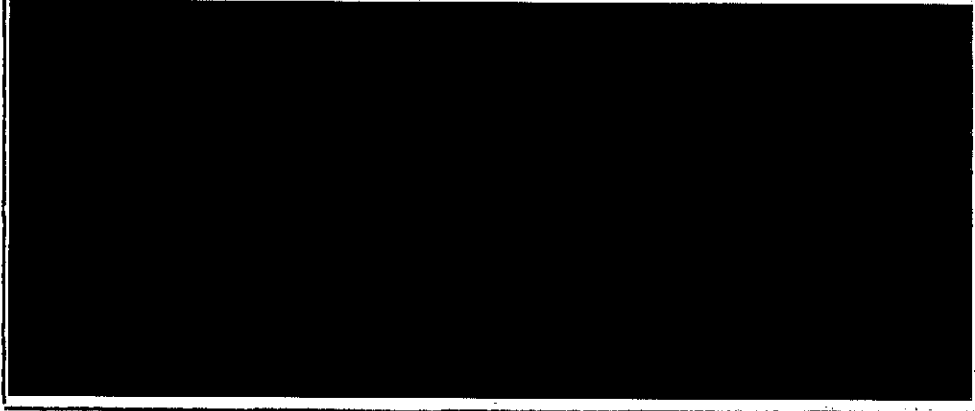
INDEX ACTION

3 Record details of this instruction on the Misc Instr Index.

ATMC No. 02615

END

CONDITIONS OF RELEASE



STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

Sponsor: DGEME

Publications

Authority: Electronics  
Branch REME

File Ref: EB/61161/GEN  
(Disk ref: EB/B/AK/14)

SUBJECT: RT 350 - Introduction of ceramic monolithic chip capacitors

INTRODUCTION

1 Difficulties were experienced in obtaining 'low value' and 'slimbody' radial leaded capacitors for production of the RT 350 equipment. The most readily available equivalents for these were found to be the rectangular monolithic ceramic chip capacitors to BS 9075 M0001. These were fitted in subsequent production.

ACTION

2

2.1 Base workshops

When stocks of existing leaded/axial components are exhausted, see BRIF Book 18, Part 1, Miscellaneous Instruction No. 15 for details on fitting ceramic monolithic chip replacement capacitors.

2.2 All other units

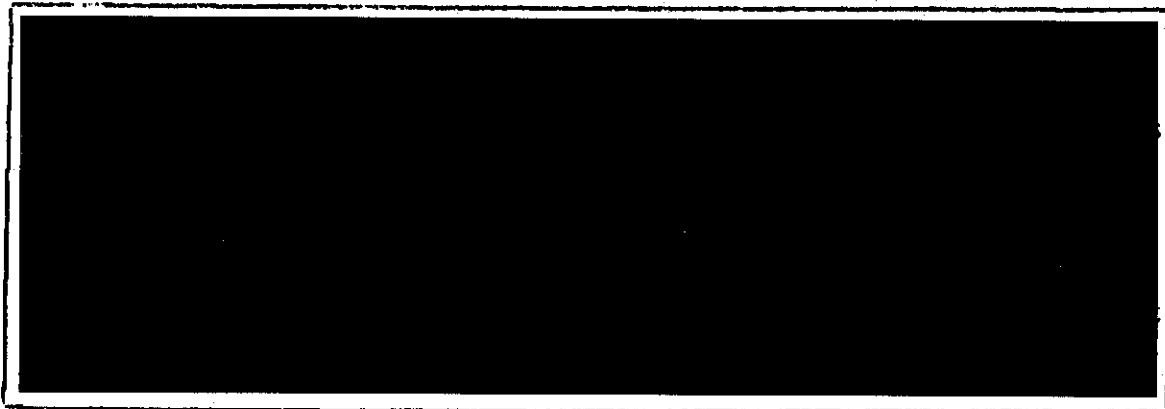
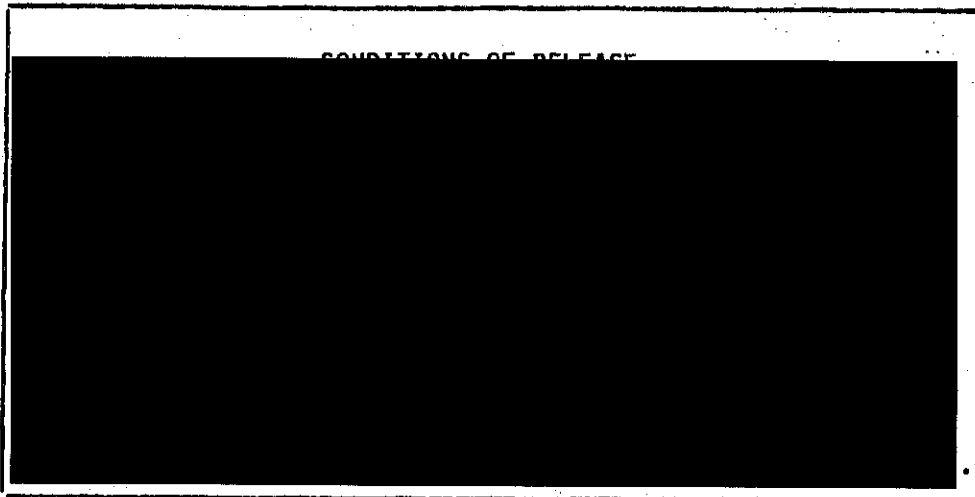
Nil.

2.3 All recipients of this regulation

Enter details of this instruction on the Misc Instr Index.

ATMC Serial No. 02586

END



STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

Sponsor: DGEME  
File ref: 61161/GEN  
(Disk ref: EB/B/AY/29)

Publications  
Authority: Electronics  
Branch REME

SUBJECT: RT 350 - Introduction of Ceramic Chip and Standard Dielectric  
Capacitors

INTRODUCTION

1 Difficulties were experienced in obtaining non-standard and N 150 dielectric capacitors for production of the RT 350 equipment. The nearest readily available alternatives for these capacitors were found to be ceramic monolithic chip capacitors to BS 9075 N0001. These were fitted in subsequent production.

ACTION

2

2.1 Units and Establishments holding the equipment

Nil.

2.2 Units authorised to carry out unit or field repairs

Nil.

2.3 Units authorised to carry out base repairs

When stocks of existing non-standard and N 150 dielectric capacitors are exhausted, see BRIF Book 18, Part 1, Miscellaneous Instruction No. 16 for details on fitting replacement capacitors.

2.4 All recipients of this instruction

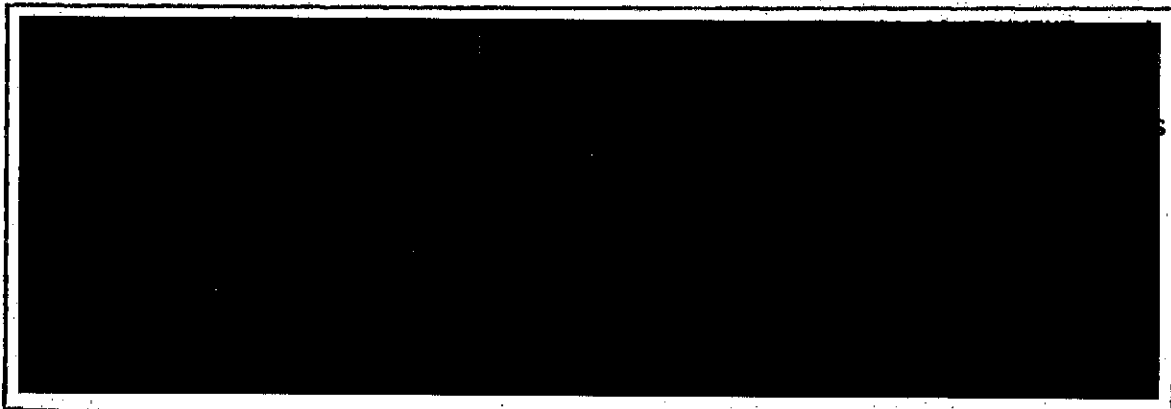
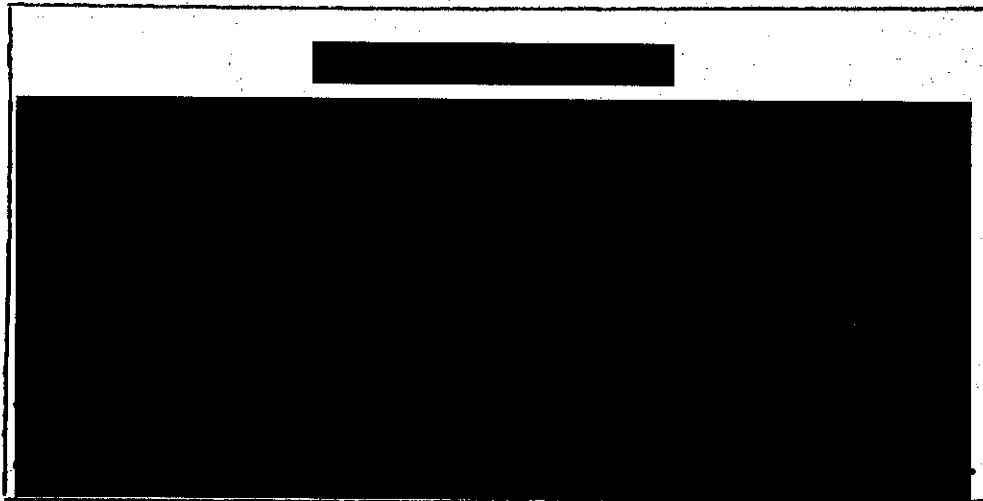
Add particulars of this instruction to the Misc Instr Index.

PUBLICATIONS AMENDMENTS

3 Nil.

ATMC Serial No. 02659

END



STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

Sponsor: DGEME

Publications

File ref: 61161/2  
(Disk ref: EB/A/AB/12)

Authority: Electronics  
Branch REME

SUBJECT: Flexible material used on Motherboard

INTRODUCTION

1. Problems were encountered in manufacture with adhesion between layers of the existing material, so it was found necessary to change the flexible material.



INFORMATION

2

2.1 The new material is Kapton, a polyimide film with a transparent dark copper colour. The copper track is visible through the film. Kapton will be used in new production of RT 350 equipment and all new spare assemblies. Interchangeability of spares is unaffected.

2.2 This instruction is for information only, as no user action is required.

APPLICABILITY

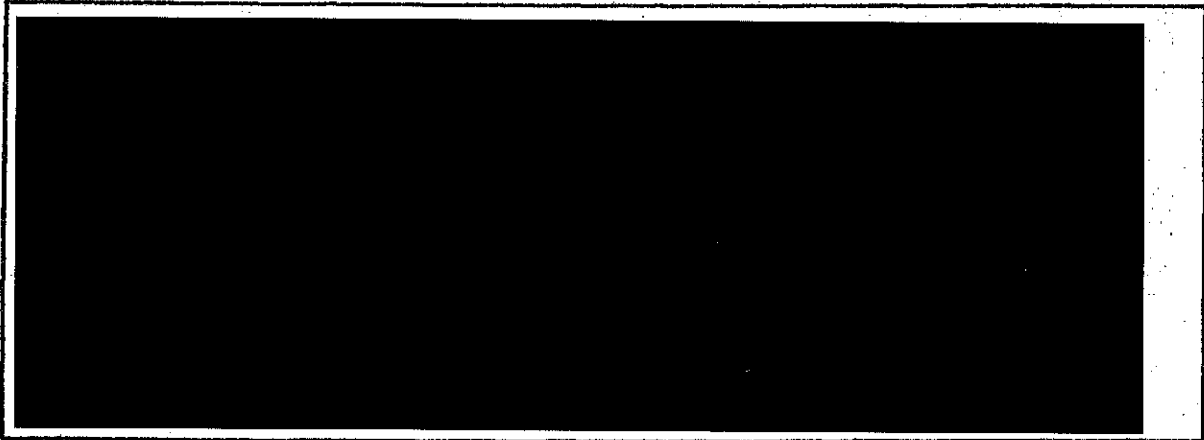
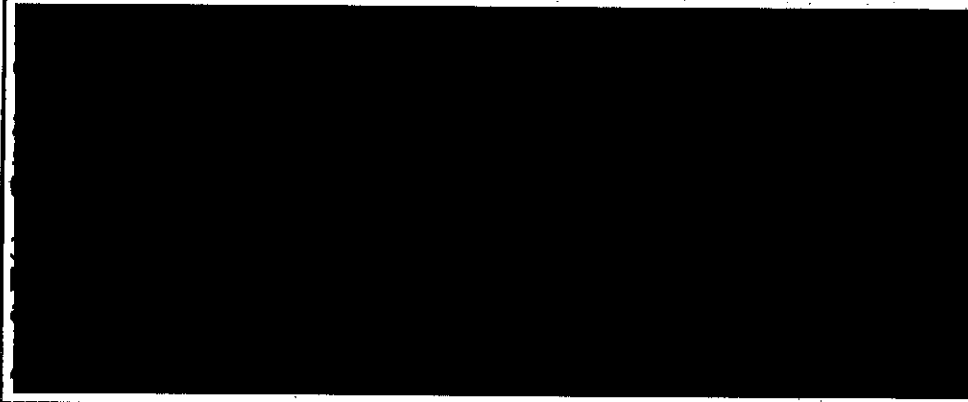
3 Panel Printed Circuit  
part of:  
Transmitter-Receiver, Radio, UK/RT 350

Z99/5820-99-626-2712

Z1/5820-99-114-3638

END

CONDITIONS OF RELEASE



CLANSMAN RADIO UK/PRC 350

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

Sponsor: DGEME

Publications  
Authority: Electronics  
Branch REME

File ref: 61161/3  
(Disk ref: EB/A/BJ/42)

SUBJECT: Antenna Matching Unit - Incorrect Manufacture

INTRODUCTION

1 A quantity of Antenna Matching Units (5820-99-622-5140) have been manufactured with the two wires from the top p.c.b too short.

ACTION

2

2.1 Units and establishment holding the equipment

N11.

2.2 Units authorised to carry out field or base repairs

2.2.1 On receipt of units with short wires, unsolder and remove top cover.

2.2.2 Unsolder and remove two short wires and replace with wires of suitable length.

2.2.3 Replace and resolder top cover.

2.3 All recipients of this instruction

Add particulars of this instruction to Misc Instr Index.

END

1.	[REDACTED]	3.	[REDACTED]
2.	[REDACTED]	4.	[REDACTED]
[REDACTED]			

STATION RADIO UK/PRC 350

TECHNICAL HANDBOOK - REPAIR CHARTS

Errata

Sponsor: DGEME

Publications

File ref: 2581

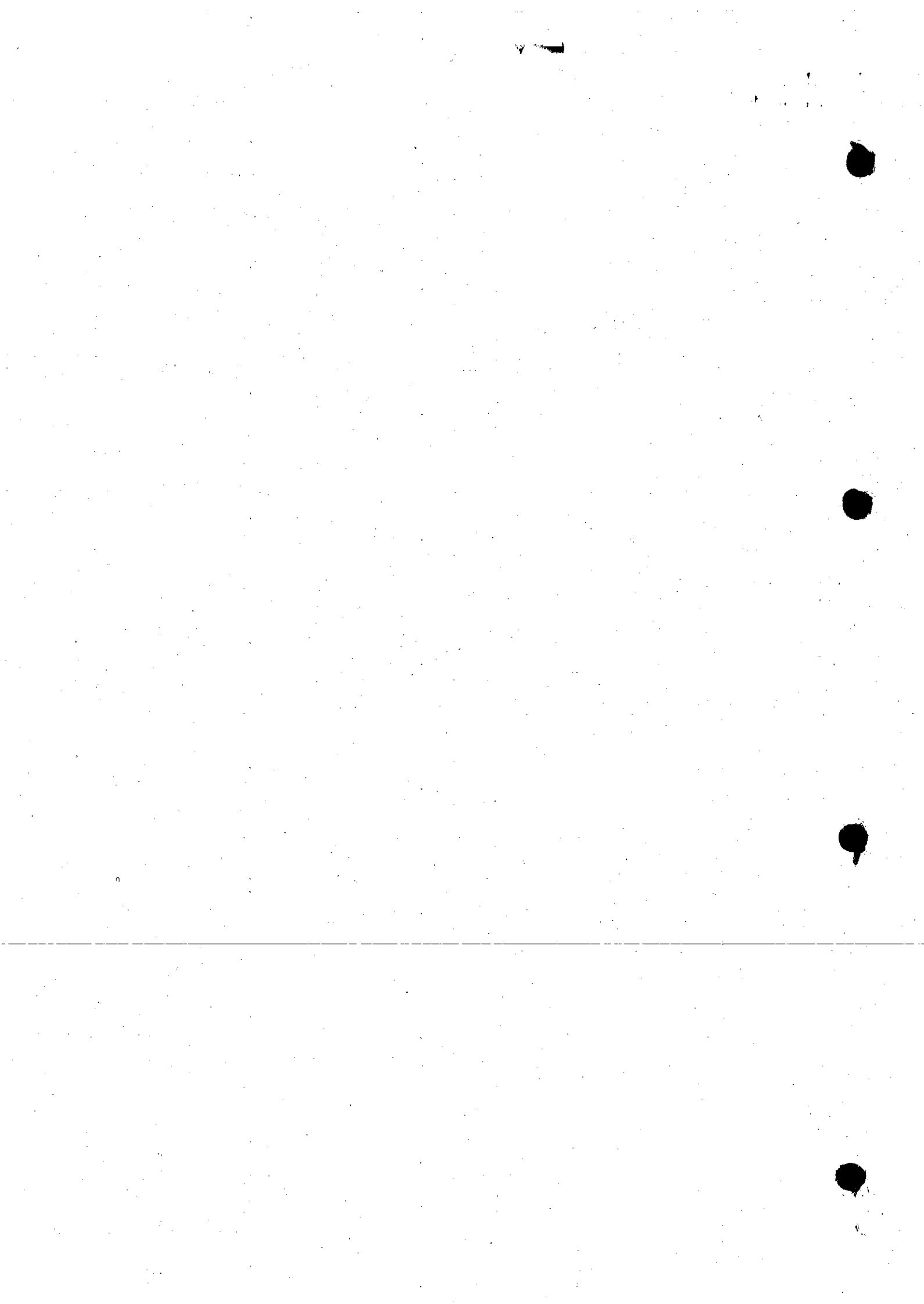
Authority: Electronics  
Branch REME

Note...

This Page 0, Issue 6 supersedes Page 0, Issue 5 dated Jan 79. The information has been completely revised.

- 1 The following amendments must be made to the regulation.
- 2 Page 6, Repair chart No. 3:

Reinsert: "lower right hand symbol marked "DETAIL PARTS"."



Errata

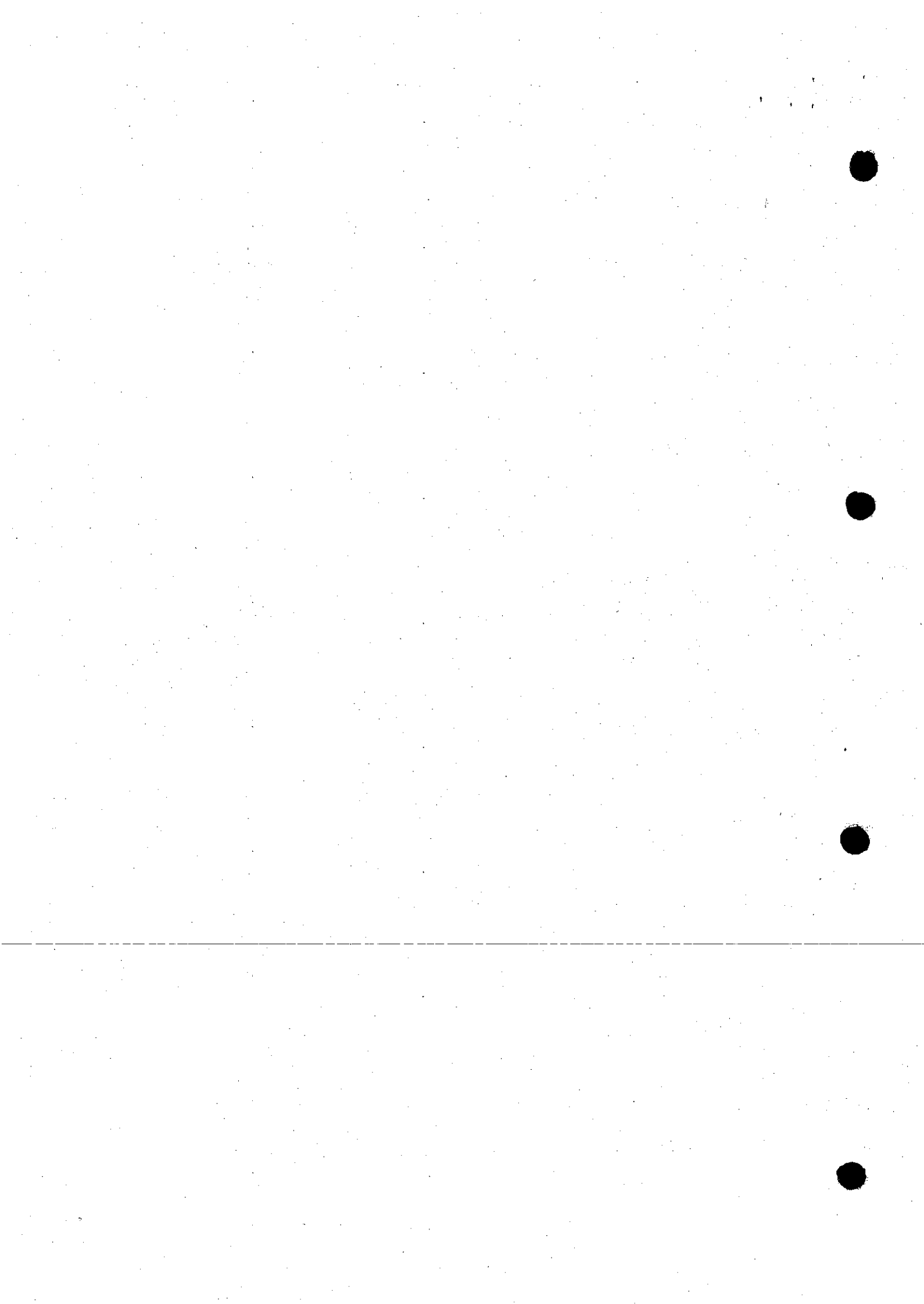
Note: This Page 01 is to be filed immediately in front of Page 1, Issue 5,  
dated Jun 78.

(The following amendments must be made to the regulation).

3. Page 5, Repair chart No 2, bottom right hand corner of figure:

Delete: '▽'

Insert: '□'



CONDITIONS OF RELEASE			
1.		3.	
2.		4.	

STATION RADIO UK/PRC 350

TECHNICAL HANDBOOK - REPAIR CHARTS

**Note:** These Pages 1-10, supersede Page 1, Issue 4, dated Nov 77. Repair chart information is additional.

**Note:** The charts in this regulation may be amended to cover modifications and changes in repair policy. Where they apply to a particular build standard (Field Batch), they will be so annotated. Issue numbers and dates listed below apply to charts depicting the latest build standard.

CONTENTS

	<u>Para</u>
INTRODUCTION ... ..	1
INTERPRETATION OF REPAIR CHARTS ... ..	2
ASSOCIATED PUBLICATIONS ... ..	4

REPAIR CHARTS

<u>Repair chart No.</u>	<u>Equipment part</u>	<u>Page</u>	<u>Issue</u>	<u>Date</u>
1	Radio station UK/PRC 350	4	5	Jun 78
2	Transmitter/Receiver RT 350	5	5	Jun 78
3	Motherboard electronic assembly	6&7	5	Jun 78
4	Selective unit r,f, 2 watt	8	5	Jun 78

TABLE

<u>Table</u>		<u>Page</u>
1	Centrem items ... ..	9

FIGURES

<u>Fig</u>		<u>Page</u>
1	Annotation of repair chart symbols ... ..	2
2	Key to repair chart symbols ... ..	10



INTRODUCTION

1. The repair charts in this regulation are based on Agreed Repair Charts, but have been adopted for use in the Field by simplifying the symbolic information and including additional information which will be required in the course of repair. They reflect the approved policy for the repair of the UK/PRC 350 which may be briefly summarised as follows:

a. Unit repairs

The RT 350 and s.u.r.f. 2 watt are sealed equipments and consequently no attempt should be made at Unit level to carry out repairs other than the exchange of loose CES items of the station, and the replacement of external components as designated in the repair charts.

b. Field repairs

Repair at Field level will be by alignment and adjustment and/or the replacement of assemblies and components as designated in the repair charts.

c. Base repairs

Other than complete overhaul of the main equipment, as is the case when an RT 350 motherboard requires replacing, Base workshops will be responsible for the repair of faulty CENTREMs when backloaded from Field workshops.

INTERPRETATION OF REPAIR CHARTS

2. The repair charts depict the repair policy in diagrammatic form using a series of symbols as shown in Fig 2. All items to which the same repair policy applies and which depend from the same horizontal line on the chart are represented by a single symbol. This symbol may contain a reference to a table where the items represented are listed. The table may be located at the foot of the chart or on a facing page.

3. Information on each item is contained in, or adjacent to the repair chart symbol as applicable. The location of this information is detailed in Fig 1.

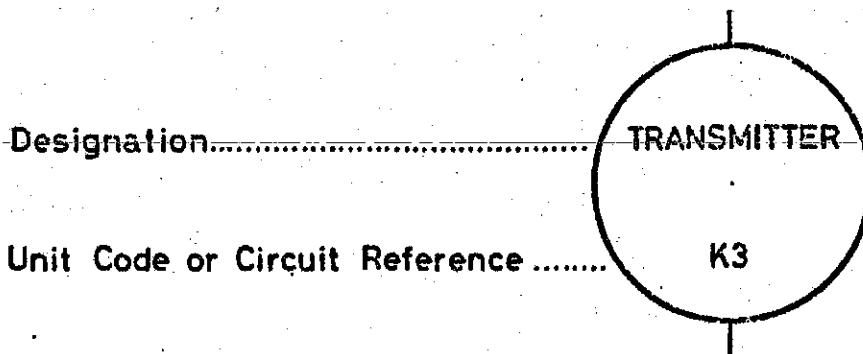
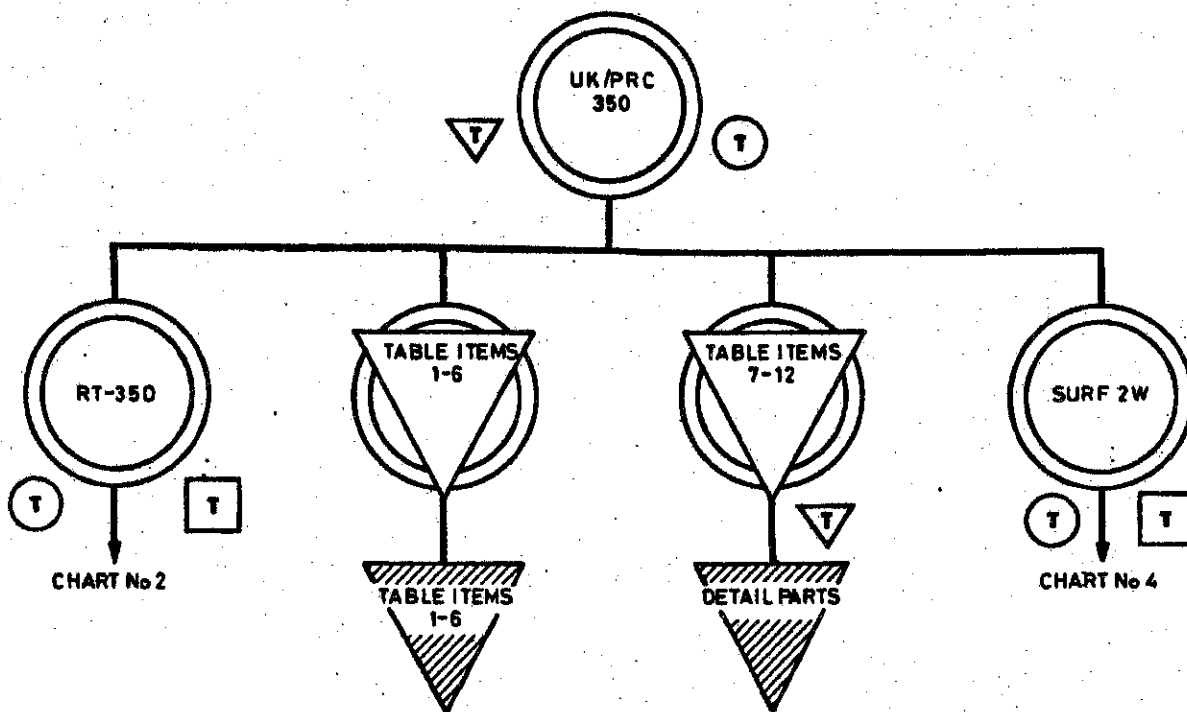


Fig 1 - Annotation of repair chart symbols

ASSOCIATED PUBLICATIONS

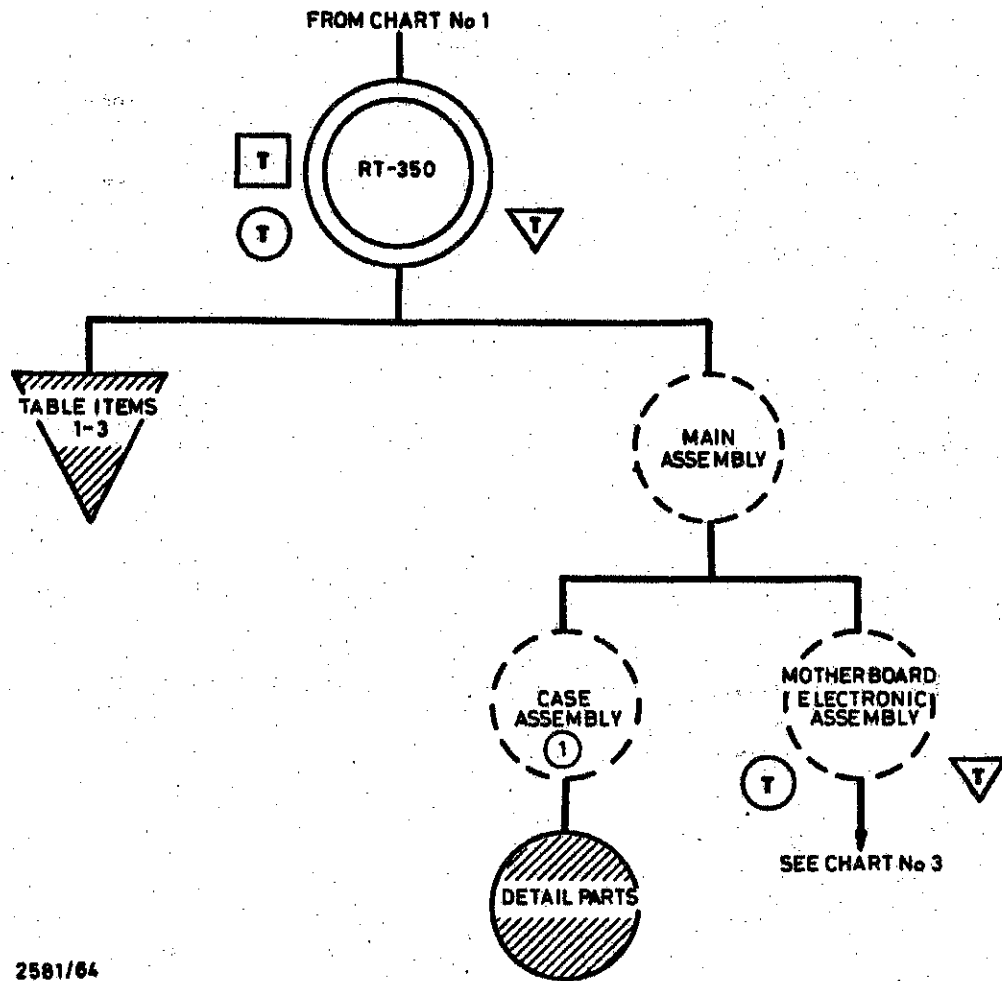
4. The following information may be found in the documents listed:
- a. Forward assembly codes - Tels F 572, Page 2001.
  - b. NATO stock numbers:
    - (1) S.U.R.F. 2 watt, Illustrated Parts Catalogue, Army Code No 61431.
    - (2) Transmitter receiver, radio UK/RT 350, Illustrated Parts Catalogue, Army Code No 61223.



2581/63

Item	Designation	Qty	Remarks
1	Battery dry 19.5V	3	
2	Antenna wire 1.2 m long	1	
3	Cable assembly special purpose	1	
4	Bag ancillaries	1	
5	Strap assembly webbing	2	
6	Pouch handset	1	
7	Handset general purpose	1	See Tels C 740 - C 749
8	Headset infantry and 'B' vehicle	1	See Tels C 740 - C 749
9	Cable assembly switch electrical	1	See Tels C 740 - C 749
10	Audio extension lead	1	See Tels C 740 - C 749
11	Antenna whip 1.2 m long	2	See Tels L 210 - L 219
12	Antenna ground spike	1	See Tels L 210 - L 219

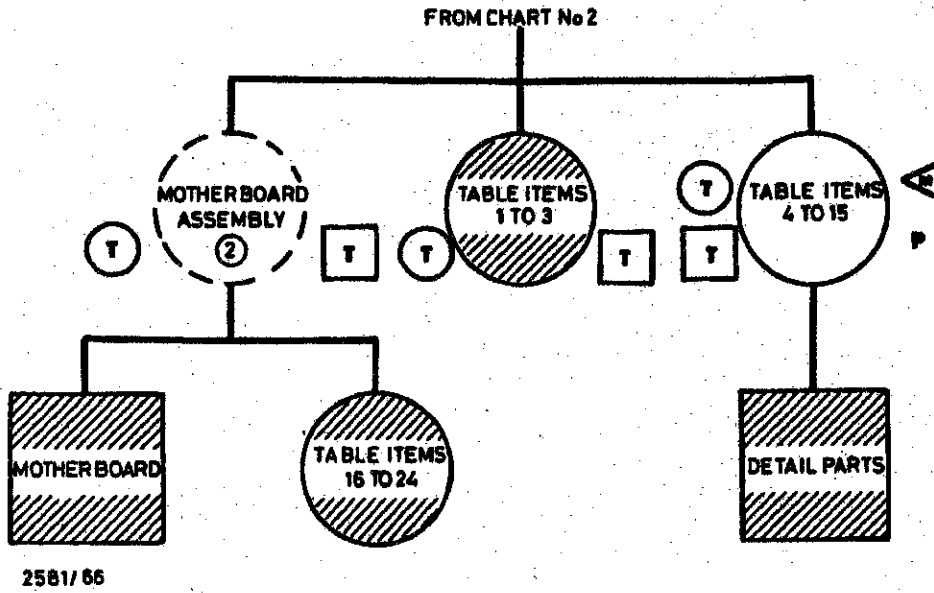
Repair chart No 1 - Radio station UK/PRC 350



2581/64

Item	Designation	Qty	Unit Code/Cct Ref
1	Dust cover, antenna socket	1	
2	Dust cover, audio socket	2	
3	Battery clip with circlips	2	

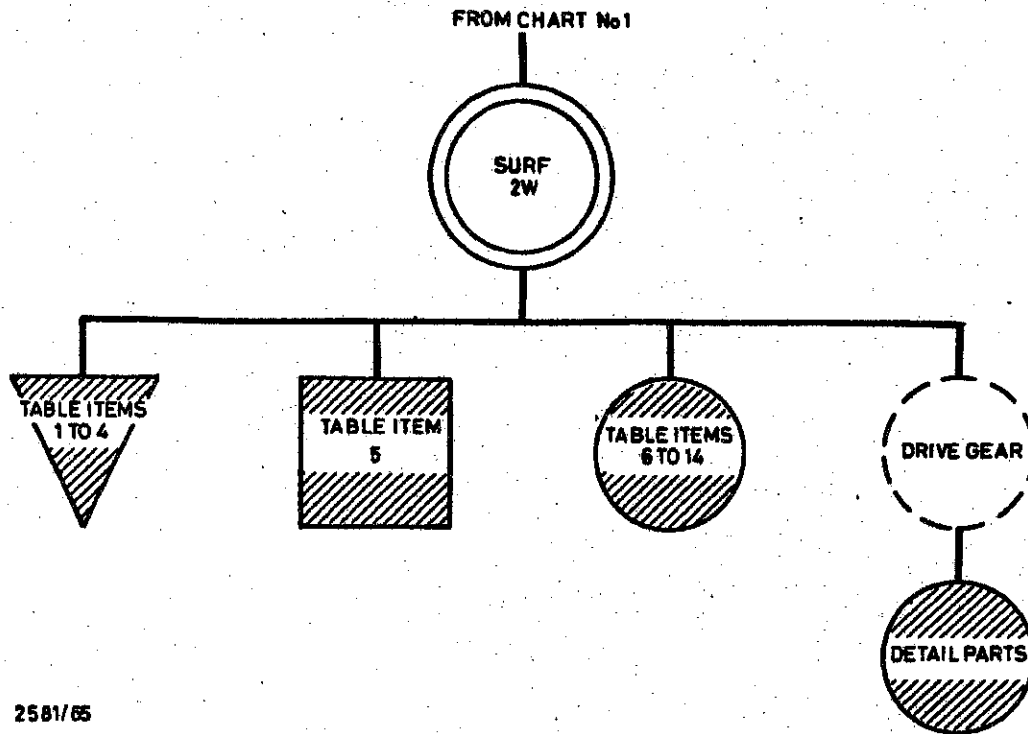
Repair chart No 2 - Transmitter/receiver RT 350



Repair chart No 3 - Motherboard electronic assembly (Part 1)

Item	Designation	Qty	Unit Code/Cct Ref
1	Antenna matching unit	1	Assembly 3
2	R.F. switching unit	1	Assembly 4
3	Amplifier receiver audio	1	Assembly 7
4	Amplifier d.c. loop	1	Assembly 8
5	R.F. head	1	Assembly 5
6	Amplifier i.f. and discriminator	1	Assembly 6
7	Squelch unit	1	Assembly 9
8	Synthesiser, electrical frequency	1	Assembly 10
9	Oscillator receiver	1	Assembly 11
10	Amplifier transmitter audio	1	Assembly 12
11	Oscillator transmitter	1	Assembly 13
12	Transmitter amplifier and filter	1	Assembly 14
13	Transmitter control	1	Assembly 15
14	D.C. converter and smoothing	1	Assembly 16
15	D.C. switching unit	1	Assembly 17
16	System switch	1	2S2
17	Frequency selection switch	1	2S1
18	Reference oscillator	1	2ML1
19	Socket electrical	2	2SK1 and 2SK2
20	Capacitor, fixed, electrolytic	1	2C1
21	Diode	1	2D1
22	Capacitor, fixed	1	2C2
23	Resistor	1	2R1
24	Capacitor, fixed	4	2C3, 2C4, 2C5, 2C6

Repair chart No 3 - Motherboard electronic assembly (Part 2)



2581/65

Item	Designation	Qty	Unit Code/Cct Ref
1	Meter cover and securing screws	1	
2	Coaxial cable clip	1	
3	Screw, knurled head 1.76 in. long	1	
4	Clamp (s.u.r.f. 2 watt to RT 350)	1	
5	Case casting	1	
6	Lid casting and securing screws	1	
7	Socket, battle antenna	1	1SK4
8	Socket coaxial (MB)	2	1SK1 and 1SK3
9	Meter	1	ME1
10	Plug sealing	1	
11	Plug sealing gasket	1	
12	Panel electronic circuit	1	
13	Knob tuning	1	
14	Gasket, lid to case	1	

Repair chart No 4 - Selective unit r.f. 2 watt

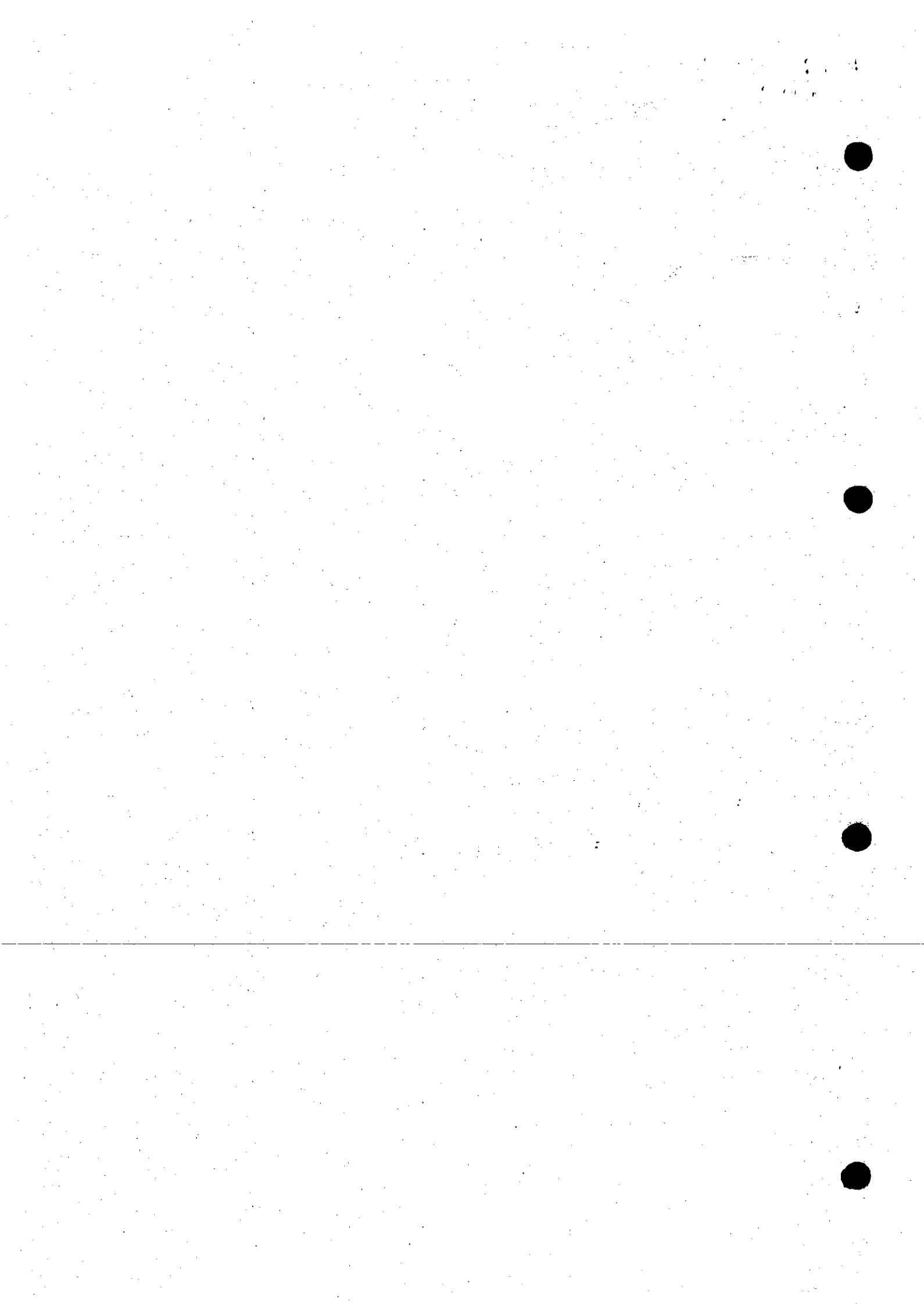
Table 1 - Centrem items

Notes:

1. Items listed are to be repaired at 33 Central Workshop REME.
2. Items for repair are to be sent to No 1 RSSD, DONNINGTON, marked for the attention of the appropriate workshop.
3. Overseas nominated workshop and RSSD - NIL.
4. Items detailed in the following list are subject to the procedure detailed in EMER Mgmt N 504.

VRN	Designation	Unit code No
<u>TRANSMITTER/RECEIVER RT 350 Z1/5820-99-114-3638</u>		
Z1/5820-99-622-5131	Converter, frequency, electronic assembly	5
Z1/5820-99-622-4933	Amplifier, i.f. and discriminator assembly	6
Z1/5820-99-622-4934	Amplifier, d.c. loop assembly	8
Z1/5820-99-622-5133	Squelch unit	9
Z1/5820-99-110-3478	Synthesiser, electrical frequency	10
Z1/5820-99-622-5134	Oscillator, receiver assembly	11
Z1/5820-99-622-5135	Amplifier, audio frequency assembly	12
Z1/5820-99-622-5136	Oscillator, transmitter assembly	13
Z1/5820-99-626-2671	Transmitter and filter unit	14
Z1/5820-99-622-5137	Control, transmitter assembly	15
Z1/5820-99-622-5138	Converter and smoothing assembly	16
Z1/5820-99-622-5139	Switching d.c. unit	17





	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE FIRST LINE REPAIR ORGANIZATION IN THE COURSE OF UNIT REPAIR. NORMALLY RANGED AS A UNIT SPARE.		A DESIGNATION WITHOUT A SYMBOL SURROUND IS USED TO INDICATE A LOGICAL BREAKDOWN AREA WHICH DOES NOT EXIST AS AN ASSEMBLY.
	AN ITEM WHICH IS SUBJECT TO UNIT REPAIR BUT WHICH IS NOT RANGED AS A SPARE.		SYMBOLS REPRESENTING ITEMS WHICH ARE STORED OR CARRIED REMOTE FROM THE EQUIPMENT ARE JOINED TO THE CHART BY BROKEN LINES.
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE SECOND LINE REPAIR ORGANIZATION IN THE COURSE OF UNIT REPAIR. NORMALLY RANGED AS A SPARE.		INDICATES AN ITEM HELD ON USER CHARGE FOR WHICH SPARE ITEMS ARE ALSO HELD BY THE USER.
	AN ITEM WHICH IS SUBJECT TO FIELD REPAIR BUT WHICH IS NOT RANGED AS A SPARE.		INDICATES AN ITEM HELD ON USER CHARGE WHICH IS NOT AVAILABLE IN THE FIELD AS A SPARE.
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE REPAIR ORGANIZATION AT INTERMEDIATE LEVEL. NORMALLY RANGED AS A SPARE.		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT UNIT LEVEL.
	AN ITEM WHICH IS SUBJECT TO INTERMEDIATE REPAIR BUT WHICH IS NOT RANGED AS A SPARE.		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT FIELD LEVEL.
	INDICATES AN ITEM REPLACED BY THE REPAIR ORGANIZATION AT UNIT LEVEL IN THE COURSE OF BASE REPAIR.		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT INTERMEDIATE LEVEL.
	AN ITEM WHICH IS SUBJECT TO BASE REPAIR BUT IS NOT RANGED AS A SPARE.		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT BASE LEVEL.
	CROSS MATCHING WITHIN AN AMF UNIT. THE SYMBOLS REPRESENT THE ITEM REPRESENTED IN A CONSISTENT MANNER.		INDICATES THAT A RE-USABLE PACKAGE IS TO BE PROVIDED FOR GENERAL USE.
	THE SYMBOLS SO ANNOTATED REPRESENT CENTRALISED REPAIR ITEMS (CENTREMS). SEE LIST OF CENTREMS FOR REPAIR RETURN AGENCY.		INDICATES THAT A RE-USABLE PACKAGE IS TO BE PROVIDED FOR USE BETWEEN BASE AND CONTRACTORS.
			INDICATES THAT A RE-USABLE PACKAGE IS TO BE PROVIDED FOR AN ASSEMBLY WHICH IS CARRIED AS AN OPERATOR'S SPARE WITH A MOBILE EQUIPMENT OR SYSTEM.
			INDICATES THAT THE ITEM IS SCHEDULED FOR REPAIR BY CONTRACTORS.
			SHOULD BE INDICATED BY A FIGURE FOLLOWING SYMBOL.
			LIFED USAGE ITEM LIFE IN HOURS, LOS PERMILEAGE ETC. TO BE ANNOTATED.

AMEC 711  
ISSUE 3, OCT 1975

Fig 2 - Key to repair chart symbols

2851/Tels

END

Issue 5, Jun 78



CONDITIONS OF RELEASE	
1. [REDACTED]	[REDACTED]
[REDACTED]	4. [REDACTED]
[REDACTED]	

STATION, RADIO, UK/PRC 350

TECHNICAL HANDBOOK - DATA SUMMARY

BY COMMAND OF THE DEFENCE COUNCIL

Sponsor: DGEME

File ref: 2581

Publications

Authority: Electronics  
Branch REME



Ministry of Defence

Note...

These Pages 1-5/6, Issue 3 supersede Pages 1-4, Issue 2 dated Jun 78.  
The regulation has been completely revised.

WARNING...

SURF 2 W

THIS EQUIPMENT CONTAINS BERYLLIUM/BERYLLIUM OXIDE AND NUCLEAR LAMPS WHICH  
MAY CONSTITUTE HAZARDS DURING THE REPAIR OF THE EQUIPMENT. FULL DETAILS  
OF THESE HAZARDS ARE GIVEN IN TELS F 572.

EQUIPMENT IDENTITY

1	<u>Designation</u>	<u>Catalogue No.</u>
	Station, Radio, UK/PRC 350	Z1/5820-99-628-9658
	Transmitter, Receiver, Radio, UK/PRC 350	Z1/5820-99-114-3638
	Selectivity Unit, Radio Frequency, 2 W	Z1/5820-99-630-6154.

ROLE

2 Primary role:	Manpack station
Secondary role:	Clipped into vehicle and mounted in one of several configurations
Equipment replaced:	Station, Radio, A40
User arms:	Infantry and R Marines at platoon level.

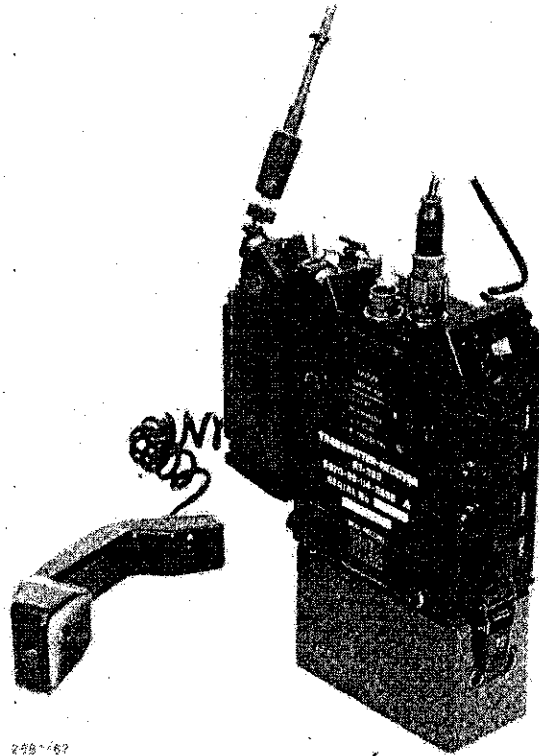


Fig 1 General view

BRIEF DESCRIPTION

3 Manpack v.h.f. transmitter, receiver providing frequency modulated transmission without remote control or rebroadcast facilities. Frequency synthesis is used to provide 840 channels at 25 kHz intervals over the range 36 MHz to 56.975 MHz.

4 Integrated circuits and discrete components are both employed in assemblies and modules which are mounted in two groups, bolted respectively to the case and the lid of a hermetically sealed metal box. All connections between case and lid are made via a flat flexible wiring loom. Assemblies can be unsoldered and removed after the parent group has been loosened.

Accessories carried in bag

- 5 Antennae: 1.2 m whip and 1.2 m wire.  
Ground spike: special.  
Operators carrying harness.  
Primary battery.  
Clansman general purpose headset and handset.  
Headset, Infantry and B Vehicle.  
Cable Assembly, Switch, Electrical.  
Extension leads: battery and audio.

Clip in supplementary items

- 6 Vehicle wiring mounting brackets for secondary role.

5/11

Additional audio extension lead.  
Selectivity Unit, Radio Frequency, 2 W (transmitter filter).

PHYSICAL DATA (All details are approximate)

7	<u>Weight</u>	<u>Height</u>	<u>Width</u>	<u>Depth</u>
RT 350:	2.1 kg (4.1/2 lb)	165 mm (6.1/2 in.)	125 mm (5.0 in.)	65 mm (2.1/2 in.)
Primary battery:	1.2 kg (2.1/2 lb)	80 mm (3.1/8 in.)	125 mm (5.0 in.)	50 mm (2.1/8 in.)
SURF 2 W (complete with coaxial cable):	0.75 kg (1.1/2 lb)	140 mm (5.1/2 in.)	50 mm (2.1/8 in.)	65 mm (2.1/2 in.)

CLIMATIC RANGE

8 Temperature:

Operating:

-40 °C to +52 °C plus allowance for solar radiation. At low temperature, battery carried in operators clothing, on extension lead.

Storage:

-40 °C to +65 °C.

Altitude:

Up to 2 400 m (8 000 ft), operating and storage.

TRANSPORTATION DATA

9 Air transportability:

May be carried, unpressurized, at altitudes up to 7 500 m (25 000 ft) and dropped by parachute using appropriate equipment.

PACKAGING DATA

10 Def 1234 - SRDE/PAK-2002.

OPERATIONAL DATA

Switching

11 Transmit/receive:

By pressel switch in handset or pressel box with headset.

Channel selection:

By four switches.

Functional switch positions:

0 (off), W (whisper), L (loud), \* (noise on).

SURF 2 W

12 Used when sets operate in close proximity to increase spectral purity of transmitter.

PERFORMANCE

13 With 1.2 m whip antenna:

Minimum range is 5 km over average rolling terrain in Western Europe.

Clipped in vehicle:

Dependant on antenna system, 4 km using the 1.2 m whip. 8 km using the 3 m whip in Truck 1-Tonne (part of vehicle installation kit).

ELECTRICAL DATA

14 Frequency range:

36 MHz to 56.975 MHz

Channel spacing:

25 kHz.

Transmitter:

Power output:

Greater than 1 W from 50  $\Omega$  antenna socket into matched load.

Modulation sensitivity:

Loud:

5 kHz deviation for 2 mV audio input.

Whisper:

Same deviation with audio input reduced 20 dB.

Receiver:

Sensitivity:

10 dB S/N ratio for 1  $\mu$ V input.

A.F. output:

3 mV into each earpiece when the output is fed into a matched load of 100  $\Omega$  consisting of three earpieces in parallel (headset and handset used together).

POWER REQUIREMENTS

15 19.5 V primary battery. The equipment has not been designed to work from vehicle supplies even through Clansman D.C. Charging Unit.

Consumption

16 Receiver:

180 mA.

Transmitter:

800 mA.

MAINTENANCE

17

- 17.1 Unit repairs: Renewal of loose CES items and repair where possible.
- 17.2 Field repairs: Renewal of faulty modules and discrete components. Backload CENTREMS for repair.
- 17.3 Base repairs: Overhaul of complete equipment and repair of CENTREMS.

Note...

Special soldering and desoldering tools to be provisioned.

ASSOCIATED PUBLICATIONS

18

- 18.1 Complete Equipment Schedule: UK/PRC 350, Service edition CES 43751. Clip in version, Service edition CES 43751 and 43752.
- 18.2 Illustrated Parts Catalogue: Transmitter, Receiver, Radio, UK/RT 350 Army code 61223.  
Selectivity Unit, Radio Frequency, 2 W Army code 61431.
- 18.3 User Handbook: UK/PRC 350, Army code 61124.
- 18.4 EMERs: Clansman, Audio Accessories, Tels C 740-749.

END





CLANSMAN HARNESS INSTALLATION TEST SYSTEM  
TECHNICAL HANDBOOK - TECHNICAL DESCRIPTION

Errata

Note: This Page 0 must be filed immediately in front of Page 1 Issue 1, dated Mar 75.

1. The following amendments must be made to the regulation.
2. Page 8, Table 2.
  - a. Amend column 1 to read as follows:

Assembly Code No	Manufacturers Code No
1	-
2	1
3	2
4	3
5	4
6	5

- b. At the foot of the table, add:

Note: Figs 2001-3 depict assemblies 1-6. These are physically marked within the equipment according to the manufacturers code number above.

3864/Tels

Errata

Note: This Page O1 is to be filed immediately in front of Page 1, Issue 1 dated Mar 75.

(The following amendments must be made to the regulation).

3. Page 32, Heading, 'Detailed description (Fig 2004)':

Delete: '(Fig 2004)'

Insert: '(Fig 2010)'.

4. Page 32, Para 102, Line 4:

Delete: 'RYAF VRC'

Insert: 'TXAF VRC'.

5. Page 1003, Table 2004, Column 'Part No':

Delete: 'Dwg No SD/D 243359'

Insert the following Part Nos:

1FLA	-	5935-99-626-5815
1FLB	-	5935-99-626-5479
1FLC	-	5935-99-013-1270
1SRA	-	5935-99-626-5472
1S1	-	5930-99-633-0607
1S2	-	5930-99-630-6254
1S3	-	5930-99-633-0608
1S4	-	5930-99-630-6254
1EM	-	6625-99-635-2604
Assy 2	-	6625-99-633-0655'

3664/Tels

CLANSMAN HARNESS INSTALLATION TEST SYSTEM

TECHNICAL HANDBOOK - TECHNICAL DESCRIPTION

Errata

Note...

These Pages 02-04 are to be filed immediately in front of Page 1, Issue 1 dated Mar 75.

(The following amendments must be made to the regulation).

6. Page 3, FIGURES - (cont):

a. Fig 2013:

Delete: 'Adaptor shorting,'

Insert: 'Adaptor, test, shorting,'

b. Fig 2014:

Delete: 'Adaptor connector,'

Insert: 'Adaptor, test, connector,'

7. Page 6, Table 1:

a. Designation:

(1) Item 5:

Delete: 'Adaptor, connector'

Insert: 'Adaptor, test, connector'

(2) Item 6:

Delete: 'Adaptor, shorting'

Insert: 'Adaptor, test, shorting'

b. Weight:

(1) Item 5:

Insert: '0.63  
(1.3/8 lb)'

(2) Item 6:

Insert: '0.575  
(1.1/4 lb)'

8. Page 8:

a. Para 14:

(1) Sub-para (d):

Delete: 'Adaptor connector'  
Insert: 'Adaptor, test, connector'

(2) Sub-para (e):

Delete: 'Adaptor shorting ) stowed in canvas  
          ) bag'

Insert: 'Adaptor, test, shorting ) stowed in  
          ) haversack'

b. Sub-para 16.(a):

Delete: '6625-99-622-5123'

9. Page 13, Table 7:

a. Primary termination:

(1) Cable Ident No 2:

Delete: '5-way socket'  
Insert: '7-way socket'

(2) Cable Ident No 3:

Delete: '5-way socket'  
Insert: '7-way socket'

b. Secondary termination:

(1) Cable Ident No 2:

Delete: '5-way plug'  
Insert: '7-way plug'

(2) Cable Ident No 3:

Delete: '5-way socket'  
Insert: '7-way socket'

10. Page 20, Para 59, Line 1, after 7-way cable assembly:

Insert 'No 9'.

11. Page 24:

a. Para 75, Line 2 after shorting and connector:

Insert: 'test'

Notes...

- (1) This Page 04, Issue 2 supersedes Page 04, Issue 1 dated May 82 and is to be filed immediately in front of Page 1, Issue 1 dated Mar 75.
- (2) The amendments at Sub para 11.b to Para 16 should have been carried out under previous errata issue but are included here as they are still current.

(The following amendments must be made to the regulation).

- b. Para 76, Line 2:  
Delete: 'shorting adaptor.'  
Insert: 'Adaptor, Test, Shorting.'
- 12 Page 25, Para 78, Line 1:  
Delete: 'shorting adaptor'.  
Insert: 'Adaptor, Test, Shorting'.
- 13 Remove and destroy Pages 1001-1004, Issue 2 dated Jun 80.
- 14 Insert new Pages 1001-1004, Issue 3 dated May 82.
- 15 Page 1018, Fig 2013, Title:  
Amend to read: 'Adaptor, Test, Shorting, circuit diagram.'
- 16 Page 1019, Fig 2014, Title:  
Amend to read: 'Adaptor, Test, Connector, circuit diagram.'
- 17 Page 1018, Fig 2013, Title:  
Add at end of title: '(after Mod Instr No. 2).'
- 18 Page 1019, Fig 2014, Title:  
Add at end of title: '(after Mod Instr No. 2).'

3864/EB

CLANSMAN HARNESS INSTALLATION TEST SYSTEM  
TECHNICAL HANDBOOK - TECHNICAL DESCRIPTION

Errata

Note...

This Page 05 is to be filed immediately in front of Page 1, Issue 1 dated Mar 75.

- 1 The following amendments must be made to the regulation.
- 2
  - 2.1 Remove and destroy pages 17 to 22, Issue 1 dated Mar 75 (3 leaves).
  - 2.2 Insert new page 17, Issue 1 dated Mar 75; page 18, Issue 4 dated Apr 93; page 19, Issue 1 dated Mar 75 and pages 20 to 22, Issue 4 dated Apr 93 (3 leaves).
- 3
  - 3.1 Remove and destroy pages 1007 to 1010, Issue 2 dated Jun 78 (2 leaves).
  - 3.2 Insert new page 1007, Issue 2 dated Jun 78; page 1008, Issue 4 dated Apr 93; page 1009, Issue 2 dated Jun 78 and page 1010, Issue 4 dated Apr 93 (2 leaves).
- 4
  - 4.1 Remove and destroy pages 1017 to 1019, Issue 1 dated Mar 75 (2 leaves).
  - 4.2 Insert new page 1017, Issue 1 dated Mar 75; and pages 1018 and 1019/1020, Issue 4 dated Apr 93 (2 leaves).

CLANSMAN HARNESS INSTALLATION TEST SYSTEM  
TECHNICAL HANDBOOK - TECHNICAL DESCRIPTION

Errata

NOTE

This Page 06 is to be filed immediately in front of Page 1, Issue 1 dated Mar 75.

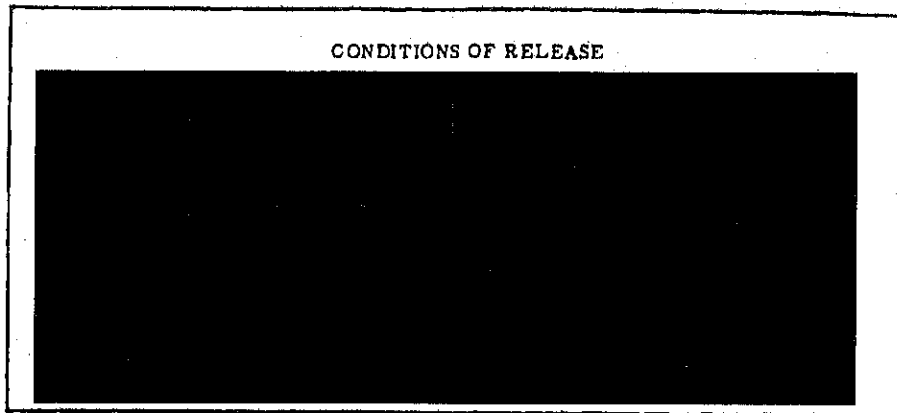
1 The following amendments must be made to the regulation.

2

2.1 Remove and destroy pages 1001 to 1004, Issue 3 dated May 82 (2 leaves).

2.2 Insert new page 1001, Issue 4 dated Oct 97; pages 1002 and 1003, Issue 3 dated May 82; and page 1004, Issue 4 dated Oct 97 (2 leaves).





CLANSMAN HARNESS INSTALLATION TEST SYSTEM

TECHNICAL HANDBOOK - TECHNICAL DESCRIPTION

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INTRODUCTION

Warning

1. The equipment described in this regulation produces high level audio tones. Prior to switching the equipment ON, ensure that all the appropriate gain controls, including those on the unit being tested, are at low settings. This is especially important when the user is wearing a headset assembly.

General

2. Each of the items which together comprise the equipment described herein is dealt with separately. The detailed descriptions should be read in conjunction with Fig 2001 to 2014 to which reference is made. In-text detailed component references are prefixed by assembly code numbers which are listed in Tables 2 to 5.

3. Details of the test procedures to be adopted when using the equipment in its designed role are to be found in EMER Tels M 671.

Role and Purpose

4. The Clansman harness installation test system enables technicians to prove the serviceability of harness boxes, connectors and cables in any installed Clansman radio control harness where the radios are disconnected. Additionally, an Interconnecting box radio adaptor (IBRA) installed in any Larkspur radio control harness may also be tested.



Fig 1 - Clansman harness installation test set, general view

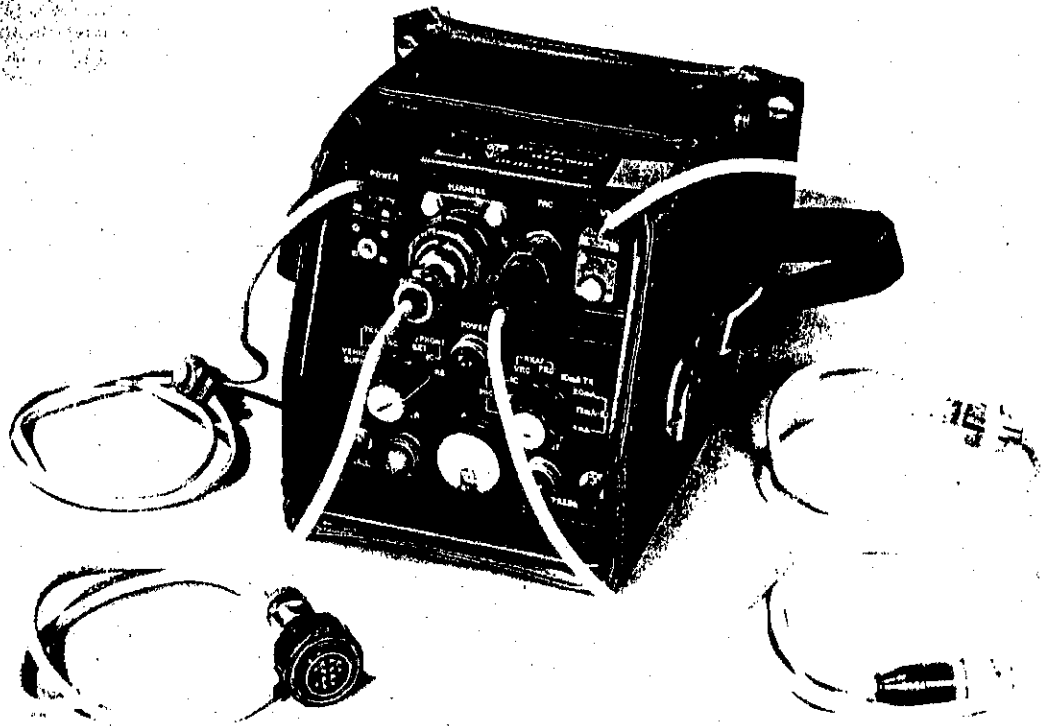


Fig 2 - Test set, interconnecting box, IBRA, general view

Main parameters

Physical parameters

5. Fig 1 and 2 are general views of the equipment.
6. The physical parameters are detailed in Table 1. The figures in brackets give the parameters in imperial units.

Table 1 - Physical parameters

Designation	Height mm	Width mm	Depth mm	Weight kg
Clansman harness installation, test set complete in case with cable assemblies	245 (9 5/8 in)	375 (14 3/4 in)	320 (12 5/8 in)	18.98 (42 lb)
Simulator, radio	125 (4 7/8 in)	255 (10 in)	172 (6 3/4 in)	4.675 (10 1/4 lb)
Test set, interconnecting box	102 (4 in)	200 (7 7/8 in)	120 (4 3/4 in)	2.125 (4 3/4 lb)
Test set, cable assembly	85 (3 3/8 in)	78 (3 in)	200 (7 7/8 in)	1.36 (3 lb)
Adaptor, <sup>test</sup> connector	48 (1 7/8 in)	102 (4 in)	102 (4 in)	<del>0.63</del> 1.3/816
Adaptor, <sup>test</sup> shorting	48 (1 7/8 in)	102 (4 in)	102 (4 in)	<del>0.575</del> 1.1/416
Test set, interconnecting box, IBRA complete in case with cable assemblies	170 (6 3/4 in)	190 (7 1/2 in)	210 (8 1/4 in)	3.97 (8 3/4 lb)
Test set, interconnecting box, IBRA	157 (6 1/4 in)	190 (7 1/2 in)	117 (4 1/2 in)	2.61 (5 3/4 lb)

Electrical parameters

- Radio signal output level: 2.2V ± 10%
- Radio signal output impedance: less than 150Ω
- Radio signal distortion into 150Ω: less than 3%
- Radio signal frequency, radio 'A': 2000Hz ± 10%
- radio 'B': 1120Hz ± 10%
- radio 'C': 640Hz ± 10%
- Microphone signal output level: 15mV ± 10%
- Microphone signal output impedance: 270Ω ± 10%
- Microphone signal distortion into 400 ohms: less than 2%
- Microphone signal frequency: 1660Hz ± 10%
- Frequency response: flat within 1dB over the range of 300Hz to 3kHz falling at greater than 3dB per octave at 10kHz.

Metering accuracy :	± 10% f.s.d. all ranges
Current commands :	Receive, less than 4mA Transmit, 8-11mA Call, greater than 20mA
Cable tests, Continuity fault :	Greater than 15Ω
Insulation fault :	Less than 1MΩ

**Power supply parameters**

8 20-30V DC as detailed in FVRDE specification No. 2070.

**Scaling parameters**

9 The items comprising the equipment are scaled. Scaled items at 1st line will be confined to lamps, lamp covers, knobs and other common FATSO items. Repairs at 2nd line will include the replacement of chassis-mounted components and faulty printed circuit board assemblies.

10 Spare oscillator board assemblies will be issued with three loose capacitors or six loose resistors for the relevant oscillator PEC. The correct value of capacitor or resistors for the appropriate A, B or C oscillator frequency must be selected from these and fitted to the replacement board assembly.

Testing and repair facilities

11 The Test Rig Electronic (MRP) will be available for testing most of the items comprising the Harness Installation Test System. In the absence of this, special-to-type test equipment will be required. Reference should be made to EMER Tels M 674.

**DESCRIPTION**

General

12 The Clansman Harness Installation Test System consists of two independent test sets:-

- |                          |  |
|--------------------------|--|
| (a) Z99/6625-99-620-3595 | Test Set, Radio Control Harness Clansman |
| (b) Z4/6625-99-620-8064  | Test Set, Interconnecting Box, IBRA      |

13 The main items of the two test sets are contained in fully sealed cast alloy boxes which are designed for their respective roles. Printed circuit board techniques are employed throughout. Connecting cable assemblies are provided, together with two adaptors, for the testing of cables and connectors.

14 The Test Set, Radio Control Harness, Clansman (Para 12(a)) comprises the following items which are all housed in a partitioned case fitted with a carrying handle and adjustable shoulder strap:

- |                      |  |
|----------------------|--|
| (a) 6625-99-622-5126 | Simulator, Radio                         |
| (b) 6625-99-622-5128 | Test Set, Interconnecting Box            |
| (c) 6625-99-622-5127 | Test Set, Cable Assembly                 |
| (d) 6625-99-622-5124 | Adaptor, Connector )                     |
| (e) 6625-99-622-5125 | Adaptor, Shorting ) stowed in canvas bag |
| (f) NYA              | Cable Assembly Set )                     |

15 The Test Set, Interconnecting Box is provided with straps which enable it to hang from the technician's neck for hands-free use.

16 The Test Set, Interconnecting Box, IBRA and Cable Assembly Set (Para 12(b)) comprises the following items which are housed separately in a polyurethane-coated nylon case:

- (a) 6625-99-622-5123                      Test Set, Interconnecting Box, IBRA
- (b) NYA                                      Cable Assembly Set

17 The Test Set, Interconnecting Box, IBRA (Test Box only) is provided with straps which enable it to hang from the technician's neck for hands-free use.

Construction

18 Each item of equipment is divided into numbered assemblies, which are individually identified by a simple code number. The assemblies and their code numbers are listed in Table 2-5 inclusive. For the location of these assemblies, reference should be made to Figs 2002, 2005, 2008 and 2011.

19 Throughout the text, references to individual components are prefixed with the relevant assembly code number.

**Table 2 Simulator, Radio : Main Assemblies**

Assembly Code No. (1)	Manufacturer's Code No. (2)	Description (3)	Para Ref. (4)
1	-	Front panel and chassis assembly	23
2	1	RAB/LARCH interface board	)
3	2	Power supply and voltmeter board	)
4	3	Oscillator board 1, 'A' radio	) 33 to 51
5	4	Oscillator board 2, 'B' radio	)
6	5	Oscillator board 3, 'C' radio	)

**NOTE**

Figs 2001-3 depict assemblies 1-6. These are physically marked within the equipment according to the manufacturer's code number above.



Table 3 - Test set, interconnecting box, main assemblies

Assembly	Description	Para ref
1	Case and chassis assy	55
2	Panel electronic circuit	62-67

Table 4 - Test set, cable assembly, main assemblies

Assembly	Description	Para ref
1	Front panel and chassis assy	70
2	Panel electronic circuit	79 - 84

Table 5 - Test set, interconnecting box, IBRA, main assemblies

Assembly	Description	Para ref
1	Front panel and chassis assy	88
2	Panel electronic circuit	95 - 113

20. Fig 2002 shows the physical arrangement of the Simulator radio assemblies. The four oscillator board assemblies are secured in pairs by clips which are themselves secured by BA cheesehead screws. Removal of the clip fixings enables the assemblies to be carefully folded outwards thereby providing access for repair purposes.

21. The electrical wiring to all the assemblies referred to in Table 2 to 5 is terminated by soldered connections.

#### SIMULATOR, RADIO

##### Outline of working

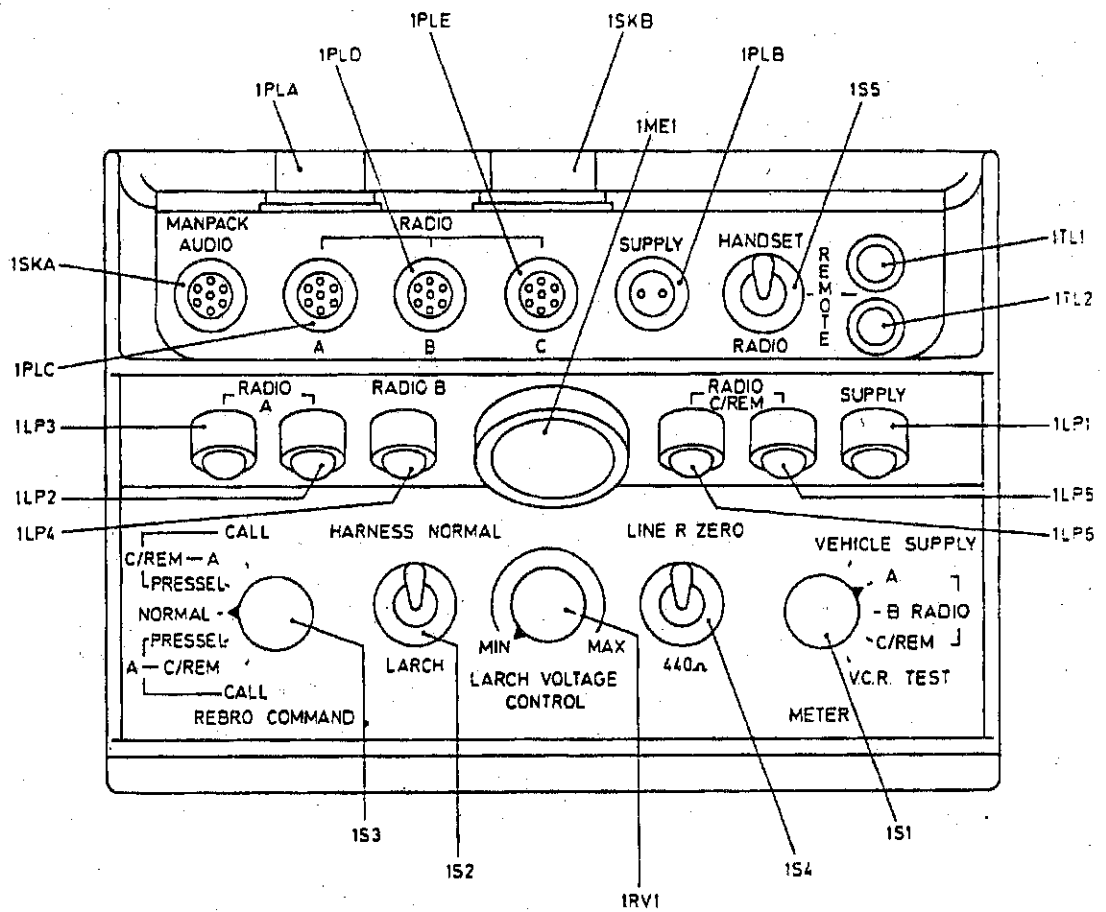
22. The Simulator radio is connected in place of the installed radios to provide the following facilities:-

- (a) An interface simulating the audio conditions and connections of three local Clansman vehicle radios (A, B and C) with the alternatives of the A radio being a Larkspur vehicle radio and the C radio being either Clansman manpack radio or a remote Clansman radio. Simulation of Clansman remote control audio equipment is also provided at the remote terminals.

- (b) Simulation of demodulated radio signals on the phone lines to the harness and the remote terminals by means of internal oscillators which operate at three different audio frequencies.
- (c) Metering of audio signals on the microphone lines from the harness. This facility is used for diagnostic tests.
- (d) Monitoring the presence of transmit and call circuit commands on the radio microphone lines or remote terminals, indicated by coloured lamps.
- (e) A method of testing the Larkspur harness facilities provided by the Radio adaptor box (RAB/LARCH) when used in conjunction with a Clansman harness.

Front panel controls (Fig 3)

23. Fig 3 shows the arrangement of the front panel controls. Table 6 details the control functions.



3864/28

Fig 3 - Simulator radio, front panel controls

Table 6 - Simulator, radio, front panel controls

Circuit Ref	Control	Setting	Facility
1S1	METER	VEHICLE/SUPPLY A B C/REM V.C.R. TEST	Meter indicates vehicle supply. Meter indicates output level of respective simulated radio.  Meter indicates RAB/LARCH control voltage, adjusted by 1RV1
1S2	HARNESS NORMAL/ LARCH	HARNESS NORMAL LARCH	A, B, C/REM radio simulation. Simulation of LARKSPUR radio.
1S3	REBRO COMMAND	NORMAL  A C/REM PRESSEL  A C/REM CALL  C/REM A PRESSEL  C/REM A CALL	Simulation of A, B, C radios.  Simulation of A radio signal rebroadcast by C/Remote radio.  Simulation of A radio calling C/Remote radio.  Simulation of C/Remote radio signal rebroadcast by A radio  Simulation of C/Remote radio calling A radio
1S4	LINE R ZERO/ 440Ω	LINE R ZERO  440Ω	Zero resistance at remote terminals  Simulated line impedance
1S5	HANDSET/RADIO	HANDSET  RADIO	'C' radio oscillator disconnected  'C' radio oscillator connected
1RV1	LARCH VOLTAGE CONTROL	VARIABLE	Adjusts Larch control voltage

Setting up

24. Using the cable assemblies supplied, the equipment is connected in accordance with Table 7.

Table 7 Simulator, Radio : Cables

Cable Ident. No. (1)	Primary termination (2)	Secondary termination (3)
1	2-way socket to Simulator SUPPLY plug	(a) 2-way plug to IB or radio supply lead socket termination (b) 2-way socket to IB SUPPLY plug
2 (Qty 3)	7-way socket to Simulator RADIO plugs A, B and C	7-way plug to radio harness lead socket
3	7-way socket to Simulator RADIO plug OR secondary of cable 2	7-way socket to IB RADIO plug
4	Free-ended twin telephone cable from REMOTE terminals of Simulator to REMOTE terminals of IB2	
5	2-way plug to RAB/LARCH supply lead (to installed radio)	2-way socket to Simulator SUPPLY plug
6	2-way socket to cable 5	2-way plug to RAB/LARCH POWER socket
7	12-way plug to cable 8	(a) 12-way socket to RAB/LARCH harness 12-way plug (b) 12-way plug to RAB/LARCH J1 12-way socket
8	12-way plug to Simulator LARKSPUR radio socket	12-way socket to installed LARKSPUR radio 12-way connector

Functional check

25 With 28V DC applied at SUPPLY plug 1PLB and METER switch set to VEHICLE SUPPLY, the SUPPLY lamp is NOT illuminated. The supply voltage is indicated on the meter. Upon selection of A, B, C/REM RADIO, meter reading lies within 20% to 80% of f.s.d. and the SUPPLY lamp is illuminated. The V.C.R. TEST position is selected when testing a RAB/LARCH.

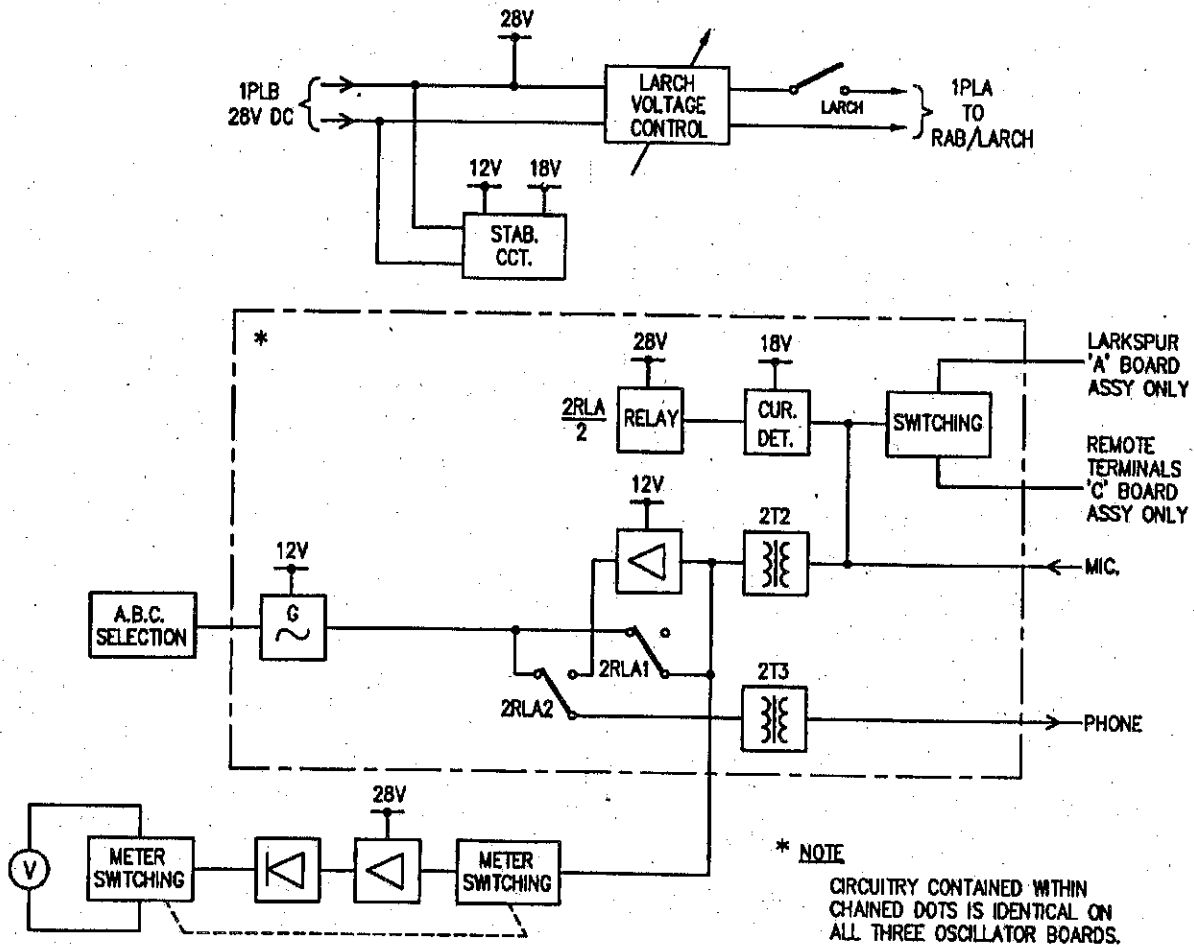


Fig 4 Simulator, Radio : functional diagram

Functional Description (Fig 4)

26 28V DC is applied via plug 1PLB directly to a stabilising circuit which produces two outputs, namely, 18V DC for the current detector circuits and 12V DC for the oscillator circuits. The 28V DC is also used to supply the relays, lamps and the meter amplifier. When testing RAB/LARCH, a voltage determined by the setting of LARCH VOLTAGE CONTROL is applied to plug 1PLA.

27 Fig 4 is a functional representation of a single oscillator board and apart from frequency of operation and the annotated differences, is identical for all three oscillator boards. The discrete A, B or C frequency (Para 7 refers) is achieved by selection of the oscillator tuned circuit capacitor or resistors.

Normal operation

28 When switch 1S1 is set to A, B or C/REM, the selected oscillator output (A, B or C) is applied to the appropriate radio phone lines, via transformer 2T1, relay switch and transformer 2T3. The selected output is also amplified, rectified and then applied to the front panel meter via meter switching circuits.

29 A transmit command at the microphone line is recognised by the current detector circuit which produces an output to energise relay 2RLA/2. Relay contact 2RLA/1 disconnects the oscillator output and completes a circuit to illuminate the appropriate TRANSMIT lamp. Relay contact 2RLA/2 changes over to provide a path from the sidetone amplifier output to the metering circuitry and the phone lines.

30 A call command from the microphone line is recognised by the current detector circuit which completes a circuit to illuminate the appropriate CALL lamp.

31 The remote terminals are connected in parallel with the microphone lines A and B of the C radio output only. A resistor can be switched into the remote circuitry to simulate a line impedance of 440Ω.

Rebro operation

32 Simulation of rebroadcast and call commands are provided by switching circuits at the outputs of the A and C oscillators. Selection of PRESSEL for the A or C oscillator, connects 1.6kΩ across the respective microphone lines. Similarly, selection of CALL connects 10Ω across the microphone lines.

Detailed Description (Fig 2001)

Power supplies

33 The positive line of the 28V DC at pin A of plug 1PLB is applied to a smoothing and control voltage circuit on assembly 2 via pin 14, and the voltage stabilising circuit on assembly 3 via pin 6. The 28V DC negative line at pin B of plug 1PLB is connected to pin 12 of assembly 2 and pin 7 of assembly 3. The stabiliser circuit on assembly 3 produces two outputs, namely 12V DC and 18V DC.

34 The 12V DC output is taken to pin 4 of assemblies 4, 5 and 6 as the supply for the oscillator and sidetone amplifier circuits on each assembly. The 18V DC output is connected to pin 7 of assemblies 4, 5 and 6 as the supply for each of the current detector circuits.

35 The 28V DC supply from pin A of plug 1PLB is connected to pin 11 of assemblies 4, 5 and 6 as the supply for each of the relays. Additionally, the 28V DC is used to supply the lamps 1LP1 to 1LP6 inclusive.

36 The 0V DC at pin 7 of assembly 3 is connected to pin 10 of assemblies 4, 5 and 6.

37 Transistor 1TR1 and variable resistor 1RV1, in conjunction with diode 2D2 and resistor 2R3 form the LARCH VOLTAGE CONTROL circuit. 28V DC is connected to switch 1S1A, directly to the collector of 1TR1 and via resistor 1RV1 to the base. The voltage at the emitter of 1TR1, controlled by resistor 1RV1, is applied via switch 1S2 to pin A of plug 1PLA.

#### Metering circuit

38 With the meter switch 1S1 set to VEH SUPPLY, the meter indicates the 28V DC supply voltage. When switch 1S1 is set to A, B or C/REM, the selected oscillator output is applied to the amplifier input at pin 8 of assembly 3, via 1RLA1, 1S1E and 1S1D, amplified and rectified before application to the meter via switches 1S1B and 1S1C.

39 With switch 1S1 set to VCR, and switch 1S2 set to LARCH, the meter indicates the LARCH supply voltage which is adjusted by the voltage control resistor 1RV1. At the same time, switch 1S1F completes a circuit from 28V to pin K of socket 1SKB via lamp 1LP4.

40 Switch section 1S1F, when set to any position except V.C.R. TEST, connects lamp 1LP4 between 28V DC and the de-energised position of relay contact 5RLA1.

#### Test circuitry

41 The following description is detailed according to the settings of the functional switches 1S2, 1S3 and 1S4.

#### NOTE

This circuit description is applicable to both types of oscillator boards available : NSN 6625-99-633-6906 or NSN 5963-99-766-3100. Although their circuitry is different, these boards are functionally identical. On board NSN 6625-99-633-6906, C1 is used to select the operating frequency of each oscillator. On board NSN 5963-99-766-3100, T1 and C1 do not exist, R3 and R4 are used instead to select the operating frequency of each oscillator.

#### 1S2 NORMAL, 1S3 NORMAL, 1S4 ZERO

42 The output of the oscillator on assembly 4 is applied to pins D and E of plug 1PLC and to pins M and G of socket 1SKB, via transformer 4T1 (see NOTE above), relay contact 4RLA2, transformer 4T3 and pins 12 and 13 of assembly 4.

43 Similarly, the outputs of the oscillators on assemblies 5 and 6 are applied to pins D and E of plugs 1PLD and 1PLE respectively. The oscillator output from assembly 6 is also applied to pins D and E of the manpack audio socket 1SKA via resistors 2R5, 2R6.

44 A transmit command on the microphone lines at pins A and B of plug 1PLC is recognised by the current detector circuit on assembly 4. Pin A of 1PLC is connected to the current detector via one of the secondary windings of transformer 4T2, switch 1S3B and pin 8 of assembly 4. Pin B of 1PLC is connected to 0V via the second winding of transformer 4T2 secondary and switch 1S3A. The current detector completes a circuit to energise relay 4RLA. Contact 4RLA1 closes and the lamp 1LP3 is illuminated. Contact 4RLA2 disconnects the oscillator output and completes an output circuit from the sidetone amplifier which is applied to the phone lines at pins D and E of plug 1PLC via transformer 4T3. The input to the sidetone amplifier is from the microphone lines, at pins A and B of plug 1PLC, via transformer 4T2.

45 A call command on the microphone lines, plug 1PLC, A and B, is recognised by the current detector circuit whose output completes a circuit to illuminate the CALL lamp 1LP2.



46 Switch 1S3B connects resistor 2R11 (1.6k $\Omega$ ) between pins D and A of LARKSPUR socket 1SKB via transformer 4T2 and capacitor 2C3.

47 The circuitry on assembly 5 operates in a similar manner to that of assembly 4 with the exception of the Larkspur connections and the transmit lamps (Para. 44). The circuitry on assembly 6 is identical to that of assembly 4 described in Para. 42. Pin A of plug 1PLE is connected directly to remote terminal 1TL2. Pin B of 1PLE is taken to remote terminal 1TL1 via switch 1S4. When 1S4 is set to 440 $\Omega$ , resistor 2R12 is connected in series with pin B and remote terminal 1TL1.

48 Switches 1S3C and 1S3D perform similar functions for the C radio circuit to those described for the A radio circuit in Para. 44.

1S2 Normal, 1S3A-C/REM CALL, 1S4 Zero.

49 The three oscillator circuits on assemblies 4, 5 and 6 and their associated phone connections remain unchanged from the previous description given in Para. 42 and 43.

50 Switches 1S3A and 1S3B connect resistor 2R7 across the A radio microphone lines, pins A and B of plug 1PLC, via transformer 4T2, and pins 16, 19 of assembly 2. The circuitry for the B and C radio outputs operates as previously described.

1S2 Normal, 1S3A-C/REM Pressel, 1S4 Zero.

51 The three oscillator circuits and their associated phone connections remain unchanged. Switches 1S3A and 1S3B connect resistor 2R8 across the A radio microphone lines, pins A and B of plug 1PLC, via transformer 4T2. Switch 1S3E connects pin E of socket 1SKB to 0V. The remainder of the circuit is unchanged.

1S2 Normal, 1S3 C/REM - A Pressel, 1S4 Zero.

52 The three oscillator circuits and their associated phone connections remain unchanged. Switches 1S3C and 1S3D connect resistor 2R9 across the C radio microphone lines, pins A and B of plug 1PLE, via transformer 6T2 and pins 17 and 21 of assembly 2, and also across remote terminals 1TL1, 1TL2. The circuitry connecting the output of assembly 4 is as described previously in Para. 42 and 43.

1S2 Normal, 1S3 C/REM - A Call, 1S4 Zero.

53 The three oscillator circuits and their associated phone connections remain unchanged. Switches 1S3C and 1S3D connect resistor 2R10 across the C radio microphone lines and remote terminals via transformer 6T2 and pins 17 and 22 on assembly 2.

Switch 1S2 to LARCH.

54 Switch 1S2 connects 28 V, d.c. to pin A of plug 1PLA via the LARCH voltage control circuit which comprises transistor 1TR1, variable resistor 1RV1, diode 2D2 and resistor 2R3.

TEST SET, INTERCONNECTING BOX

Outline of working

55 This unit is connected to any AUDIO socket in a harness installation. Its use is essential for fault finding in the installation since the levels of the working and monitor signals vary according to the settings of the controls in the various harness boxes. For correct diagnosis these levels must be measured.

56 A standard Clansman headset assembly may be used for functional speech and sidetone testing with, or without, the test set.

57 The test set provides the following facilities:-

57.1 Simulation of an audio signal on the microphone lines by an internal oscillator. This signal can be switched on and off as required.

57.2 Measurement of the level of the internal oscillator output applied to the microphone lines.

57.3 Measurement of signal levels on the phone lines by an active metering circuit. This is switched to measure either the working signal applied to the left earpiece or the monitor signal applied to the right earpiece.

57.4 A pressed switch to originate transmit commands.

57.5 Measurement of the supply (either 13 V, d.c. or 18 V, d.c.) to the harness box under test.

57.6 A connection for a headset to the harness item under test via the test set but independent of its test facilities. This provides a means of monitoring the test tones.

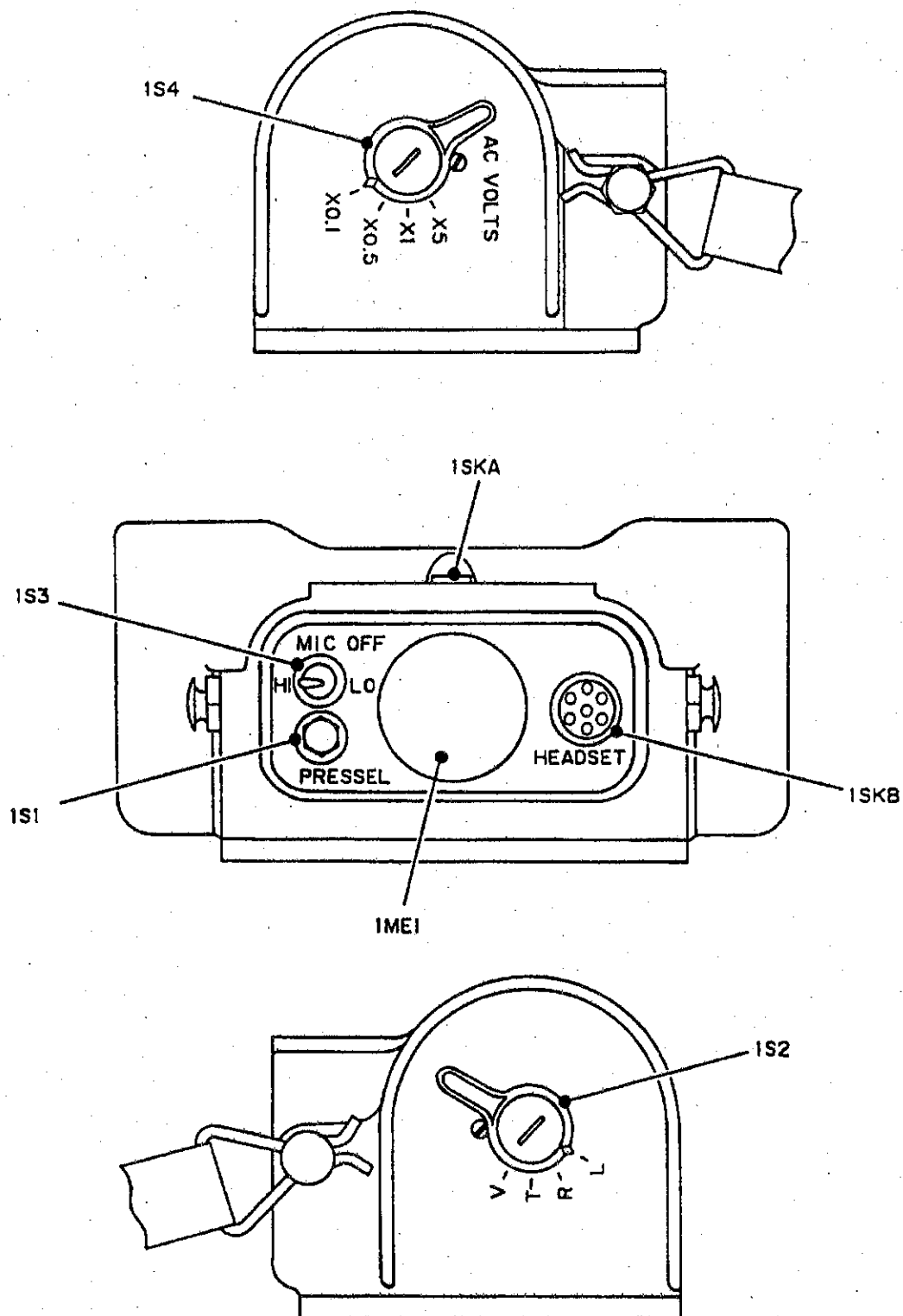


Fig. 5 Test Set, Interconnecting Box front panel controls

Front panel controls (fig. 5)

58 Fig. 5 shows the arrangement of the controls. Table 8 details the control functions.

Table 8 Test Set, Interconnecting Box controls

Circuit Ref.	Control	Setting	Facility
1S1	PRESSEL	Operated	Connects pins F, E of harness box audio socket together thereby initiating a transmit condition
1S2	METER SELECTOR	V	Meter indicates 18 V supply at box under test if connected to an unmodified CPU. Meter indicates 13 V supply at box under test if connected to an ANR modified CPU
		T	Meter indicates output level of internal oscillator
		R	Meter indicates signal level on RH phone line
		L	Meter indicates signal level on LH phone line
1S3	MIC HI/OFF/LO	HI/LO	Oscillator output applied to microphone lines
1S4	AC VOLTS	X5	Meter reads 5 V f.s.d.
		X1	Meter reads 1 V f.s.d.
		X0.5	Meter reads 500 mV f.s.d.
		X0.1	Meter reads 100 mV f.s.d.

Setting up

59 Connect the 7-way cable assembly No.9 supplied between the HARNESS AUDIO socket and the AUDIO socket of any harness box. A standard Clansman headset may be connected at the HEADSET socket.

Functional check

60 Connect the test set to a harness box audio socket and switch on POWER supply at IB2/IB3. Select position T of METER SELECTION switch; meter indicates output level of internal oscillator.

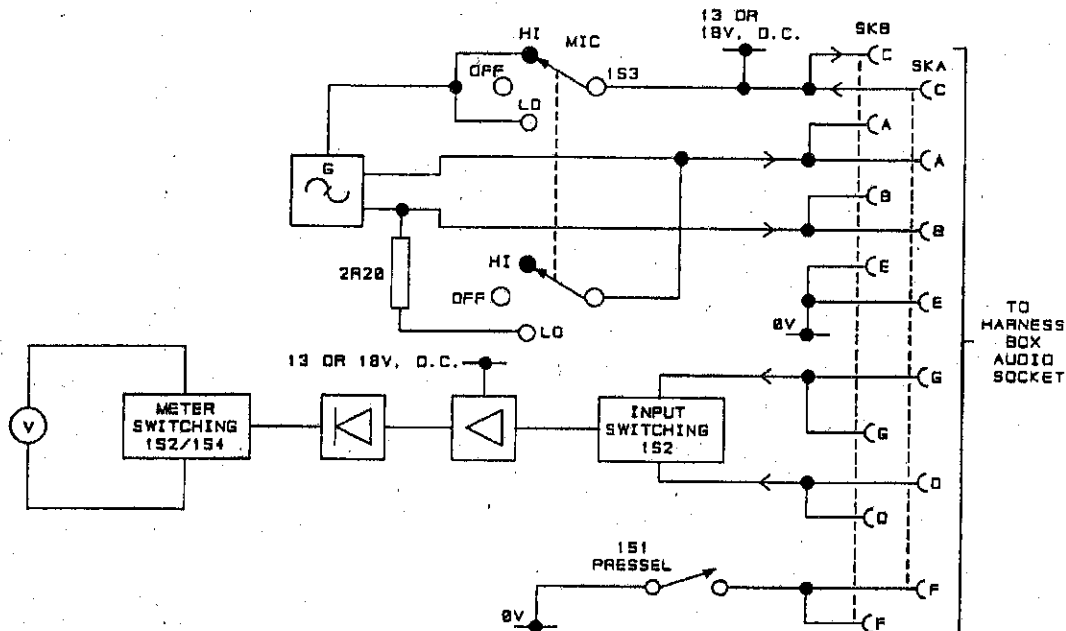


Fig. 6 Test Set, Interconnecting Box functional diagram

#### Functional description (fig. 6)

61 The supply (either +18 V, d.c. from unmodified CPU's or +13 V, d.c. from ANR modified CPU's) for the test set is obtained from pin C of the audio socket of the harness box under test. This voltage can be measured by the test set meter with the METER SELECTOR switch set to V.

62 With the MIC switch set to HI or LO the 18 V, d.c. supply energises the internal oscillator whose output is taken to the audio socket microphone lines, pins A and B of sockets 1SKA and 1SKB. The oscillator output level can also be measured by the test set meter with the METER SELECTOR switch set to T.

63 The signal on the monitor and working phone lines, pins G and D of sockets 1SKA and 1SKB, is selected by a switching circuit and fed to an amplifier circuit. The amplified output is rectified and applied via a meter switching circuit to the front panel meter.

64 A pressel switch is incorporated to originate transmit commands.

#### Detailed description (fig. 2004)

65 The supply (either +18 V, d.c. from unmodified CPU's or +13 V, d.c. from ANR modified CPU's) at pin C of sockets 1SKA and 1SKB is connected directly to pin 6 of assembly 2 and then to the internal oscillator via resistor 2R4, MIC switch 1S3 (set to HI or LO) and pin 5 of assembly 2. The oscillator output at transformer 1T2 is connected to pins A and B of sockets 1SKA and 1SKB via resistors 2R5, 2R11 and pins 1 and 7 of assembly 2. With MIC switch 1S3 set to LO, resistor 2R20 is connected in parallel with the oscillator output via 1S3B.

66 Operation of PRESSEL switch 1S1 applies 0V to pin F of sockets, 1SKA, 1SKB.

67 Incoming audio signals, at pins D and G of HARNESS socket 1SKA, are fed to pins D and G of the HEADSET socket 1SKB via pins 17 and 16 of assembly 2, resistors 2R1, 2R2, 2R3, 2R6 and pins 19 and 20 of assembly 2. The signals are also applied to the metering circuit via switch 1S2B.

#### Metering circuit

68 Switches 1S2 METER SELECTOR and 1S4 AC VOLTS, provide metering facilities. Switch 1S4 controls the range of meter readings via series resistors 2R7, 2R8, 2R9 and 2R10. With switch 1S2 set to L or R, the meter indicates the level of either the working or monitor phone signals via switches 1S2B and 1S4, pin 18 of assembly 2, capacitor 2C3, amplifier circuit, rectifier, pins 9 and 10 of assembly 2 and switches 1S2C, 1S2D.

69 With METER switch set to T, the output from the internal oscillator is applied to the metering circuit via pin 2 of assembly 2 and switches 1S2B and 1S2A.

70 With METER switch set to V, the meter indicates the +18 V, d.c. or +13 V, d.c. supply from the harness box under test via resistor 2R14 and pin 8 of assembly 2.

#### TEST SET, CABLE ASSEMBLY

##### Outline of working

71 This test set is used in conjunction with two adapters to test the serviceability of any Clansman cable having up to 12 conductors and a braid. Results of tests are indicated by coloured lamps.

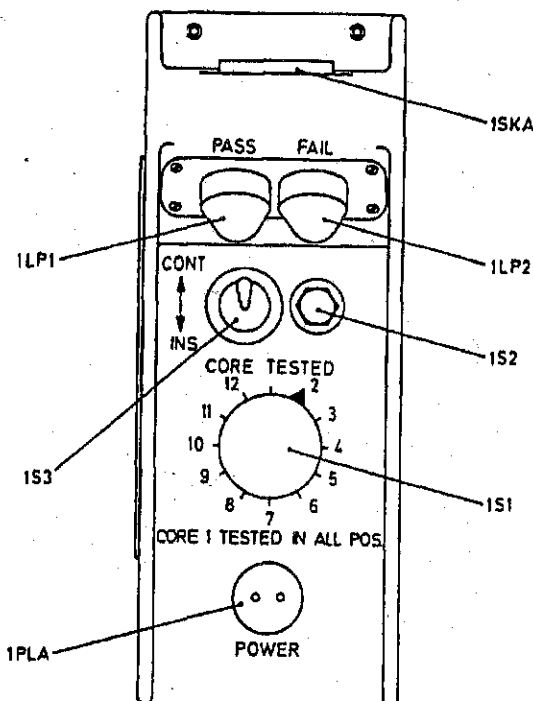
72 The test set checks the following:-

72.1 Continuity of each conductor and the braid of a cable.

72.2 Insulation between each conductor and between each conductor and the connector shell.

##### Front panel controls (fig. 7)

73 Fig. 7 shows the arrangement of the front panel controls. Table 9 details the control functions.



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Fig 7 - Test set, cable assembly, front panel controls

Table 9 - Test set, cable assembly, controls

Circuit Ref	Control	Setting	Facility
1S1	CORE TESTED	2-12	Selects conductor for test
1S2	BRAID TEST	Operated	Cable braid connected to selected conductor
1S3	CONT. INS.	CONT. INS.	Continuity testing selected Insulation testing selected

Setting up

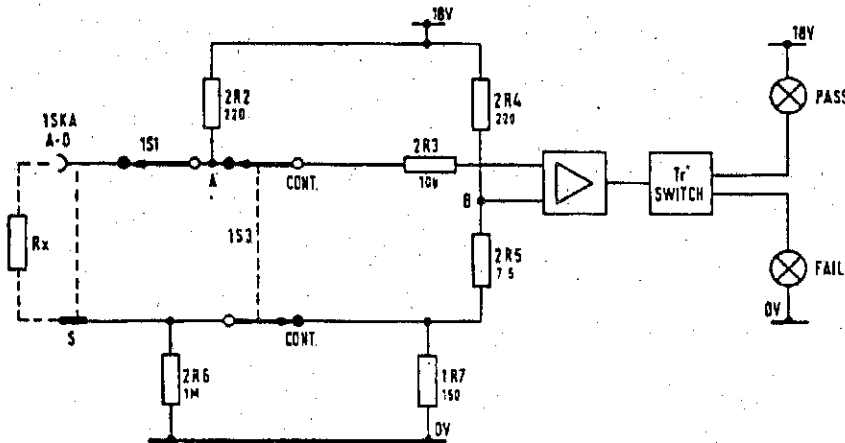
74. Using the cable assemblies supplied, the equipment is connected in accordance with Table 10.

Table 10 - Test set, cable assembly, cables

Cable Ident. No.	Primary termination	Secondary termination
10	2-way socket to test set POWER plug	(a) 12-way double-density plug to any harness box HARNESS socket  (b) 12-way double-density socket to plug termination of disconnected lead
11	12-way double-density plug to test set TEST socket	12-way double-density plug to 12-way socket of SHORTING or CONNECTOR adaptor

Functional check

75. Connect cable 10 as detailed in Table 10. Connect cable 11 between the TEST socket and the shorting and connector adaptors successively, testing for continuity and insulation respectively.



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Fig 8 - Test set cable assembly continuity test functional diagram

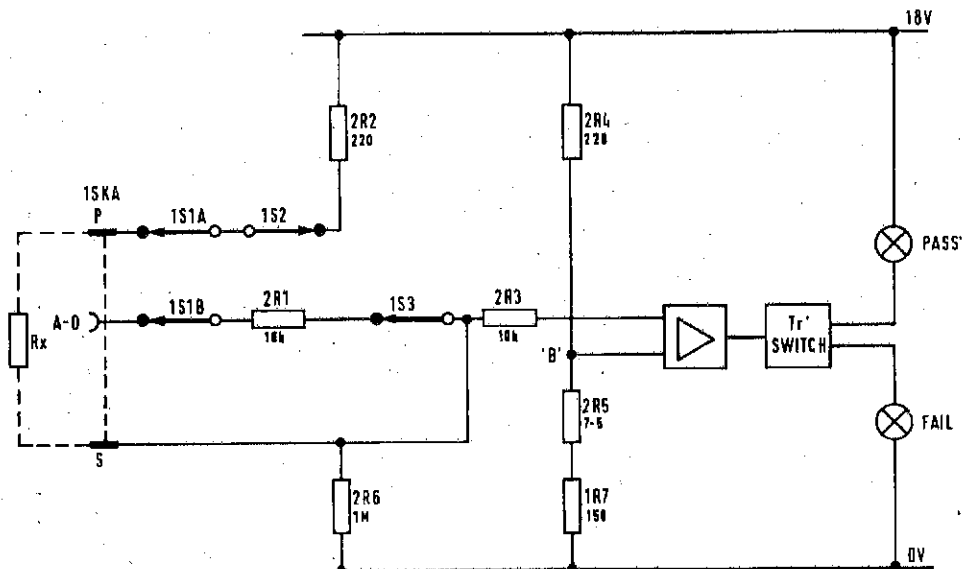
Functional description (Fig 8)

Continuity test

76. The cable under test is connected between socket 1SKA and the appropriate plug or socket of the shorting adaptor. Fig 8 represents the circuit arrangement for testing one conductor of the suspect cable which is shown as resistor Rx in the diagram. With a 'good' conductor, Rx is effectively a short circuit and there is a potential difference between points A and B. This p.d. is amplified and used to switch on the transistor associated with the PASS lamp.



77. If the conductor is faulty, the effect of Rx is to reduce the p.d. between points A and B to a point at which a second transistor is switched on to illuminate the FAIL lamp.



NOTE:-  
LINE 'P' UNDER TEST

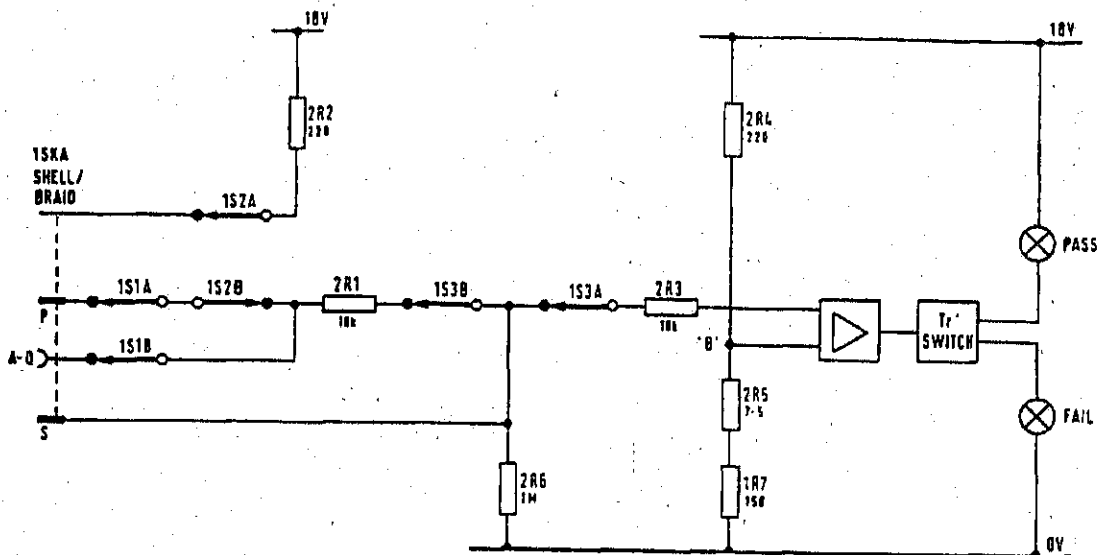
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Fig 9 - Test set, cable assembly insulation test, functional diagram

Insulation test (Fig 9)

78. ~~The shorting adapter~~ <sup>adapter test shorting</sup> is disconnected. Fig 9 represents the circuit arrangement for testing the insulation of one conductor of the suspect cable. With a 'good' conductor, Rx is effectively open circuit and a potential difference exists between points A and B. This p.d. is amplified and used to switch on the transistor associated with the PASS lamp.

79. If the conductor is faulty, Rx reduces the p.d. between points A and B to a point at which a second transistor is switched on to illuminate the FAIL lamp.



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Fig 10 - Test set, cable assembly braid insulation test, functional diagram

Braid insulation test (Fig 10)

80. Fig 10 represents the circuit arrangement for testing the Braid for insulation against any conductor in the cable under test. The braid is shown as Rx and provided it is insulated from any conductor under test will effectively be an open circuit. Under this condition the circuit operates as described previously in para 75. If a fault condition exists, the circuit will operate in a similar manner to that described in para 76.

81. The circuit arrangement for testing the Braid for continuity is similar to that shown in Fig 8 which is described in paras 73 and 74.

Detailed description (Fig 2007)

Continuity test

82. The connectors (A-P) from socket 1SKA are taken to switch 1S1 sections A and B whose wipers are connected to switch 1S2 moving contact and 1S2 fixed contact respectively.

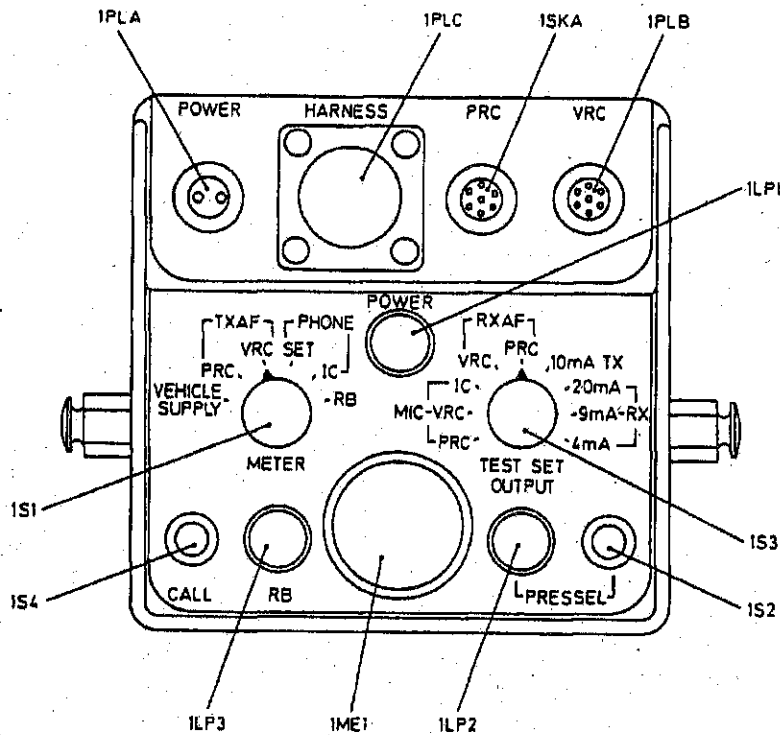
83. Pin S of socket 1SKA is deliberately separated from the remainder for safety purposes. Should the cable under test be left plugged into the harness ring main installation, instead of one of the adaptors, pins S (18V) and P (0V) could be shorted together during testing procedures.

84. The 'wiper' of switch 1S1B is taken to the disengaged contact of switch 1S3B via diode 2D1 and resistor 2R1. The engaged contact of switch 1S3A is connected to one input of the amplifier via resistor 2R3, whilst the engaged contact of switch 1S3B is connected to the other input of the amplifier via resistor 2R5 and diode 2D2. Diodes 2D3, 2D4 afford overload protection for the amplifier.

85. Transistors 2TR1 (npn) and 2TR2 (pnp) are connected as a complimentary pair such that when one is conducting the other is cut off. With switch 1S3 set to CONTINUITY and the conductor under test having a resistance less than  $15\Omega$ , the effective impedance of resistors 2R2 to 2R7 and conductor under test results in approximately  $-0.5V$  being developed across the input to the amplifier whose output under these conditions is approximately  $1.5V$ . This voltage switches transistor 2TR2 on and completes a circuit to illuminate the PASS lamp 1LP1. If the conductor under test is faulty and has a resistance in excess of  $15\Omega$ , the effective impedance of 2R1 to 2R7 and conductor under test causes a voltage of approximately  $+0.5V$  to be developed across the amplifier input. This is amplified to produce  $15V$  which switches transistor 2TR1 on and a circuit is completed to illuminate the FAIL lamp 1LP2.

86. With switch 1S3 set to INSULATION the input to the amplifier is reversed so that the conditions that produced a PASS result for continuity testing now become the conditions required for a FAIL result and conversely, the conditions previously required for a FAIL result now cause the PASS lamp to be illuminated.

87. With switch 1S2 operated and switch 1S3 set to CONTINUITY, the braid and shell of the cable under test is connected for continuity testing and the circuit functions as described in paras 79-82. When switch 1S3 is set to INSULATION, the braid and shell is connected to test its insulation from all the conductors in the cable and the circuit functions as described in para 83.



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Fig 11 - Test set, interconnecting box, IBRA front panel controls

TEST SET, INTERCONNECTING BOX, IBRA

Outline of working

88. This unit is used independently of the items previously described to test an Interconnecting box radio adaptor (IBRA) installed in a Larkspur harness.

89. It provides the necessary stimuli, switching and measuring devices to test all IBRA functions by the use of routed tones, current commands, coloured indicating lamps and an active metering circuit.

90. The test set provides the following facilities:-

- (a) Produces audio tones at correct levels for checking the PRC, VRC and harness circuitry of IBRA.
- (b) A metering circuit for measurement of phone and microphone levels from IBRA.
- (c) Current command circuitry for receive, transmit and rebroadcast facilities.
- (d) Indicator lamps for PRESSEL and REBRO operation.

Front panel controls (Fig 11)

91. Fig 11 shows the arrangement of the controls. Table 11 details the control functions.

Table 11 - Test set, interconnecting box, IBRA, controls

IBRA Set to	Test Set CONTROL SETTING		F A C I L I T Y
	Test output 1S3	Meter 1S1	
		VEHICLE SUPPLY	Meter indicates vehicle supply voltage
VRC	MIC VRC	TXAF VRC	VRC microphone line level from IBRA
VRC	RXAF VRC	PHONE SET	Tone to VRC RXAF lines; meter indicates set phone level from IBRA
VRC	MIC IC	PHONE IC	Tone to harness microphone lines; meter indicates IC phone line level from IBRA
VRC	MIC PRC	PHONE IC	Tone to harness microphone lines; CALL switch 1S4 operated, meter indicates IC phone line level from IBRA
PRC	10mA TX	RB	PRESSEL 1S2 operated - meter indicates zero PRESSEL lamp illuminated. See Note 1
VRC	10mA TX	RB	PRESSEL 1S2 operated - meter indicates TX current; PRESSEL lamp extinguished. See Note 1
VRC	20mA RX	RE	Meter indicates zero. See Note 2

Table 11 - continued

IBRA Set to	Test set CONTROL SETTING		F A C I L I T Y
	Test output 1S3	Meter 1S1	
VRC	9mA RX	RB	Meter indicates zero; REBRO lamp illuminated. See Note 1
VRC	4mA RX	RB	Meter indicates zero. See Note 2
PRC	MIC PRC	TXAF PRC	Tone to harness microphone lines; meter indicates PRC TXAF level from IBRA
PRC	RXAF PRC	PHONE SET	Tone to PRC RXAF lines; meter indicates harness phone level from IBRA
PRC	RXAF PRC	PHONE SET	PRESSEL 1S2 operated - PRESSEL lamp is illuminated, meter indicates zero
<p><u>Note 1:</u> Tests <u>must</u> produce these results</p> <p><u>Note 2:</u> REBRO lamp may or may not be illuminated</p>			

Setting up

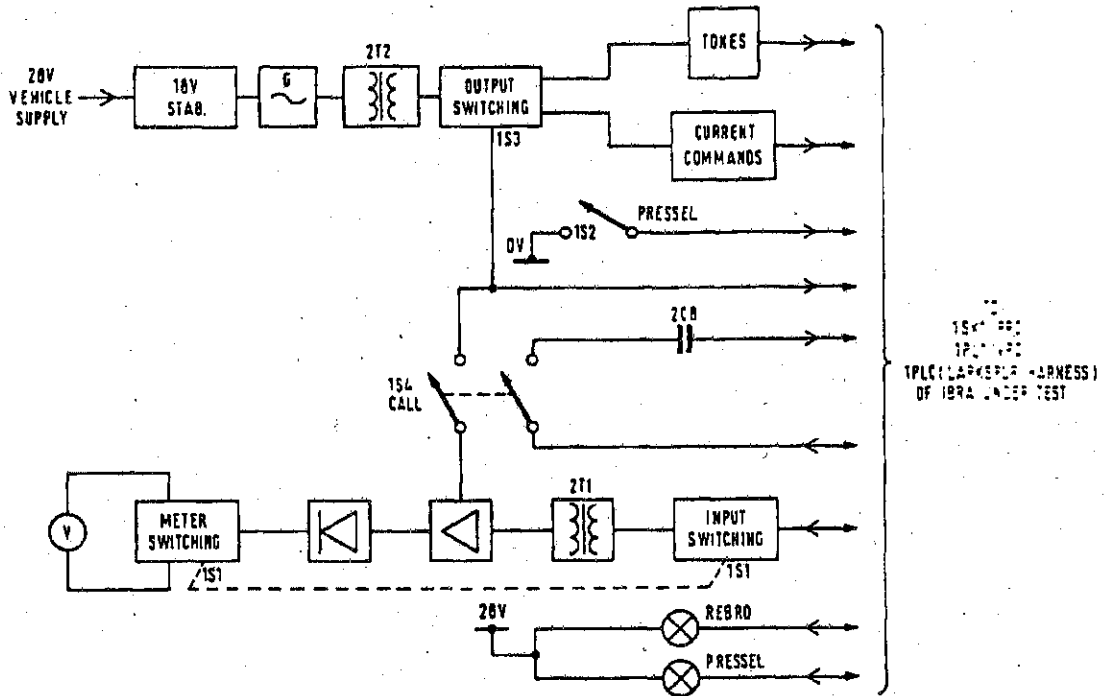
92. Using the cable assemblies supplied, the equipment is connected in accordance with Table 12.

Table 12 - Test set, interconnecting box, IBRA, cables

Cable Ident No	Primary termination	Secondary termination
1	2-way socket to test set POWER plug	2-way plug to IBRA POWER socket
2	7-way socket to test set VRC plug	7-way socket to IBRA VRC plug
3	7-way plug to test set PRC socket	7-way plug to IBRA PRC socket
4	12-way socket to test set HARNESS socket	12-way plug to IBRA HARNESS

Functional check

93. With vehicle supply voltage ON and test set METER switch set to VEHICLE SUPPLY, the POWER lamp is NOT illuminated and the meter indicates the vehicle supply voltage.



3864/11

Fig 12 - Test set, interconnecting box, IBRA, functional diagram

Functional description (Fig 12)

94. The 28V d.c. vehicle supply is stabilised to produce 18V d.c. for the oscillator. Selected oscillator outputs at the required levels are routed to the VRC, PRC and harness circuits of the IBRA under test. Additionally, the output switching circuit selects the necessary rebroadcast command impedances for checking the relevant IBRA circuitry.

95. A push-action pressel switch, when operated, applies OV to activate the harness command relay in IBRA. This relay places OV on the PRC pressel line, illuminating the PRESSEL lamp.

96. The tones from IBRA are selected by the test set input switching and applied to an amplifier circuit. The amplified tones are rectified and the resultant voltages applied to a metering circuit.

97. Successful testing of the rebroadcast facility of the IBRA causes current to be drawn from the IBRA current detector circuit. As a result, OV from IBRA is applied to illuminate the RE lamp.

Detailed description (Fig 2004)

Power supplies

98. 28V d.c. is applied at pins A and B of plug 1PLA and decoupled by capacitor 2C1. The 28V positive line at Pin A is fed via pin 2 of assembly 2, polarity protection diode 2D2 and pin 9 of assembly 2 to the wiper of METER switch 1S1A. The 28V negative line at pin B of plug 1PLA is fed directly to the wiper of switch 1S1B.

99. With switch 1S1 set to any position other than VEHICLE SUPPLY, the POWER 'on' lamp 1LP1 is illuminated and the 28V d.c. supply is applied to the voltage stabiliser circuit via pins 18 and 8 of assembly 2.

100. The positive 28V d.c. line is also fed from pin 9 of assembly 2 to the wiper of switch 1S1D. The negative 28V d.c. line is also fed to the wiper of switch 1S1C via resistor 2R6 and pins 3 and 6 of assembly 2. With switch 1S1 set to VEHICLE SUPPLY the 28V d.c. is indicated on the meter 1ME1.

101. The stabilised 18V from the stabiliser circuit on assembly 2 (para 99 refers) supplies an audio oscillator circuit. The oscillator output is applied to switch sections 1S3B, 1S3C and 1S3D via pins 22, 26, 24 and 21 of assembly 2.

Test circuitry

102. The following description is detailed according to the test input and output conditions selected by the METER switch 1S1 and TEST SET OUTPUT switch 1S3.

1S3, MIC VRC and 1S1, RXAF VRC. IBRA set to VRC

103. The audio oscillator output is applied to pins A and B of the HARNESS plug 1PLC via switch sections 1S3B, 1S3C and 1S3D. The TXAF at pins A and B of the VRC plug 1PLB is applied to the primary winding of transformer 2T1 via switch sections 1S1J, 1S1K and pins 1 and 4 of assembly 2. The secondary winding of transformer 2T1 applies the TXAF, via resistor 2R17, to an amplifier circuit whose output is rectified and applied to the meter 1ME1 via pins 11 and 12 of assembly 2 and switch sections 1S1F and 1S1G.

1S3, RXAF VRC and 1S1, PHONE SET. IBRA set to VRC

104. The audio oscillator output is applied to pins D and E of the VRC plug 1PLB via switch sections 1S3B, 1S3C and 1S3D. The signal on the phone line at pin M of the HARNESS plug 1PLC is applied to the meter circuit, as described previously, via switch sections 1S1J, 1S1K, 1S1F and 1S1G.

1S3, MIC IC AND 1S1, PHONE IC. IBRA set to VRC

105. The audio oscillator output is applied to pins C and B of HARNESS plug 1PLC via switch sections 1S3B, 1S3C and 1S3D. The oscillator output is also applied to the disengaged contact of the CALL switch 1S4 via capacitor 2C8.



106. The IC phone signal at pin J of plug 1PLC is connected to the meter circuit via switch sections 1S1J, 1S1K, 1S1F and 1S1G.

1S3, MIC PRC and 1S1, PHONE IC. IBRA set to VRC. 1S4 operated.

107. The audio oscillator output is applied to pins A and B of harness plug 1PLC via switch sections 1S3B, 1S3C and 1S3D. The output is also connected to the disengaged contact of the call switch 1S4. When operated, one section of switch 1S4 connects capacitor 2C8 between the input and output of the IBRA IC amplifier via pins C and J of plug 1PLC. The second section of 1S4 connects pins B and G of plug 1PLC together to complete the feedback path for the CALL tone. The IC phone signal at pin J of 1PLC is connected to the meter circuit as described in para 106.

1S3, 10mA TX and 1S1 RB. 1S2 PRESSEL operated. IBRA set to VRC

108. The audio oscillator output is disconnected by switch sections 1S3B, 1S3C and 1S3D. The harness pressel connection at pin D of plug 1PLC is connected to OV by one section of the PRESSEL switch 1S2. 18V is applied to the positive side of the meter, via section of the pressel switch 1S2 (at the same time disconnecting the 18V supply to the meter amplifier circuit) and switch section 1S1G, and to the negative meter connection via resistor 2R23 and switch section 1S1F.

109. The meter is also connected to pin A of the VRC plug 1PLB via switch section 1S3A. The meter indicates the transmit command current drawn from pins A and B of plug 1PLB; pin B is connected to OV by switch section 1S1H.

110. The PRESSEL lamp 1LP2 is illuminated when the IBRA under test is switched to PRC operation, thereby proving the operation of IBRA relay 3RLB/2.

1S3, 20mA RX and 1S1, RB. IBRA set to V.R.C.

111. The audio oscillator output is disconnected by switch sections 1S3B, 1S3C and 1S3D. The meter circuit is disconnected by switch sections 1S1F, 1S1G and 1S3A which also connects resistor 2R15 between pin A of plug 1PLB and OV. Pin B of 1PLB is connected to OV by switch section 1S1H.

1S3, 9mA RX and 1S1, RB. IBRA set to VRC.

112. The audio oscillator output and the meter circuit are disconnected as described in para 107. Switch 1S3A disconnects resistor 2R15 and connects resistor 2R16 between pin A of plug 1PLB and OV. The current drawn from pins A and B of plug 1PLB, through resistor 2R16, operates relay 3RLA in the IBRA. Relay contact 3RLA1 applies OV to pin E of plug 1PLC thereby illuminating the RB lamp 1LP3.

1S3, 4mA RX and 1S1, RB.

113. The audio oscillator output and the meter circuit are disconnected as described in para 107. Switch 1S3A substitutes resistor 2R18 for resistor 2R16. The RB lamp 1LP3 is now extinguished.

C14

1S3, MIC PRC and 1S1, TXAF PRC. IBRA set to PRC.

114. The audio oscillator output is connected to pins A and B of the HARNESS plug 1PLC and also to the disengaged contact of the CALL switch 1S4. The TXAF signal on pins A and B of socket 1SKA is applied to the meter circuit via switch sections 1S1K, 1S1J and 1S1F, 1S1G.

1S3, RXAF PRC and 1S1, PHONE SET. IBRA set to PRC.

115. The audio oscillator output is connected between pins D and E of socket 1SKA via switch sections 1S3B, 1S3C and 1S3D. The phone signal on pins M and G of the HARNESS plug 1PLC is connected to the meter circuit via switch sections 1S1J, 1S1K and 1S1F, 1S1G.

1S3, RXAF PRC and 1S1, PHONE SET. IBRA set to PRC, PRESSEL operated.

116. The PRESSEL switch 1S2 disconnects the 18V supply to the meter amplifier and connects pin D of the HARNESS plug 1PLC to OV. The PRESSEL lamp 1LP2 is illuminated, by the action of relay contact 3RLB2 in the IBRA, and the meter 1ME1 indicates zero.

Note: The next page is Page 1001

## NOTE

These Pages 1001, Issue 5 dated Jun 99; 1002 and 1003, Issue 3 dated May 82; and 1004, Issue 5 dated Jun 99 supersede Pages 1001, Issue 4 dated Oct 97, 1002 and 1003, Issue 3 dated May 82, and 1004, Issue 4 dated Oct 97. Table 2001 and Fig 2001 have been amended.

Table 2001 Simulator, Radio (6625-99-622-5126) : component list

This table is current at time of publication only : use IPC, when available, for demanding spares.

Cct Ref (1)	Value (2)	Rating (3)	Type (4)	NSN (5)
1PLB			Plug, Electrical, Fixed, 2-pole	5935-99-626-5815
1PLC	)			
1PLD	)		Plug, Electrical, Fixed, 7-pole	5935-99-626-5479
1PLE	)			
1PLA			Plug, Electrical, Fixed, 2-pole	5935-99-013-1238
1RV1	250Ω	1/2 W	Resistor, Variable	5905-99-011-9857
1SKA			Socket, Electrical, Fixed, 7-pole	5935-99-626-5472
1SKB			Socket, Electrical, Fixed, 12-pole	5935-99-013-1474
1S1	)			
1S3	)		Switch, Rotary, Wafer	5930-99-635-1976
1S2, 1S5			Switch, Toggle, Type SL3	5930-99-051-0551
1S4			Switch, Toggle, Type SL4	5930-99-051-0552
1TR1	)			
1TR2	)		Valve, Electronic	5961-99-118-5712
			<u>Miscellaneous</u>	
			Desiccant, Container	4440-99-014-2514
			Knob	5355-99-942-8690
			Insert, Control, Dial Knob	5355-99-942-8697
			Knob, Finger	5355-99-942-8683
			Light, Indicator	6210-99-012-0913
1LP1- 1LP6	28V	1 W	Lamp, Filament	6240-99-995-9182
			Lens, Light, Indicator, Red	6210-99-012-7421
			Lens, Light, Indicator, Yellow	6210-99-012-7422
			Lens, Light, Indicator, Green	6210-99-012-7423
			Lens, Light, Indicator, Blue	6210-99-012-7424
1ME1			Meter, Arbitrary Scale	6625-99-635-2604
Assy 2			Panel, Electronic Circuit	6625-99-633-8236
Assy 3			Panel, Electronic Circuit OR	6625-99-633-8235
			Power Supply and Voltmeter PCB Assembly	6625-99-127-4744
Assy 4, 5 and 6			Panel, Electronic Circuit OR	6625-99-633-6906
			Oscillator PCB Assembly	5963-99-766-3100
1TL1	)			
1TL2	)		Terminal, Spring Head	5940-99-108-6537

**Table 2002 Test Set, Interconnecting Box (6625-99-622-5128) : component list**

This table is current at time of publication only.  
Use IPC, when available, for demanding spares.

Cct Ref (1)	Value (2)	Rating (3)	Type (4)	NSN (5)
1SKA 1SKB	}		Socket, Fixed, 7-pole	5935-99-626-5472
1S1			Switch, Push	5930-99-630-6254
1S2			Switch, Rotary, Wafer	5930-99-633-6904
1S3			Switch, Toggle	5930-99-626-3660
1S4			Switch, Rotary, Wafer	5930-99-633-6903
			<u>Miscellaneous</u>	
			Insert, Control, Dial Knob	5355-99-942-8697
			Knob	5355-99-942-8667
1ME1			Meter, Moving Coil	6625-99-742-2617
Assy 2			Panel, Electronic Circuit	6625-99-633-6912
L2			Transformer, Audio Frequency	5950-99-631-0444

**Table 2003 Test Set, Cable Assembly (6625-99-622-5127) : component list**

This table is current at time of publication only.  
Use IPC, when available, for demanding spares.

Cct Ref (1)	Value (2)	Rating (3)	Type (4)	NSN (5)
1PLA			Plug, Electrical, Fixed, 2-pole	5935-99-626-5815
1R7	150Ω		Resistor, W.W., Fixed	5905-99-015-5550
1SKA			Plug-Socket, Electrical, Fixed, 12-pole	5935-99-014-8897
1S1			Switch, Rotary, Wafer	5930-99-633-6913
1S2			Switch, Push	5930-99-630-6254
1S3			Switch, Toggle	5930-99-051-0554
			<u>Miscellaneous</u>	
			Insert, Control, Dial Knob	5355-99-942-8697
			Knob, Finger	5355-99-942-8683
1LP1, 1LP2	28V	1 W	Lamp, Filament	6240-99-995-9182
			Light, Indicator	6210-99-012-0913
			Lens, Light, Indicator, Red	6210-99-012-7421
			Lens, Light, Indicator, Green	6210-99-012-7423
Assy 2			Panel, Electronic Circuit	6625-99-633-6911

Table 2004 - Test Set, Interconnecting Box Radio Adaptor (IBRA) (6625-99-620-8064), component list

This table is current at time of publication only.  
Use IPC, when available, for demanding spares.

Cct Ref (1)	Value (2)	Rating (3)	Type (4)	NSN (5)
1PLA			Plug, Electrical, 2-pole	5935-99-626-5815
1PLB			Plug, Electrical, 7-pole	5935-99-626-5479
1PLC			Plug, Electrical, 12-pole	5935-99-013-1270
1SKA			Socket, Electrical, 7-pole	5935-99-626-5472
1S1			Switch, Rotary, Wafer, 6-pos'n	5930-99-633-0607
1S2			Switch, Push	5930-99-630-6254
1S3			Switch, Rotary, Wafer, 9-pos'n	5930-99-633-0608
1S4			Switch, Push	5930-99-630-6254
			Miscellaneous	
			Insert, Control, Dial Knob	5355-99-942-8697
			Knob, Finger	5355-99-942-8683
1LP1	)		Lamp, Filament	6240-99-995-9182
1LP2	) 28 V	1 W		
1LP3	)		Light, Indicator	6210-99-012-0913
			Lens, Light, Indicator, Red	6210-99-012-7421
			Lens, Light, Indicator, Yellow	6210-99-012-7422
			Lens, Light, Indicator, Green	6210-99-012-7423
1ME1			Meter, Moving Coil	6625-99-742-2617
Assy 2			Panel, Electronic Circuit	6625-99-633-0855

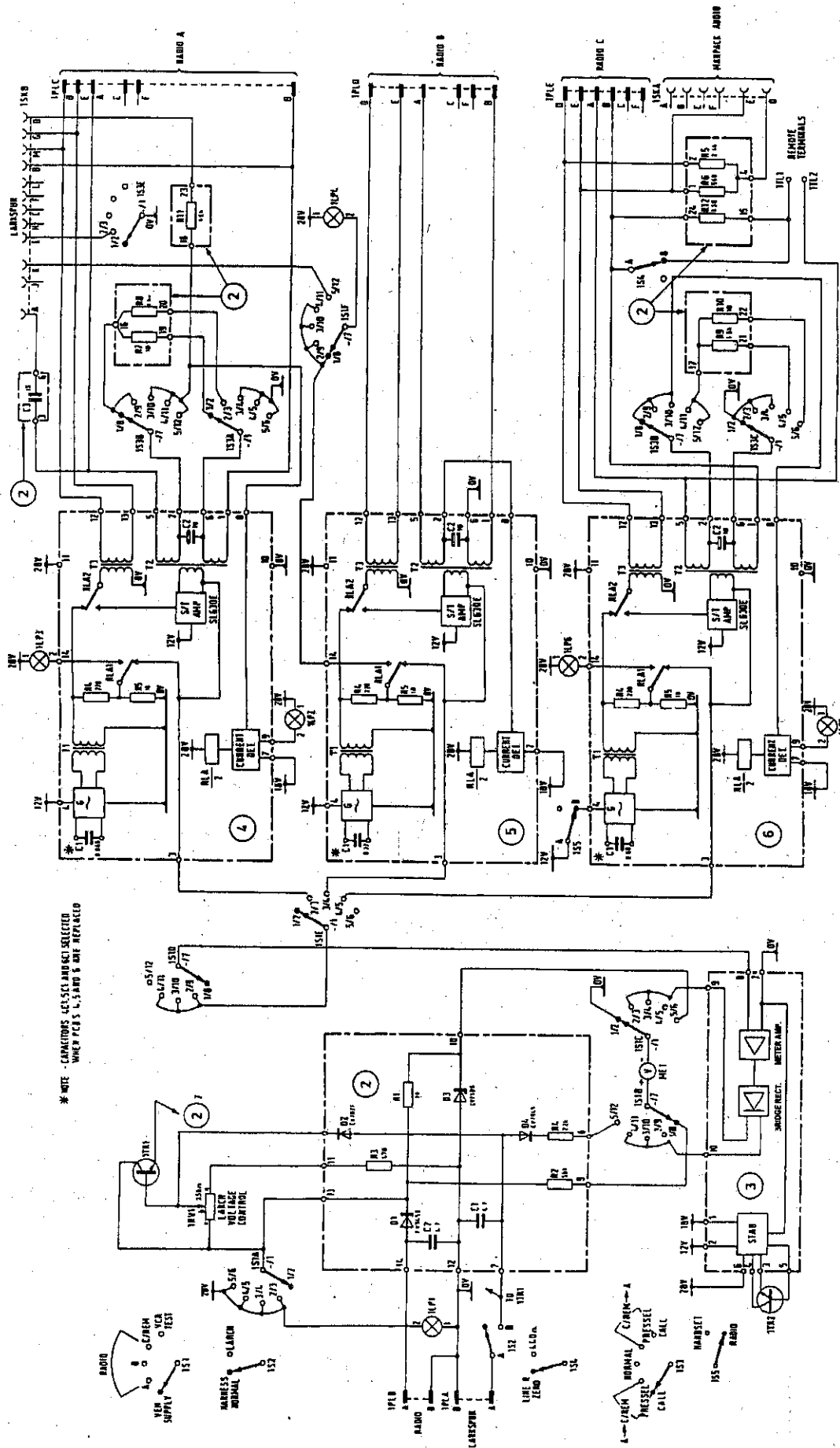


Fig 2001 - Simulator, Radio, circuit diagram

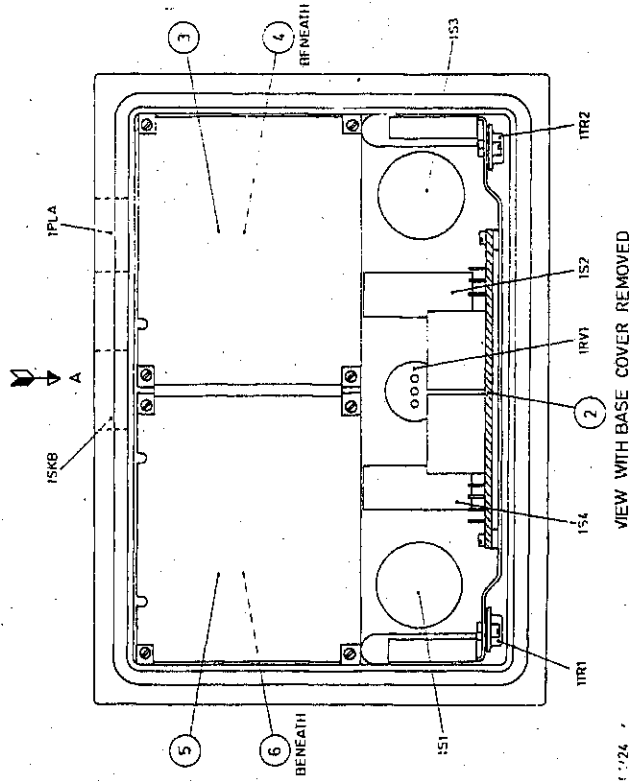
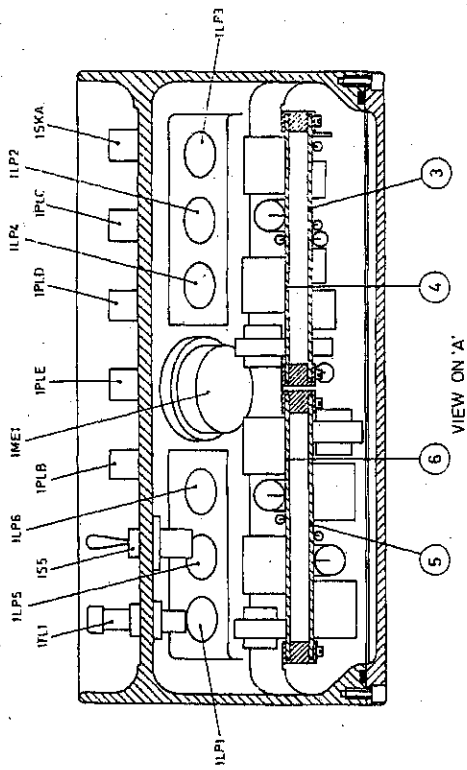


Fig 2002 - Simulator radio, layout diagram

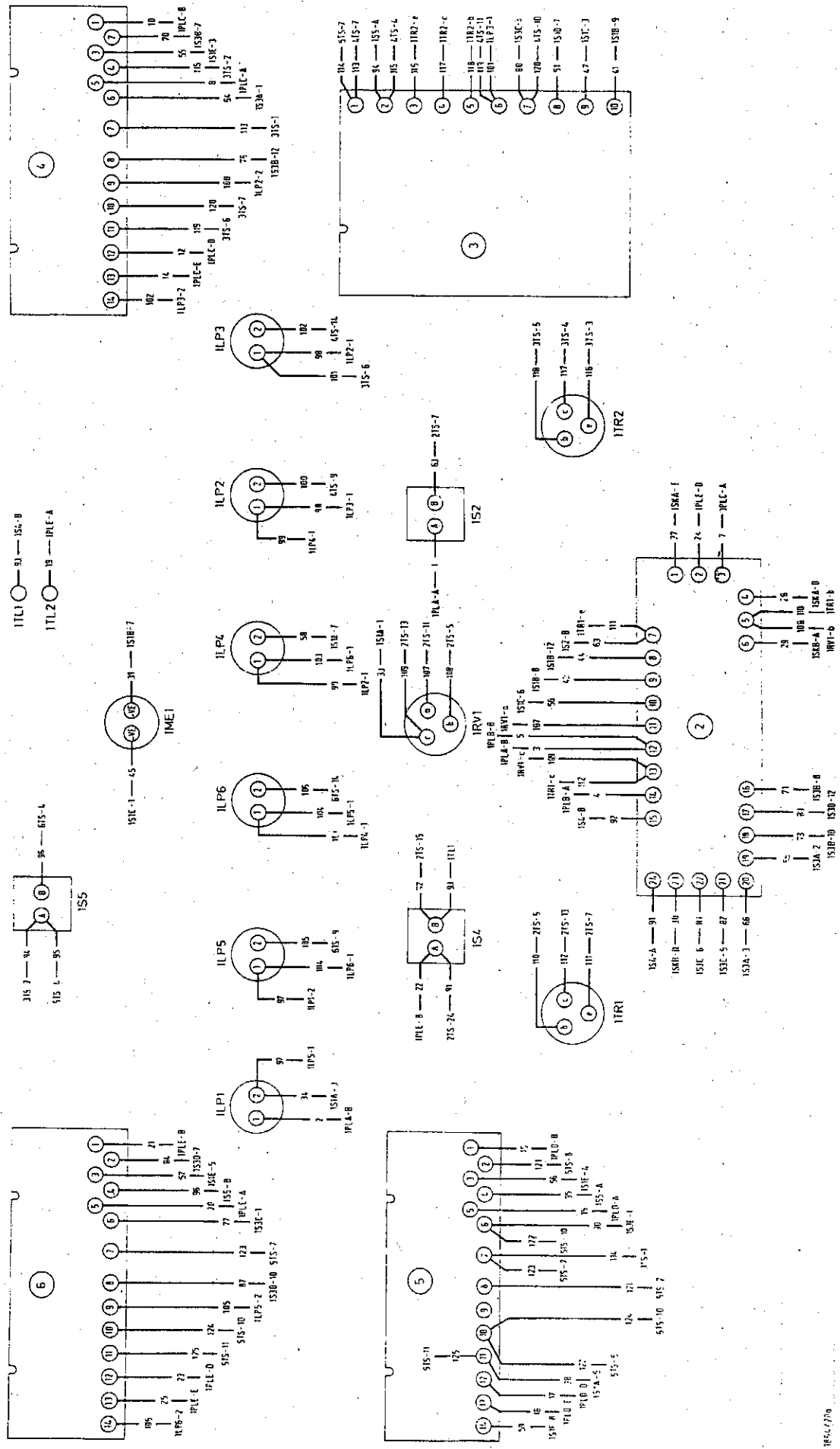


Fig 2003 (part 1) - Simulator radio, wiring diagram



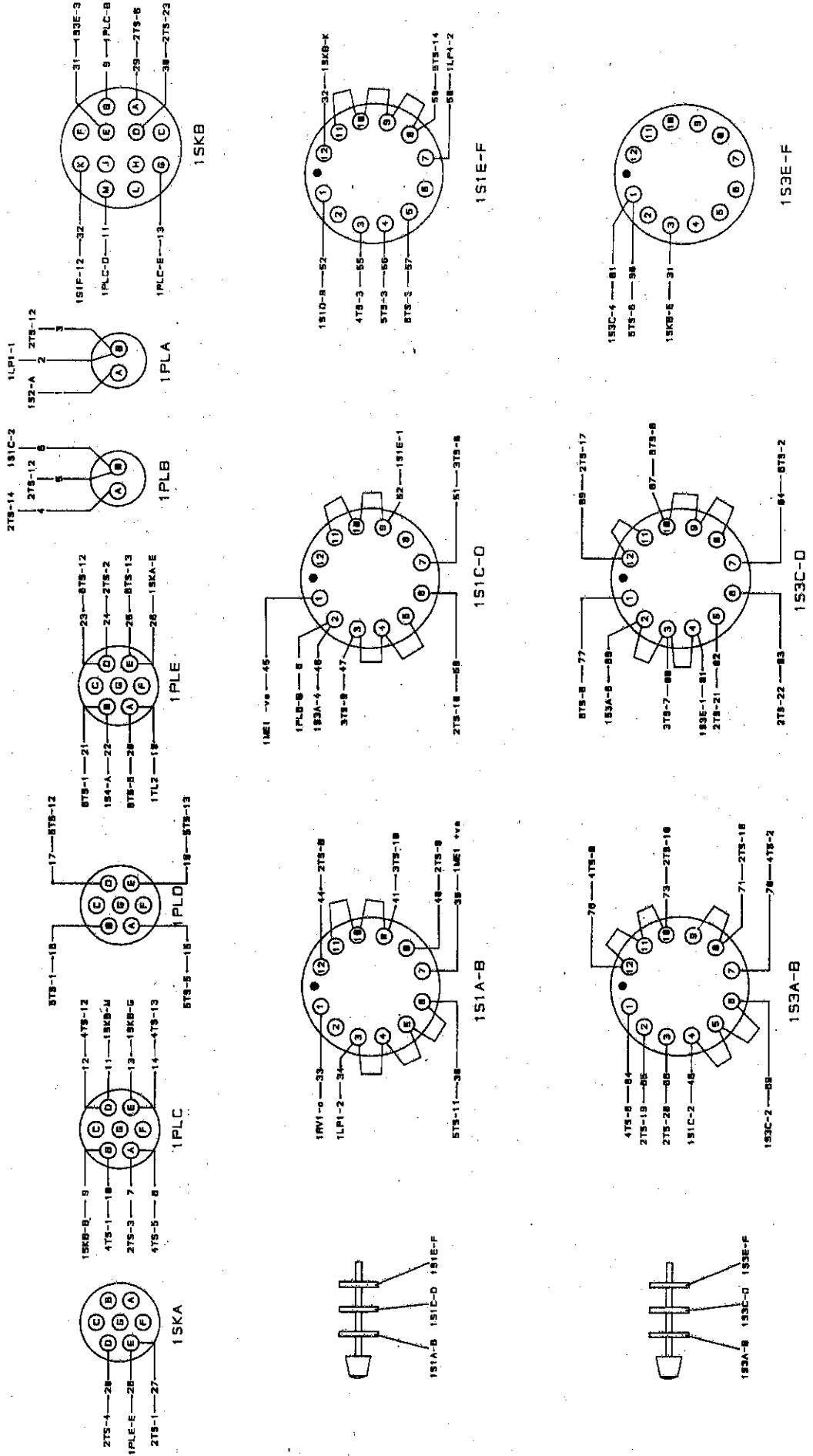


Fig. 2003 (Part 2) Simulator Radio : wiring diagram

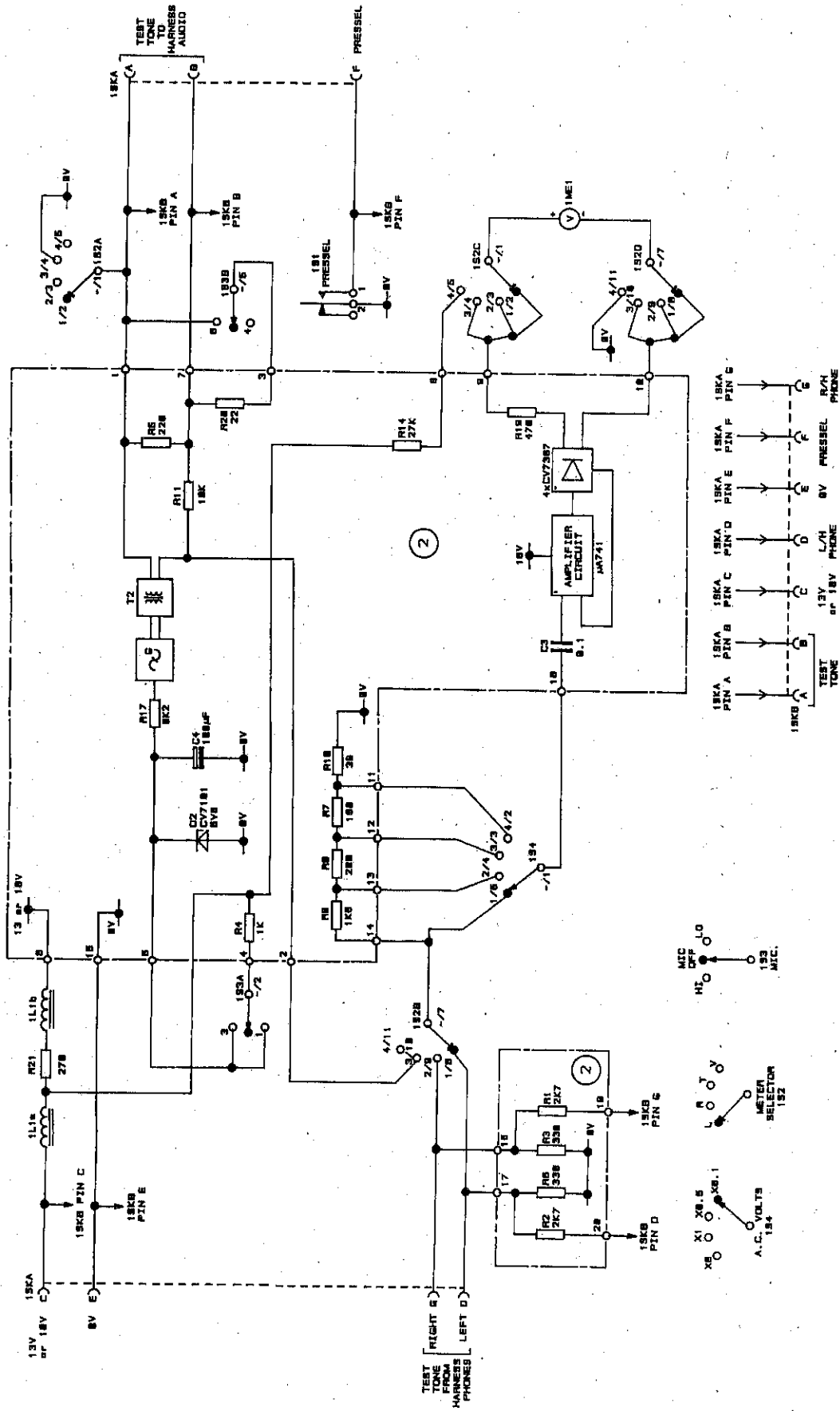


Fig. 2004 Test Set, Interconnecting Box : circuit diagram

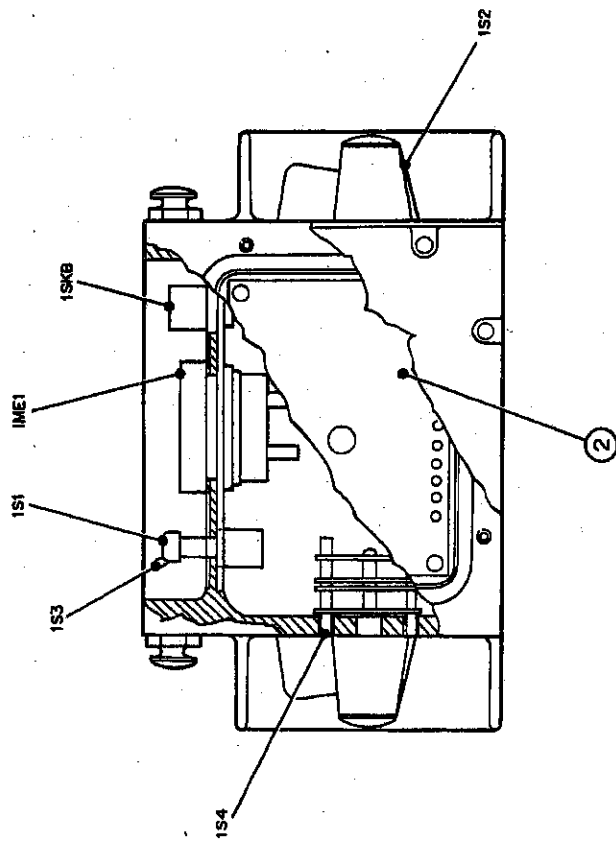


Fig. 2005 Test Set, Interconnecting Box, layout diagram

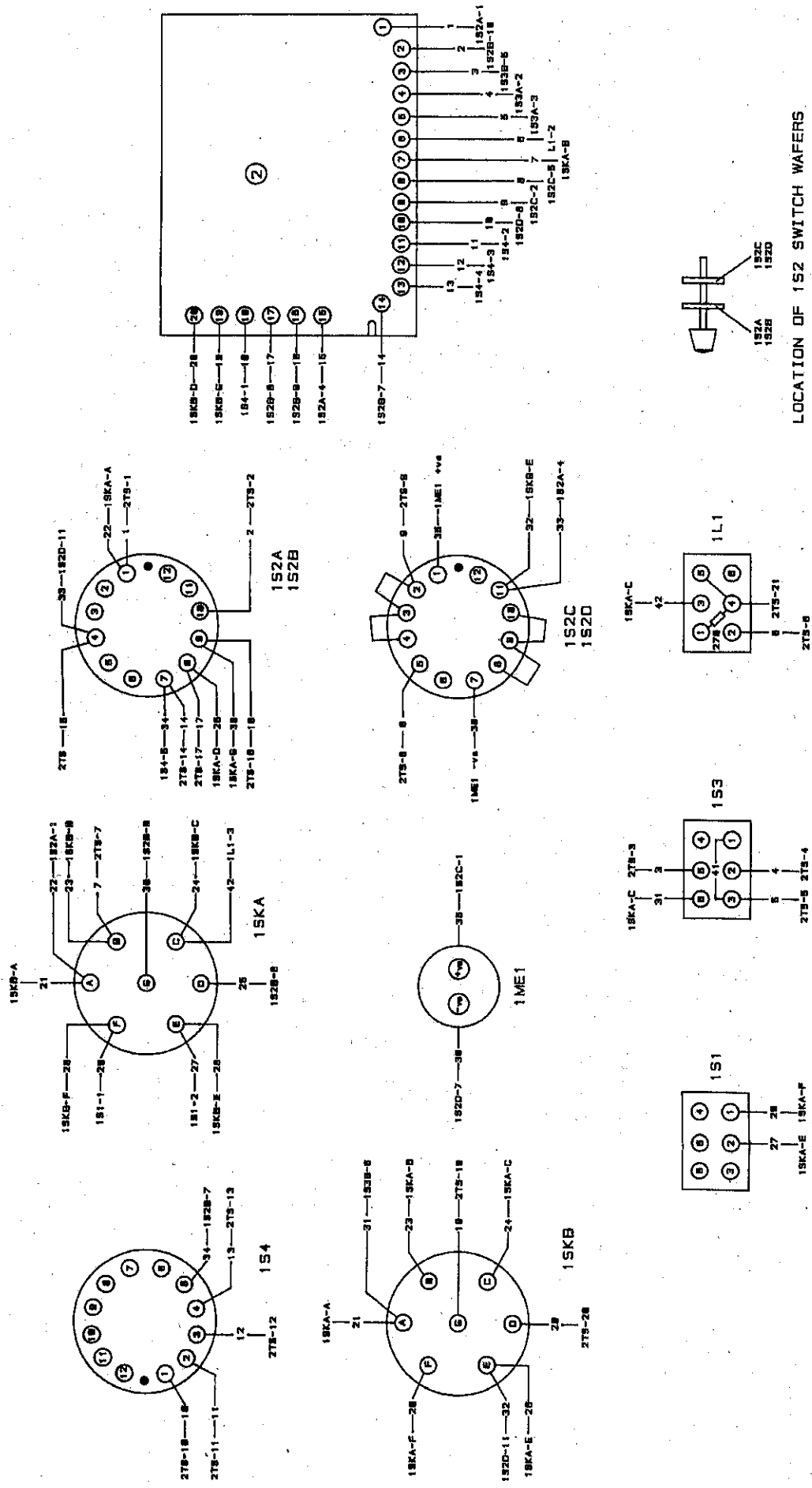
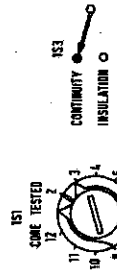
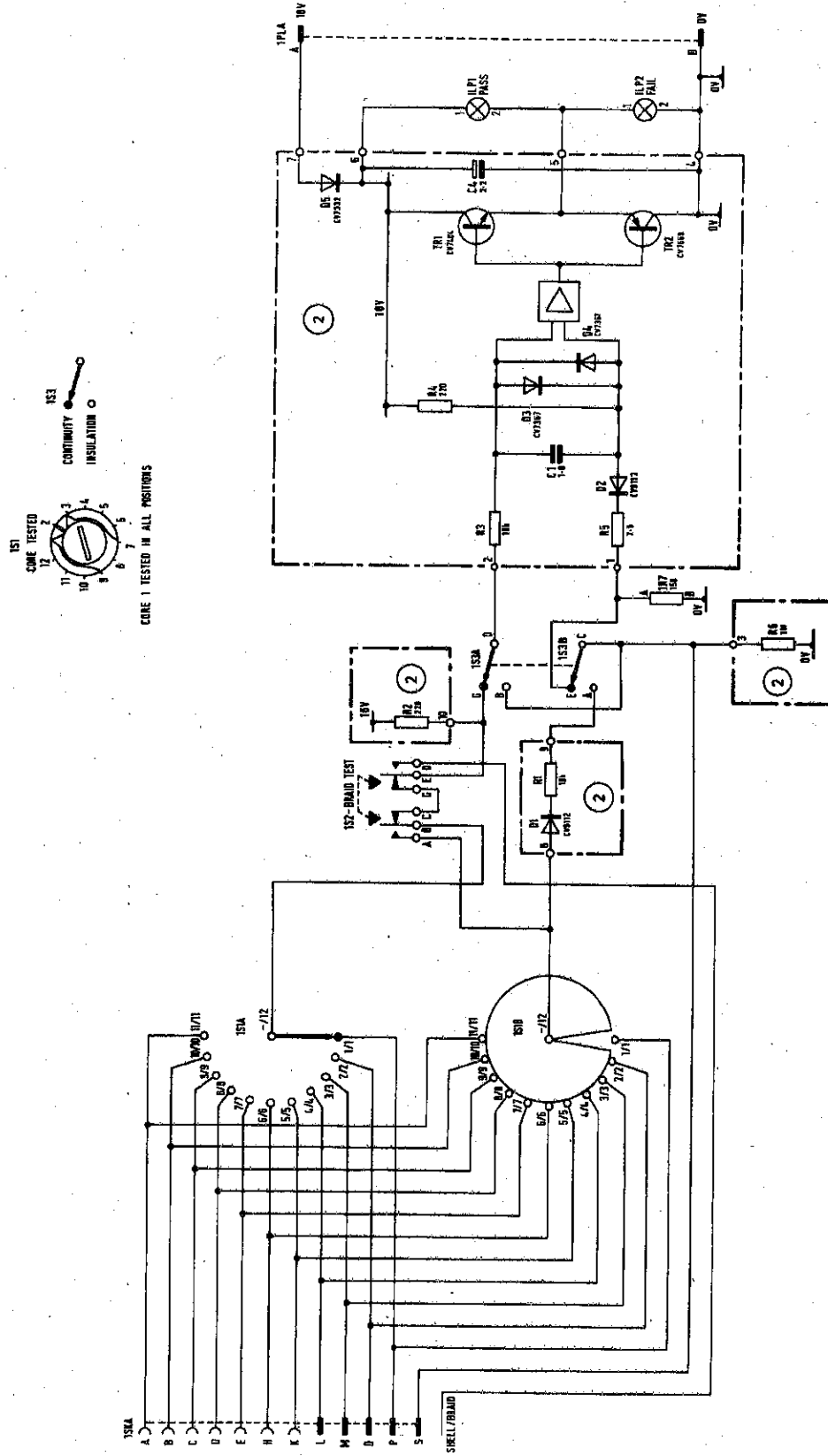
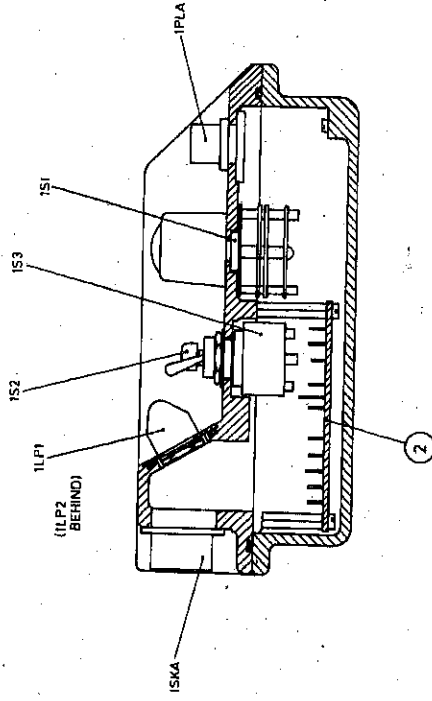


Fig. 2006 Test Set. Interconnecting Box : wiring diagram



CONE 1 TESTED IN ALL POSITIONS

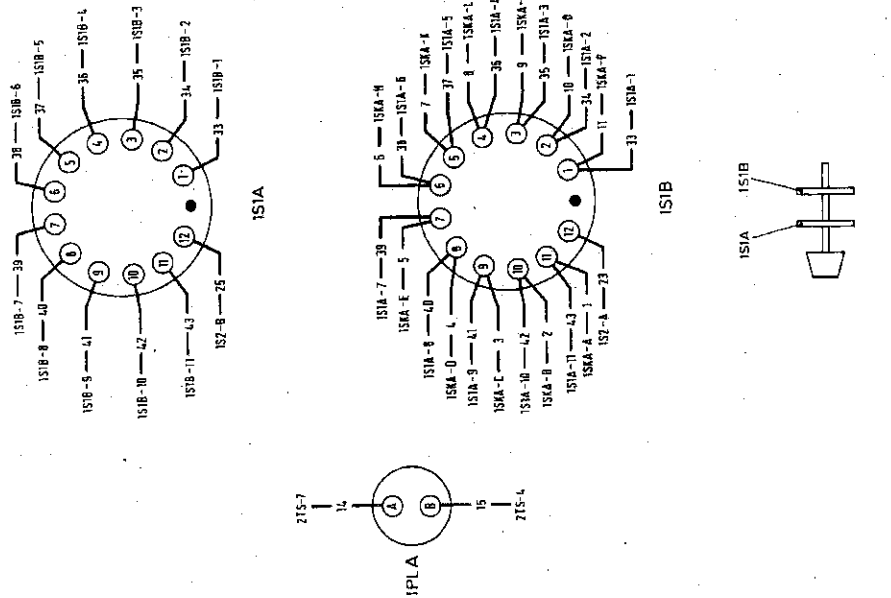
Fig 2007 - Test set, cable assembly, circuit diagram



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Fig 2008 - Test set, cable assembly, layout diagram

Note: These Pages 1013 - 1014, Issue 2 supersede Pages 1013 - 1014, Issue 1 dated Mar 75. FIG 2010 has been amended.



LOCATION OF 1S1 SWITCH WAFERS

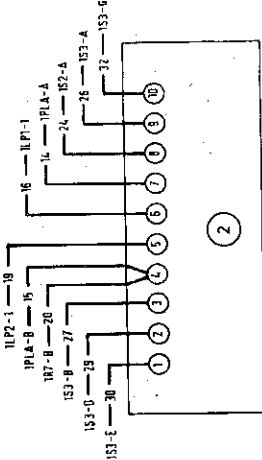
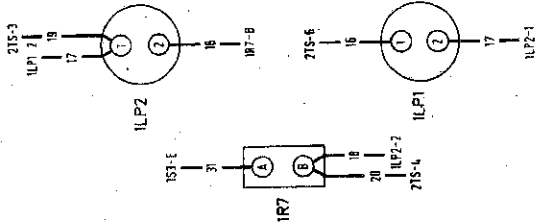


Fig 2009 - Test set, cable assembly, wiring diagram

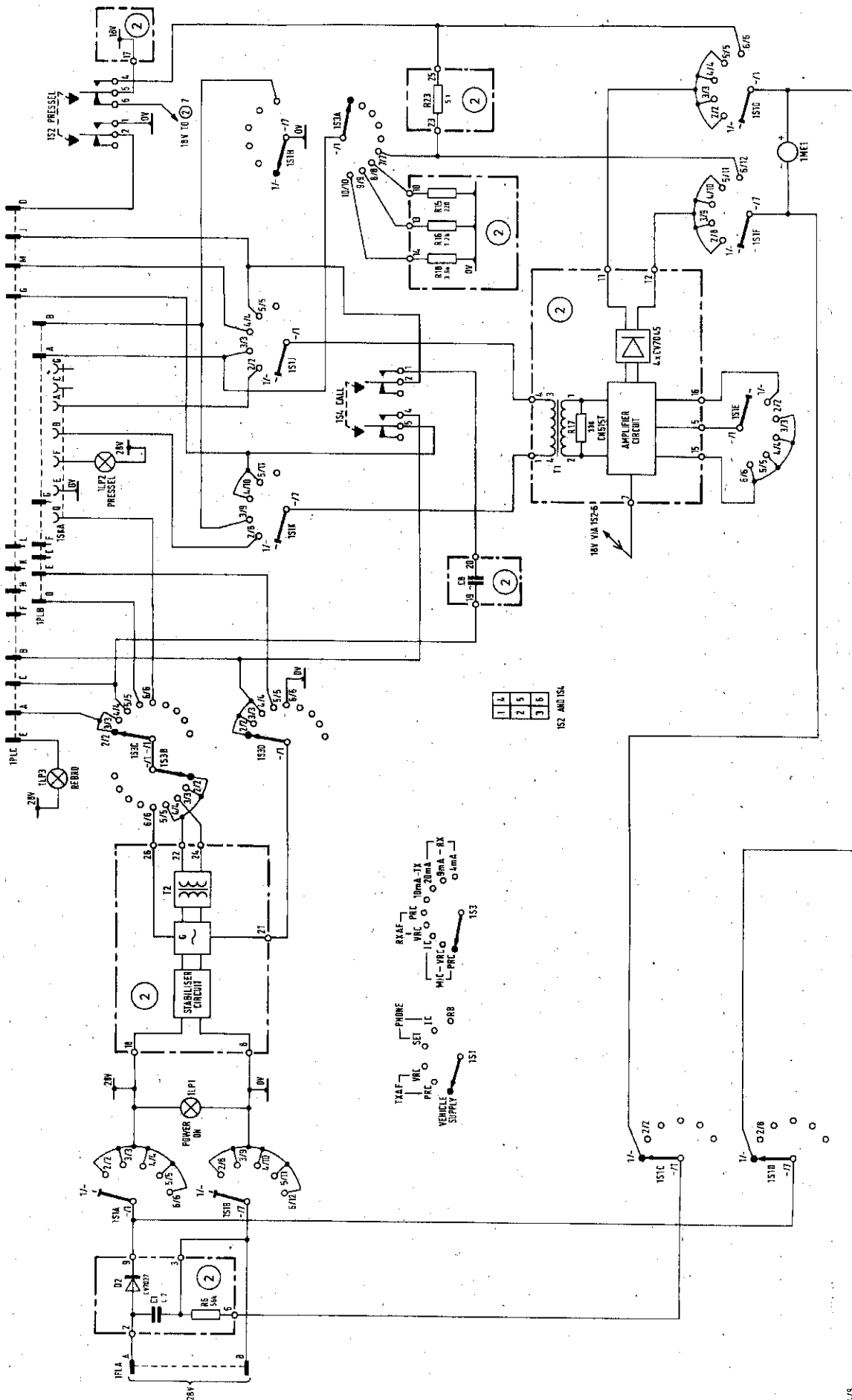
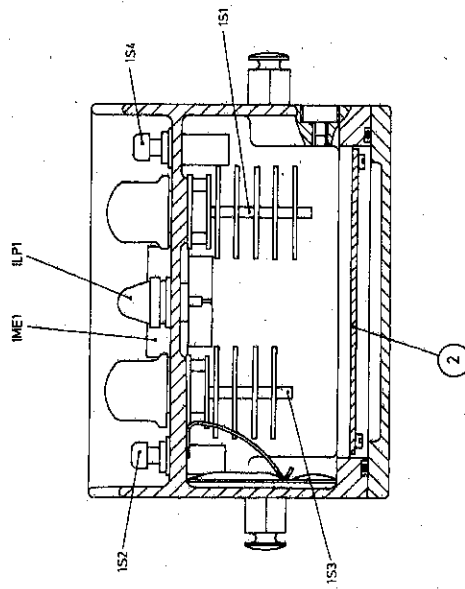


Fig 2010 - Test set, interconnecting box, IBRA, circuit diagram





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Fig 2011 - Test set, interconnecting box, IBRA, layout diagram

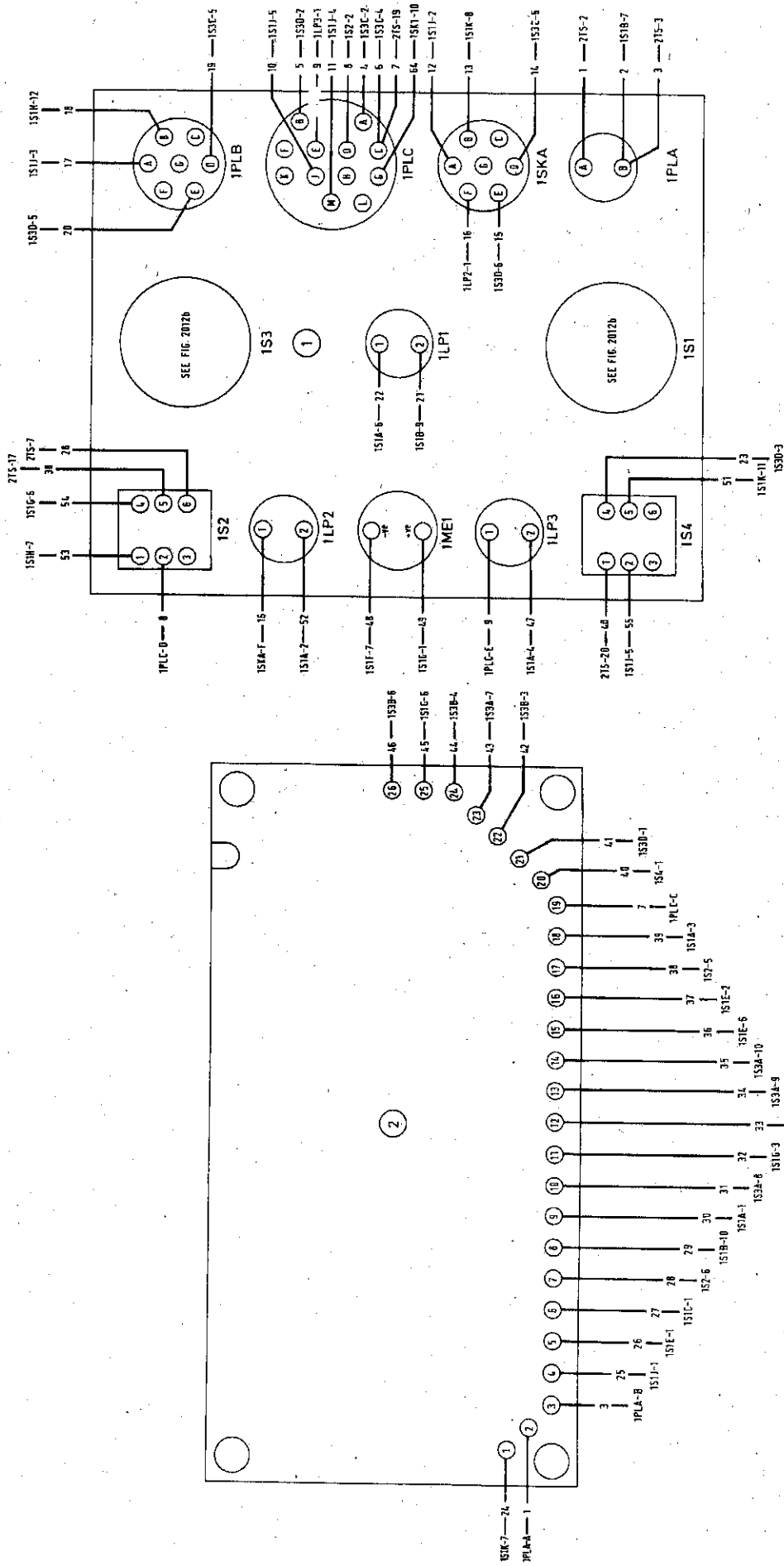
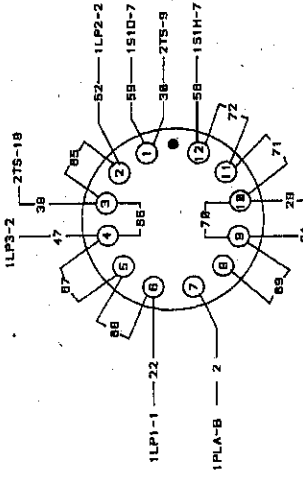
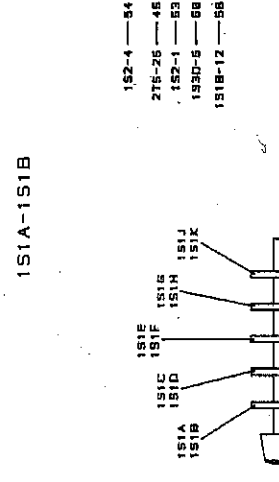


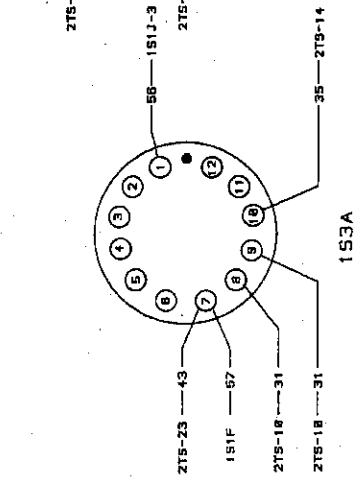
Fig 2012 (Part 1) - Test set, interconnecting box, IBRA, wiring diagram



151C-151D



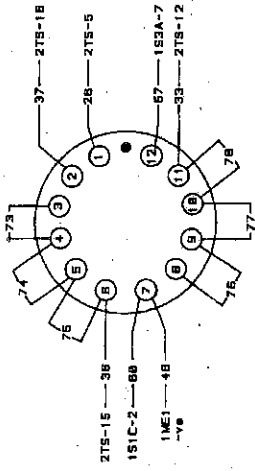
LOCATION OF 151 SWITCH WAFERS



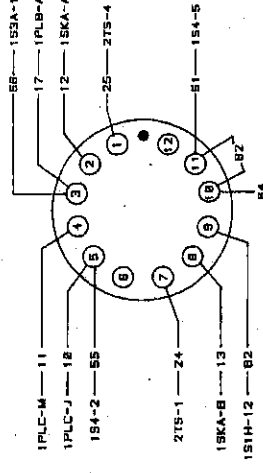
153C

153B

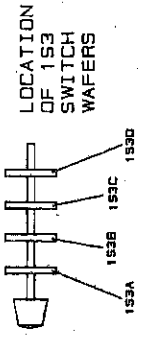
153A



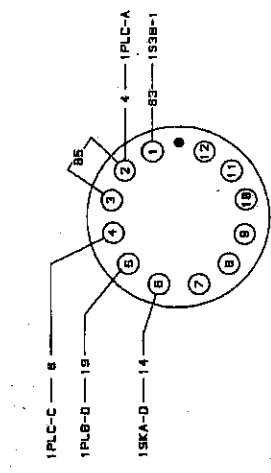
151E-151F



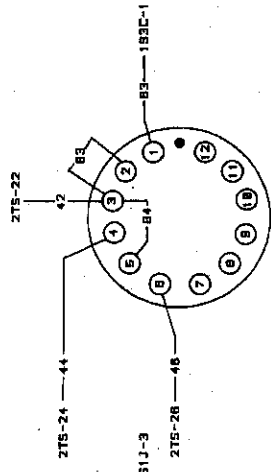
151G-151H



151J-151K



153D



153B

153A

Fig. 2012 (Part 2) - Test Set. Interconnecting Box. 153A : wiring diagram

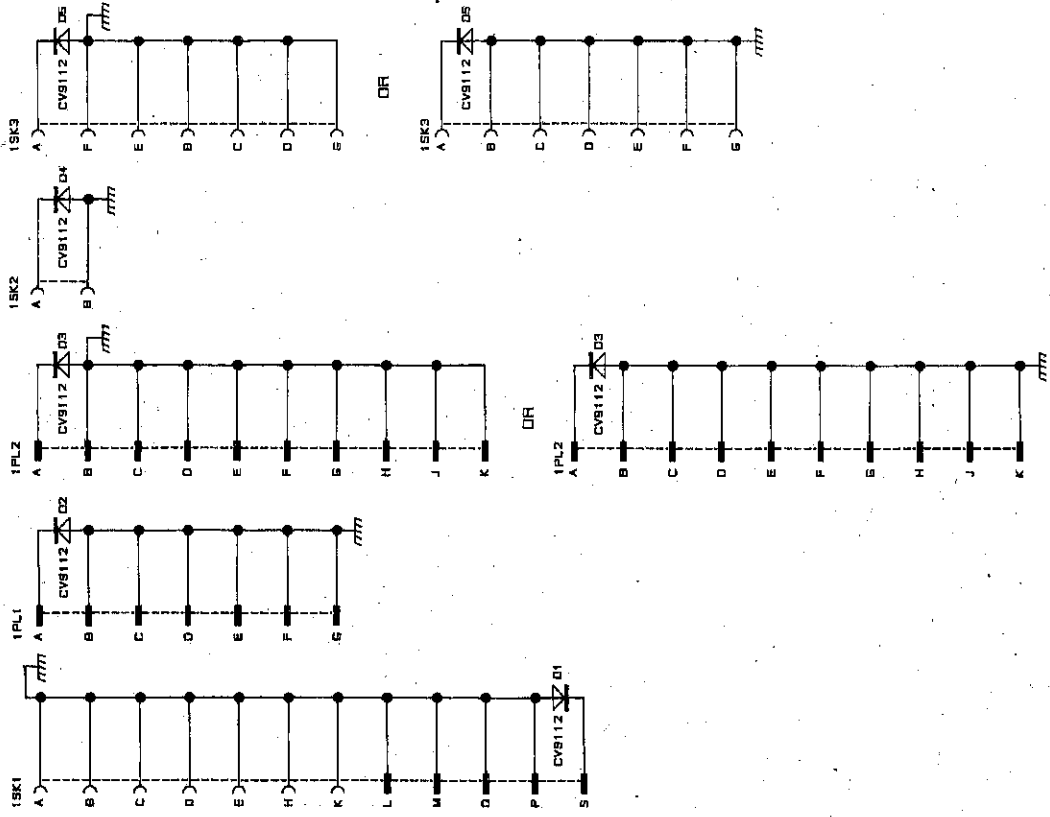


Fig. 2819 Adaptor test shorting, circuit diagram



NOTE:  
THIS PAGE 1019, ISSUE 5 SUPERSEDES PAGE 1019, ISSUE 4 DATED APR 93

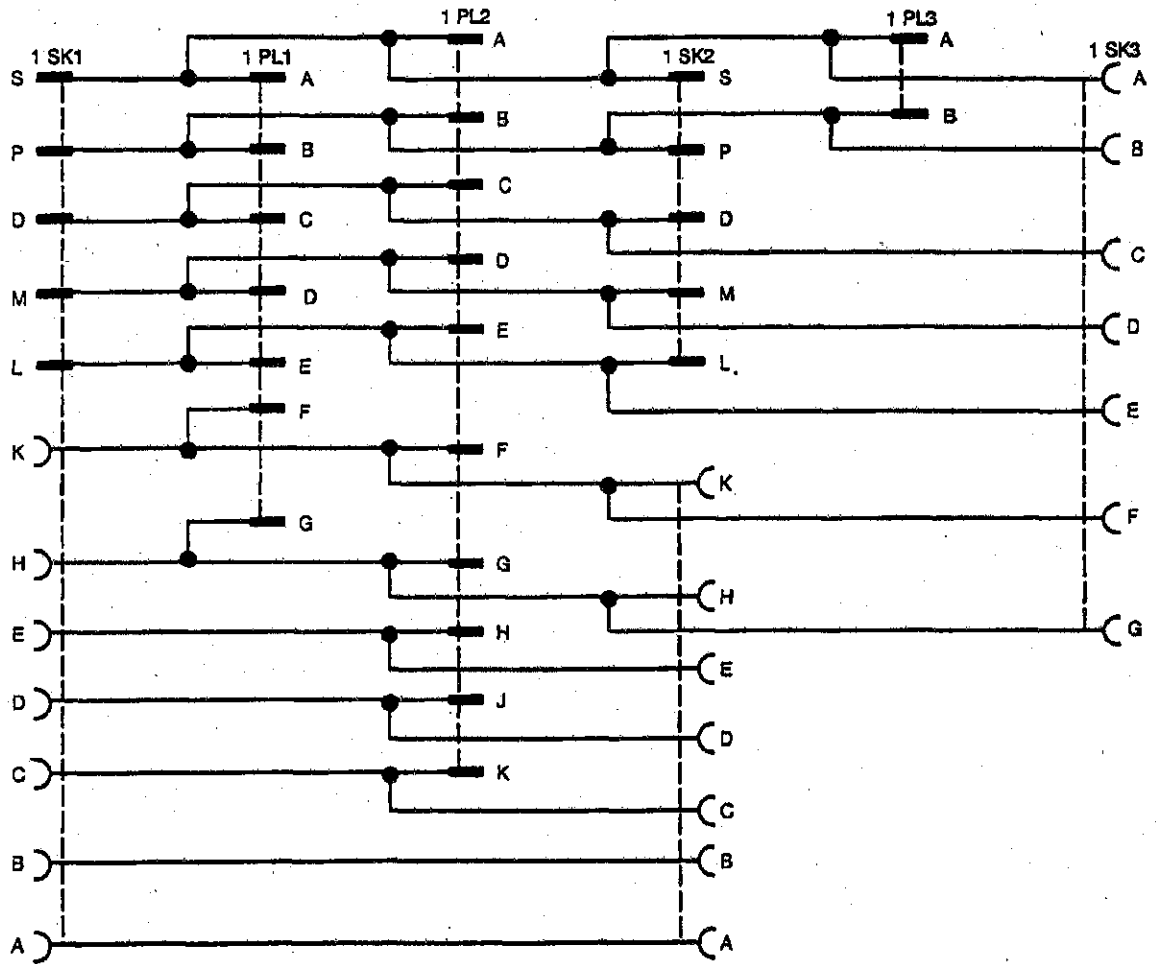


Fig. 2014 Adaptor test connector, circuit diagram



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CLANSMAN HARNESS INSTALLATION TEST SYSTEM

TECHNICAL HANDBOOK - FORWARD CODING

Note: The following list of assembly codes must be used in conjunction with Mgmt J 021 Part 4.

Assembly Code	Designation
	Simulator, radio:
0010	General assembly
0015	Chassis, electrical equipment
0020	Assembly 2
0030	Assembly 3
0040	Assembly 4
0050	Assembly 5
0060	Assembly 6
	Test set, interconnecting box:
0005	General assembly
0010	Chassis, electrical equipment
0015	Panel, electronic circuit
	Test set, cable assembly:
0020	General assembly
0025	Chassis, electrical equipment
0030	Panel, electronic circuit
	Test set, IBRA
0040	General assembly
0050	Box assembly
0060	Panel, electronic circuit
0070	Adaptor, test, shorting
0080	Adaptor, test, connector
0090	Cables interconnecting

3864/Tels

END

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2.		4.	



CLANSMAN V.H.F. ANTENNA SYSTEMS

TECHNICAL HANDBOOK - REPAIR CHARTS

SECTION 0 - INDEX OF SECTIONS

CONTENTS

Section

0	Index of sections	
1	General	(To be published)
2	Tuning Unit Automatic Antenna Matching	
3	Adaptor R.F. Antenna Tuning	
4	Initiate Box	
5	Ground Mounted Monopole	(To be published)
6	Inverted Vee	(To be published)
7	Ground Spike	(To be published)
8	Conversion Kit, Ground Spike to Elevated	(To be published)
9	Wide Band High Power Elevated Antenna	(To be published)
10	Minor Antenna Systems	(To be published)
11	Base Antenna Element	

6082/Tels

END of Section 0



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1.		3.	
2.		4.	

CLANSMAN V.H.F. ANTENNA SYSTEMS

SECTION 2 - TUNING UNIT AUTOMATIC ANTENNA MATCHING

Note: The chart in this regulation may be amended to cover modifications and changes in repair policy. Where it applies to a particular build standard (Field Batch), it will be so annotated.

INTRODUCTION

1. The repair chart in this regulation is based on Agreed Repair Charts, but has been adapted for use in the Field by simplifying the symbolic information and including additional information which will be required in the course of repair. It reflects the approved policy for repair of the TUAAM which may be briefly summarised as follows:

a. Unit repairs

Repairs will be confined to the replacement of dust caps. No repairs or servicing will take place within the sealed equipment.

b. Field repairs

Repairs will be by replacement of faulty p.e.c.'s, servo-motor gearbox assemblies, and chassis mounted discrete components, which are classified as throwaway items.

c. Base repairs

Repairs will be confined to complete overhaul of the TUAAM when rejected at Field level as BLR.

INTERPRETATION OF THE REPAIR CHART

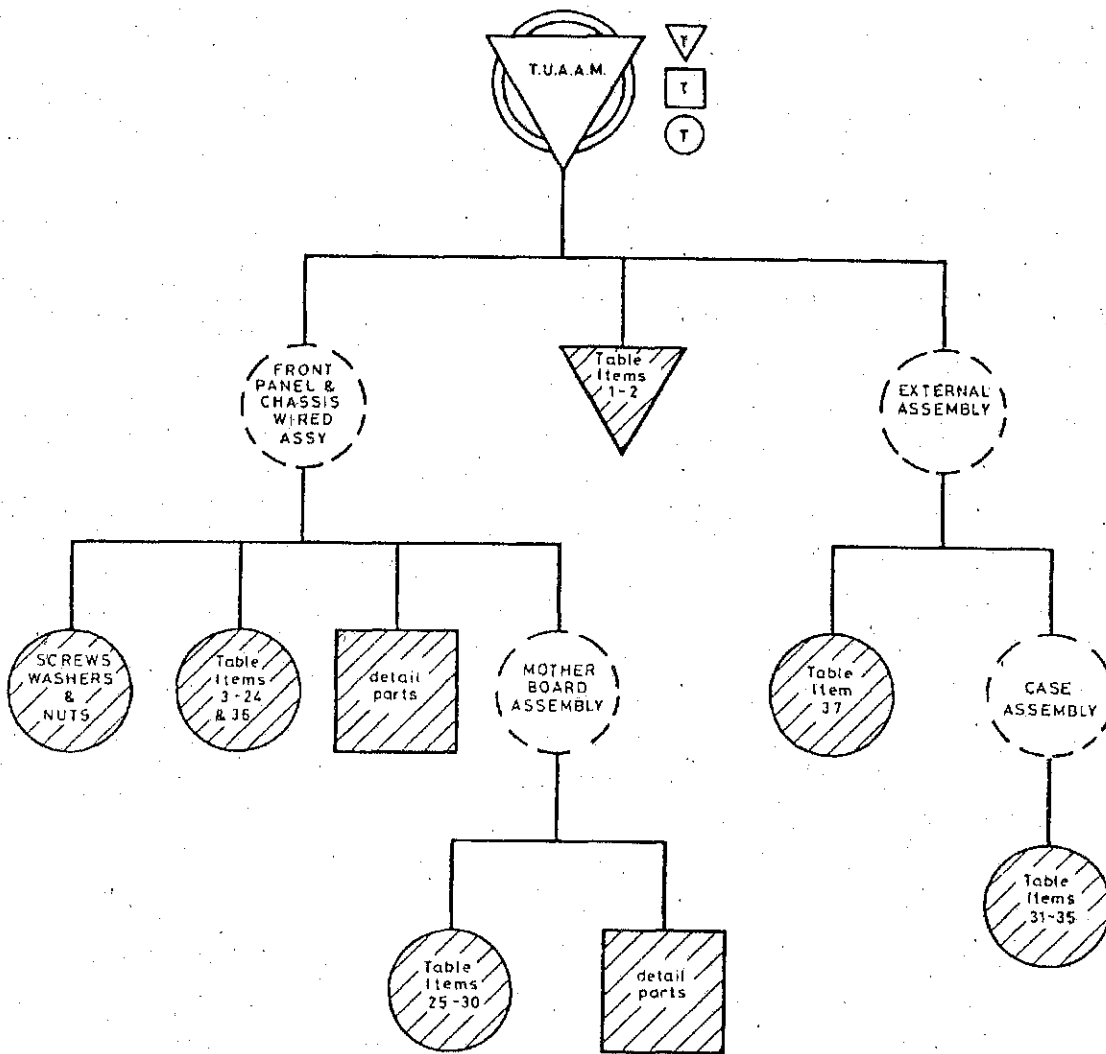
2. The repair chart depicts the repair policy in diagrammatic form using a series of symbols as shown in Fig 1. A symbol may contain a reference to the table where the items represented are listed. The table is located on the page facing the chart.

ASSOCIATED PUBLICATIONS

4. The following information may be found in the documents listed:

a. FORWARD assembly codes: Tels L 212 Section 2, Page 2001.

b. NATO stock numbers: IPC No 61610.

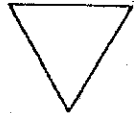
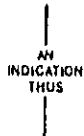


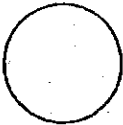

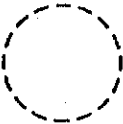
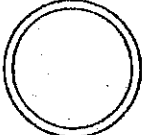
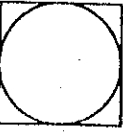

















444213

Repair chart No 1 - TUAAM (Part 1)

Item No	Designation	Qty	Assembly code/ cct ref
1	Cover electrical plug and socket	1	1SK1
2	Cover electrical plug and socket	2	1SK2 & 1SK3
3	Front panel assembly	1	
4	Screw captive skt hd M3	10	
5	Terminal assembly earth	1	
6	Cap screw head anti-tamper	4	
7	Screws, slotted pan head M4 10 mm	4	
8	Plate identification	1	
9	Socket electrical assembly	1	1SK2
10	Socket electrical assembly	1	1SK3
11	Panel electronic circuit	1	1.a.
12	Panel electronic circuit	1	1.b. c/w 1SK1
13	Bracket discriminator assembly	1	
14	Panel electronic circuit	1	Board 3
15	Pillar protection	1	
16	Motor	3	2M1, 2M2 & 2M3
17	Gear box	1	2M1
18	Gear box	2	2M2, 2M3
19	Cover p.e.c. boards	1	Boards 4-9
20	Coupling assemblies	3	2C1, 2C2 & 2C3
21	Capacitors	3	C4, C5 & C6
22	Pillar assembly	5	
23	Plate stop assembly	1	2C2
24	Sleeve rubber	1	2C2
25	Panel electronic circuit	1	Board 4
26	Panel electronic circuit	1	Board 5
27	Panel electronic circuit	1	Board 6
28	Panel electronic circuit	1	Board 7
29	Panel electronic circuit	1	Board 8
30	Panel electronic circuit	1	Board 9
31	Case equipment	1	C/w items 34 & 35
32	Plug sealing	2	
33	Ring seal toroidal	2	
34	Insert steel M3	10	
35	Insert steel M6	2	
36	Desiccator 'Silica Gel'	1	
37	Gasket flat 210 x 110 mm	1	

Repair chart No 1 - TUAAM (Part 2)

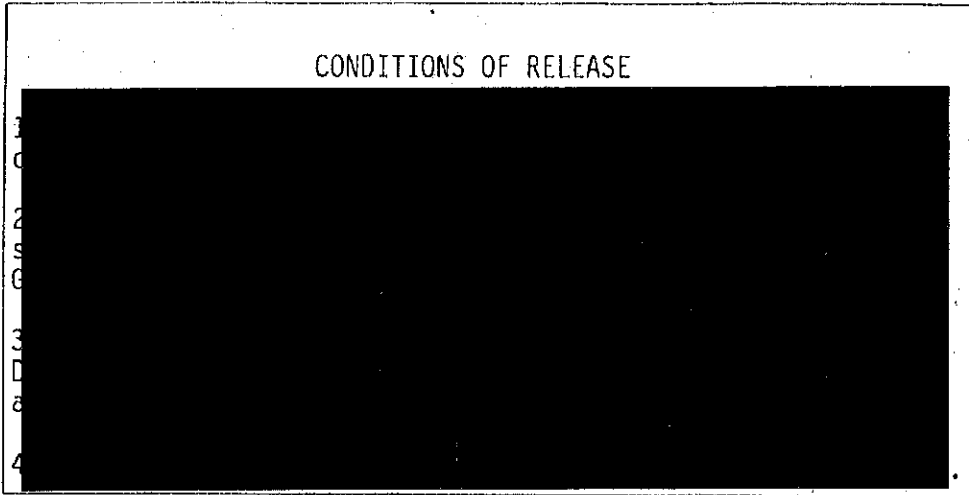
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE FIRST LINE REPAIR ORGANIZATION IN THE COURSE OF UNIT REPAIR, NORMALLY RANGED AS A UNIT SPARE.		A DESIGNATION WITHOUT A SYMBOL SURROUND IS USED TO INDICATE A LOGICAL BREAKDOWN AREA WHICH DOES NOT EXIST AS AN ASSEMBLY
	AN ITEM WHICH IS SUBJECT TO UNIT REPAIR BUT WHICH IS NOT RANGED AS A SPARE		SYMBOLS REPRESENTING ITEMS WHICH ARE STOWED OR CARRIED REMOTE FROM THE EQUIPMENT ARE JOINED TO THE CHART BY BROKEN LINES
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE SECOND LINE REPAIR ORGANIZATION IN THE COURSE OF FIELD REPAIR, NORMALLY RANGED AS A SPARE		INDICATES AN ITEM HELD ON USER CHARGE FOR WHICH SPARE ITEMS ARE ALSO HELD BY THE USER
	AN ITEM WHICH IS SUBJECT TO FIELD REPAIR BUT WHICH IS NOT RANGED AS A SPARE		INDICATES AN ITEM HELD ON USER CHARGE WHICH IS NOT AVAILABLE IN THE FIELD AS A SPARE
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE REPAIR ORGANIZATION AT INTERMEDIATE LEVEL, NORMALLY RANGED AS A SPARE		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT UNIT LEVEL
	AN ITEM WHICH IS SUBJECT TO INTERMEDIATE REPAIR BUT WHICH IS NOT RANGED AS A SPARE		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT FIELD LEVEL
	INDICATES AN ITEM REPLACED BY THE BASE WORKSHOP ORGANIZATION IN THE COURSE OF BASE REPAIR		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT INTERMEDIATE LEVEL
	AN ITEM WHICH IS SUBJECT TO BASE REPAIR BUT IS NOT RANGED AS A SPARE		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT BASE LEVEL
	CROSS HATCHING WITHIN IN ANY SYMBOL INDICATES THAT THE ITEM REPRESENTED IS A CONSUMABLE ITEM		INDICATES THAT A RE-USABLE PACKAGE IS TO BE PROVIDED FOR GENERAL USE
	THE SYMBOLS SO ANNOTATED REPRESENT CENTRALISED REPAIR ITEMS (CENTREXIS). SEE LIST OF CENTRES FOR REPAIR RETURN AGENCY		INDICATES THAT A RE-USABLE PACKAGE IS TO BE PROVIDED FOR USE BETWEEN BASE AND CONTRACTORS
			INDICATES THAT A RE-USABLE PACKAGE IS TO BE PROVIDED FOR AN ASSEMBLY WHICH IS CARRIED AS AN OPERATOR'S SPARE WITH A MOBILE EQUIPMENT OR SYSTEM
			INDICATES THAT THE ITEM IS SCHEDULED FOR REPAIR BY CONTRACTORS
			SHelf LIfeD ITEM LIfe IN MONTHS TO BE INDICATED BY A FIGURE FOLLOWING SYMBOL
			LIfeD USAge ITEM LIfe IN HOURS, RDS FERRIS, MILEAGE ETC TO BE INDICATED

MISC 721

ISSUE 3, OCT 1973

Fig 1 - Key to repair chart symbols

CONDITIONS OF RELEASE



CLANSMAN V.H.F. ANTENNA SYSTEMS

SECTION 3 - ADAPTOR R.F. ANTENNA TUNING (ARFAT)

TECHNICAL HANDBOOK - REPAIR CHART

These Pages 1, 2 and 2a, Issue 2, dated Jul 91 supersede Page 1&2, Issue 1 dated May 78.

Note: The chart in this regulation may be amended to cover modifications and changes in repair policy. Where it applies to a particular build standard (Field Batch), it will be so annotated. This issue applies to the chart depicting the latest build standard.

INTRODUCTION

1. The repair chart in this regulation is based on Agreed Repair Charts, but has been adapted for use in the Field by simplifying the symbolic information and including additional information which will be required in the course of repair. It reflects the approved policy for the repair of the Adaptor R.F. Antenna Tuning (ARFAT) which may be briefly summarized as follows:

a. Unit repairs

The ARFAT is a sealed equipment and no attempt should be made at Unit level to carry out repairs.

b. Field repair

Repair at Field level will be by replacement of components or items as specified in the repair chart.

c. Base repairs

Nil.

INTERPRETATION OF THE REPAIR CHART

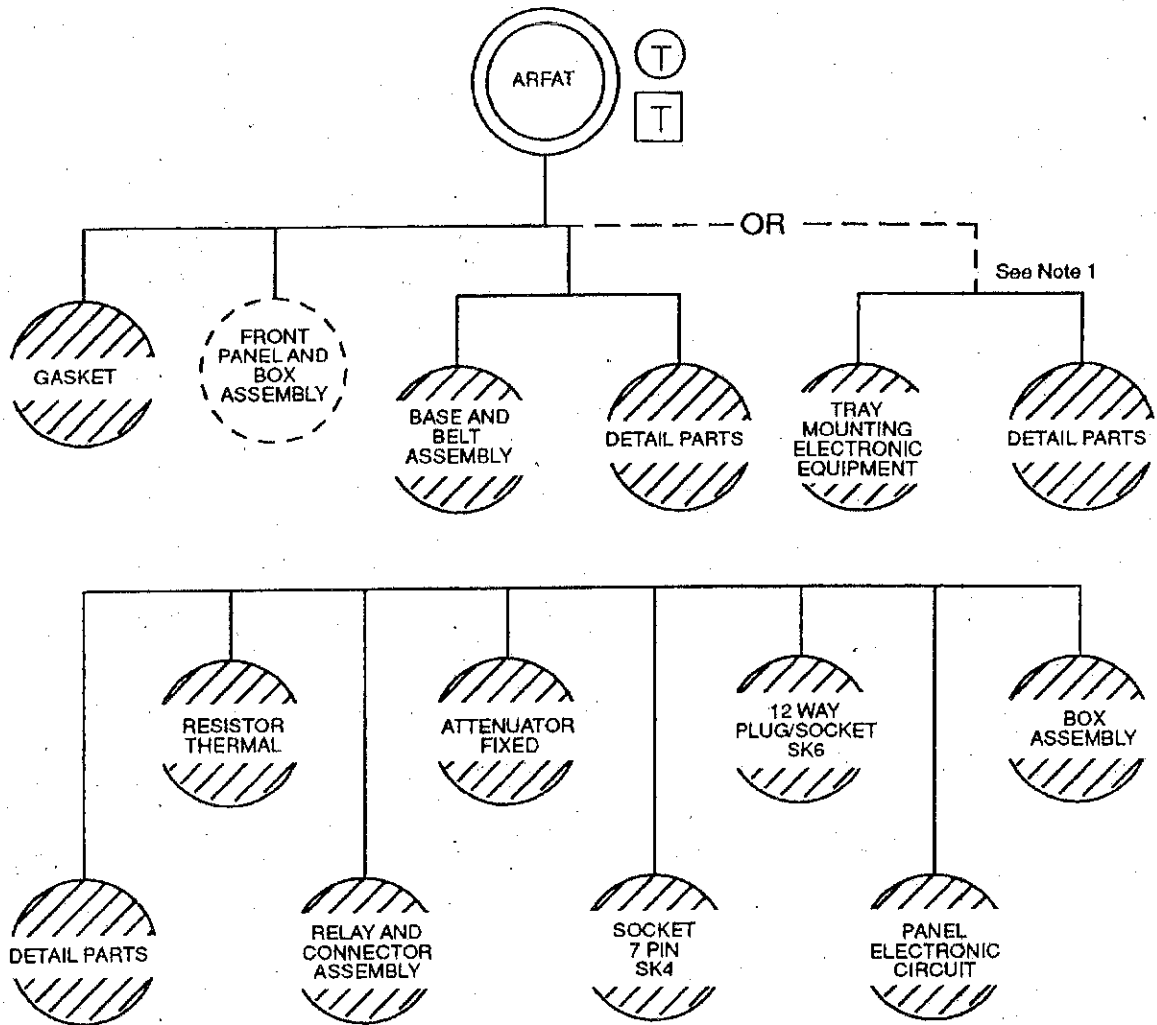
2. The repair chart depicts the repair policy in diagrammatic form, using the series of symbols described in Fig 1.

3. Information on each item is contained in or adjacent to the repair chart symbol as applicable.

ASSOCIATED PUBLICATIONS

4. The following information may be found in the documents listed:

- a. FORWARD assembly codes ..... Tels L 212, Section 3, Page 2001
- b. NATO stock numbers ..... IPC No 61597.


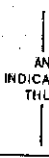

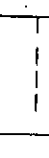
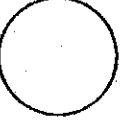
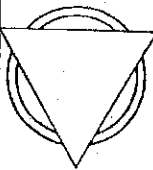

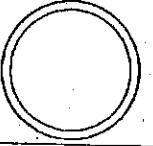
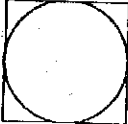



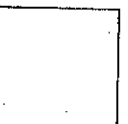

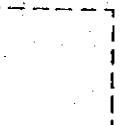

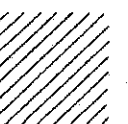









Item	Designation	Qty	Unit code / cct ref
1	Gasket synthetic rubber	1	
2	Base and belt assembly	1	
OR 2a	Tray mounting electronic equipment	1	
3	Relay and connector assembly	1	
4	Panel electronic circuit	1	
5	Resistor thermal	1	
6	Plug socket electrical	1	SK6
7	Socket electrical	1	SK4
8	Box assembly	1	
9	Attenuator	1	

Note 1. For detail parts refer to IPC AC 61597

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Repair chart No 1 – Adaptor r.f. antenna tuning

	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE FIRST LINE REPAIR ORGANIZATION IN THE COURSE OF UNIT REPAIR, NORMALLY RANGED AS A UNIT SPARE.		A DESIGNATION WITHOUT A SYMBOL SURROUND IS USED TO INDICATE A LOGICAL BREAKDOWN AREA WHICH DOES NOT EXIST AS AN ASSEMBLY
	AN ITEM WHICH IS SUBJECT TO UNIT REPAIR BUT WHICH IS NOT RANGED AS A SPARE		SYMBOLS REPRESENTING ITEMS WHICH ARE STOWED OR CARRIED REMOTE FROM THE EQUIPMENT ARE JOINED TO THE CHART BY BROKEN LINES
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE SECOND LINE REPAIR ORGANIZATION IN THE COURSE OF FIELD REPAIR, NORMALLY RANGED AS A SPARE		INDICATES AN ITEM HELD ON USER CHARGE FOR WHICH SPARE ITEMS ARE ALSO HELD BY THE USER
	AN ITEM WHICH IS SUBJECT TO FIELD REPAIR BUT WHICH IS NOT RANGED AS A SPARE		INDICATES AN ITEM HELD ON USER CHARGE WHICH IS NOT AVAILABLE IN THE FIELD AS A SPARE
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE REPAIR ORGANIZATION AT INTERMEDIATE LEVEL, NORMALLY RANGED AS A SPARE		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT UNIT LEVEL
	AN ITEM WHICH IS SUBJECT TO INTERMEDIATE REPAIR BUT WHICH IS NOT RANGED AS A SPARE		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT FIELD LEVEL
	INDICATES AN ITEM REPLACED BY THE BASE WORKSHOP ORGANIZATION IN THE COURSE OF BASE REPAIR		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT INTERMEDIATE LEVEL
	AN ITEM WHICH IS SUBJECT TO BASE REPAIR BUT IS NOT RANGED AS A SPARE		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT BASE LEVEL
	CROSS HATCHING WITHIN IN ANY SYMBOL INDICATES THAT THE ITEM REPRESENTED IS A CONSUMABLE ITEM		INDICATES THAT A RE-USABLE PACKAGE IS TO BE PROVIDED FOR GENERAL USE
	THE SYMBOLS SO ANNOTATED REPRESENT CENTRALISED REPAIR ITEMS (CENTREMS). SEE LIST OF CENTREMS FOR REPAIR/RETURN AGENCY		INDICATES THAT A RE-USABLE PACKAGE IS TO BE PROVIDED FOR USE BETWEEN BASE AND CONTRACTORS
			INDICATES THAT A RE-USABLE PACKAGE IS TO BE PROVIDED FOR AN ASSEMBLY WHICH IS CARRIED AS AN OPERATOR'S SPARE WITH A MOBILE EQUIPMENT OR SYSTEM
			INDICATES THAT THE ITEM IS SCHEDULED FOR REPAIR BY CONTRACTORS
			SHelf LIfeD ITEM, LIfe IN MONTHS TO BE INDICATED BY A FIGURE FOLLOWING SYMBOL
			LIfeD USAge ITEM, LIfe IN HOURS, RDS FIRING, MILEAGE ETC. TO BE INDICATED

MISC 721

ISSUE 3, OCT 1975

Fig 1 - Key to repair chart symbols

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END



CONDITIONS OF RELEASE	
1. [REDACTED]	3. [REDACTED]
2. [REDACTED]	4. [REDACTED]

## CLANSMAN V.H.F. ANTENNA SYSTEMS

### SECTION 4 - INITIATE BOX

Note: The chart in this regulation may be amended to cover modifications and changes in repair policy. Where it applies to a particular build standard (Field Batch), it will be so annotated.

#### INTRODUCTION

1. The repair chart in this regulation is based on Agreed Repair Charts, but has been adapted for use in the Field by simplifying the symbolic information and including additional information which will be required in the course of repair. It reflects the approved policy for repair of the Initiate Box which may be briefly summarised as follows:

a. Unit repairs

Repairs will be by replacement of lamp filament, lens indicator, fuse holder cap, fuse link, and dust covers plug-socket and lamp. No repairs or servicing will take place within the sealed equipment.

b. Field repairs

Repairs to the Initiate Box will be by replacement of faulty chassis mounted discrete components.

c. Base repairs

Repairs will be confined to a complete overhaul of equipment when rejected at Field level as BLR.

#### INTERPRETATION OF THE REPAIR CHART

2. The repair chart depicts the repair policy in diagrammatic form using a series of symbols as shown in Fig 1. A symbol may contain a reference to the table where the items represented are listed. The table is located on the page facing the symbolic chart.

#### ASSOCIATED PUBLICATIONS

3. The following information may be found in the documents listed:

- a. FORWARD assembly codes - Tels L 212 Section 4, Page 2001
- b. NATO stock numbers - IFC No 61662

Item.	Designation	Qty	NSN/Assembly Code/ Circuit Reference
1	Base Antenna Support No. 31, Mk 6	1	Z1/5985-99-744-7409
2	Rubber Gasket	1	Z1/5330-99-949-1082
3	Lead Electrical Assy	1	Z42/5945-99-658-1409(PL1)
4	Collett Clamp	1	Z42/5985-99-744-3411
5	Collett Circlip	1	G1/5365-99-744-3412
6	Screw Hex, Skt Head, M6X16 mm lg	1	G1/5305-99-136-4527
7	Washer, Shakeproof, M6	1	G1/5310-99-100-6945
8	Spacer Assembly	1	Z42/5985-99-658-1153
9	Plate Assy (Including Transformer and Insulator)	1	Z99/5985-99-661-3768
10	Connector Coaxial	1	Z32/5935-99-631-3976(SK1)
11	Thread Insert, M6 x 2 mm dia	3	G1/5340-99-137-3585
12	Screw, Pan Head, M3 x 5 mm lg	3	G1/5305-99-630-6241
13	Plate Modification Record	1	Z99/9905-99-100-4529
14	Plate Designation	1	Z99/9905-99-661-4253
15	Washer, Spring Tension, M3	3	G1/5310-99-137-0207

Repair Chart No. 1 - Base Antenna Element (Part 2)

(Disk ref: EB/C/BL/19)

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