STATION, RADIO, A41, NO 1 AND 2

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

This EMER must be read in conjunction with Tels F 482 Part 2 which contains figures and tables to which reference is made.

Note: These Pages 1 and 2, Issue 2, supersede Pages 1 and 2, Issue 1, dated 5 Oct 62. Detail covering the A41, No 2 has been added.

SUBJECT INDEX

TRANSMITTER RECEIVER, RADIO, A41, NO 1

SUBJECT INDEX - (cont)

TRANSMITTER-RECEIVER, RADIO, A41, NO 2

INDEX TO TABLES

Note: These Pages 3 and 4, Issue 2, supersede Pages 3 and 4, Issue 1, dated 5 Oct 62. Table 4008, Fig 4 and 4037 are additional.

INDEX TO TABLES - (cont)

INDEX TO FIGURES

INTRODUCTION

1. The construction of the Transmitter-receiver, radio, A41 is such that field and base repairs will normally fall in two categories:-

(a) Complete transmitter-receiver, radio.

(b) Sub-units returned as suspected faulty items from a more forward repair line (see para 53).

DISMANTLING, REPAIR AND ADJUSTMENT
(See Fig 2502, Tels F 482 Part 2 for component layout)

Plug-in units

2. To replace plug-in units:-

(a) Remove set from case (two allen headed bolts).

(b) Remove securing plate from i.f. unit (four No 6 BA screws and washers).

(c) Pull the unit gently from the base. (Ensure that no h.t. or l.t. voltages are on the unit).

Front panel components

3. To remove the front panel assembly:-

(a) Disconnect the two leads at aerial socket SKT1.

(b) Disconnect the two leads at aerial socket SKT3.

(c) Disconnect the lead at aerial socket SKT2.

(d) Disconnect green lead from output socket SKT5 at tag strip board.

(e) Remove tuning knob (No 6 BA screw and washer).

(f) Remove dial lock by unscrewing securing screw, lifting off lever and unscrewing splined shaft.

(g) Remove the three allen headed screws securing the tuning drive to the front panel, two are situated adjacent to tag strip and one is on the front panel under a tamper-proof seal.

(h) Remove the four No 4 BA screws (two on either side) holding the panel to chassis and gently lift the front panel clear.

(j) Replace in reverse order. It will be found that the dial lock mechanism has swung round the drive shaft but no difficulty will be encountered in moving it back into position and refitting the splined shaft.

(d) Care must be taken that the wire to LP1 is not trapped between the front panel and tuning drive.

4. Replacement of various components on front panel will be self evident after front panel has been removed.

Tuning capacitor and drive

5. To remove tuning capacitor and drive:-

(a) Remove shield from V2 (two screws) and remove V2.

(b) Disconnect all connections to gang capacitor.

(c) Remove cursor and tension spring, dial and four screws exposed by removing dial.

(d) Front panel complete with gang capacitor and drive can now be removed by carrying out para 3.

(e) Replace in reverse order.

(f) Set gang fully in against stops and replace dial and cursor set to datum mark on dial at 38Mc/s, with cursor set at centre of its range of adjustment.

6. To remove drive only:-

(a) Set gang fully in against stops (do not move gang until drive has been re-assembled).

(b) Carry out para 3.

(c) Remove No 4 BA nut securing front end of gang to drive assembly and withdraw drive assembly (care must be used as gang is now only held by end of spigot and wiring).

(d) Replace in reverse order, para 3 and 5(f).

Wired-in units
(See Fig 4006 to 4010 for full wiring details)

7. To remove units:-

(a) Remove valve cover from V3, 4, 5 and 12 (four No 6 BA csk screws).

(b) Remove V2 and shield.

(c) Disconnect all connections and remove vlave from faulty unit.

(d) Remove three screws securing the unit and lift out.

(e) Replace in reverse order.

I.F. unit chassis
(See Fig 4002 for wiring details)

8. To remove chassis:-

(a) Remove all plug-in units.

(b) Disconnect C13 at component panel.

(c) Remove crystal and disconnect lead from pin 4, 2nd i.f. base.

(d) Remove cableform from two securing clips.

(e) Remove securing screws (six). Chassis can then be lifted clear enough to remove bottom cover and to replace components and valve-holders.

Gear drive assembly

(See Table 4007 and Fig 4036)

9. The only maintenance required by this assembly is occasional lubrication with instrument oil. Should, however, it be necessary to dismantle the assembly (base repair only) it should be re-assembled as follows:-

(a) Lubricate all gears and spindles in bearings with item 28.

(b) Assemble item 24 to item 8.

(c) Assemble item 9 through rear bearing of item 1.

(d) Assemble item 8 to item 9 as shwon, pushing item 9 through front bearing of item 1. Maintain dimension 21/64 in.

(e) Assemble item 11 to item 1 as shown.

(f) Assemble item 5 to item 7 driving 7 into item 1 ensuring free rotation of item 5 when meshed with item 9.

(g) Press item 3 into item 1.

(h) Slide item 15 on to item 3.

(j) Rotate gear train until vanes of item 11 are fully meshed.

(k) Position item 8 so that grubscrew, item 24, is accessible for tightening.

(l) Slide item 6 through front bearing of item 1 and engage pinion in front wheel of item 8. Rotate rear wheel of item 8 by two teeth before sliding item 6 home and retaining in position with item 10.

(m) Assemble items 13, 14, 17, 18 and 22 as shown. Position item 18 on to item 3 so that the spring is wound clockwise by 1/4 turn approximately.

Note: These Pages 7 and 8, Issue 2, supersede Pages 7 and 8, Issue 1, dated 5 Oct 62. Para 9(t), 10 and 12, and Table 1 have been amended.

(n) Position pinion teeth of item 9 as shown on drawing in bottom l.h. view, maintaining the stop on item 9 in an anticlockwise position against item 14 (see bottom r.h. view). Check that vanes on item 11 are fully meshed, then tighten item 24.

(o) With item 26 in anticlockwise position against item 14 (as operation 14) assemble item 4 as shown in bottom r.h. view and secure position by tightening item 23. Check that cam, item 4, allows 17.4/5 turns of item 6 in each direction.

(p) Drill through pilot holes in items 4 and 8 and fit pins, item 30. Remove items 23 and 24.

(q) Apply item 29 to item 12, then assemble item 12 into item 16. Check full anticlockwise position of item 6, then assemble item 16 to item 1 with surfaces of bracket and casting in close contact. Secure item 16 with items 21 and 26.

(r) Manoeuvre rack of item 12 to mesh with item 15 in order to position the end of iron dust core 1/32 in. from end of coil former, item 16. It may be necessary to repositionitem 16 in order to achieve this dimension.

(s) Fit item 2 and secure with items 21 and 26.

(t) Torque required to rotate spindle, item 6, in either direction must not be greater than 5 oz. in. (360 g. cm.).

Repainting

10. Any repainting should be carried out as detailed in Tels A 760. Take care when chemical strippers are used as the case and front panel are manufactured from aluminium alloy and varnished to render them non-porous.

SPECIFICATION TESTS

11. These tests are divided into two categories, Class A and Class B.

Class A tests

12. These tests are those necessary to ensure correct operation of the set and must be carried out in full on initial inspections and after repairs or overhauls.

Class B tests

13. These tests need not be carried out after every overhaul but are included since they may assist in locating obscure faults.

Table 1 - Test equipment schedule - field and base repairs

Preferred instrument		Suitable alternative	
Part No	Designation	Part No	Designation
ZD 02674	Signal generator No 12, CT320	ZD 00391	Signal generator No 1, Mk 3
ZD 04302	Signal generator No 18, CT402	WD 3941	Signal generator No 13
Z4/6625-99-949-1999	Multimeter, set, Avo, type 9SX	Z4/6625-99-943-1524	Multimeter, Avo, model 8S
Z4/6625-99-913-8618	Oscilloscope set, CT436	Z4/10S/831	Oscilloscope, type 13A
Z4/6625-99-949-0510	Wattmeter, absorption, a.f., No 1, CT44	ZD 00663	Meter, output power, No 3, Mk 2
Z4/6625-99-949-0593	Calibrator, crystal, set, CT507	WY 0241	Wavemeter, standard, No 2
			* Test set, type AM 193 * Test set, type AM 330
ZD 00747	Wattmeter, absorption, h.f., No 2, CT211	-	-
Z4/6625-99-949-0470	Voltmeter, valve, No 3, CT208	ZD 00617	Instrument, testing, electronic, multi-range, No 1
ZD 00198	Oscillator, b.f., No 8	-	-
Z4/6625-99-949-0515	Test set, deviation, f.m., No 2, CT45	-	-
Z4/6625-99-933-1822	Counter, electronic, frequency	ZC 1411 Z4/ZD 00118	Frequency meter SCR 211 Wavemeter, No 4, Mk 2
Z4/6625-99-933-1923	Counter, electronic, frequency range extender	-	-
Z4/6625-99-933-1884	Converter, frequency, electronic	-	-
Z4/6625-99-942-4825	Ovens, drying, telecommunication equipment, 115/240V, 50-60c/s	-	-
Z4/6625-99-943-2419	Test set, electronic valve, CT160	ZD 00286 ZD 00019	Tester, valve, Avo, No 3 or No 1, Mk 2
W3/6625-99-200-2271	Leak locator	-	-
Z4/6625-99-943-1523	Multimeter, Avo, model 7	ZD 00207	Instrument, testing, Avometer, universal, 50-range, No 2
Z4/6625-99-949-5448	Power supply set for bench testing manpack radio sets	-	-
ZD 03985	Kits, testing, vehicle and manpack radio sets (see Tels M 152)	-	-

*Used in conjunction with Wavemeter, standard, No 2 in base workshops for crystal testing

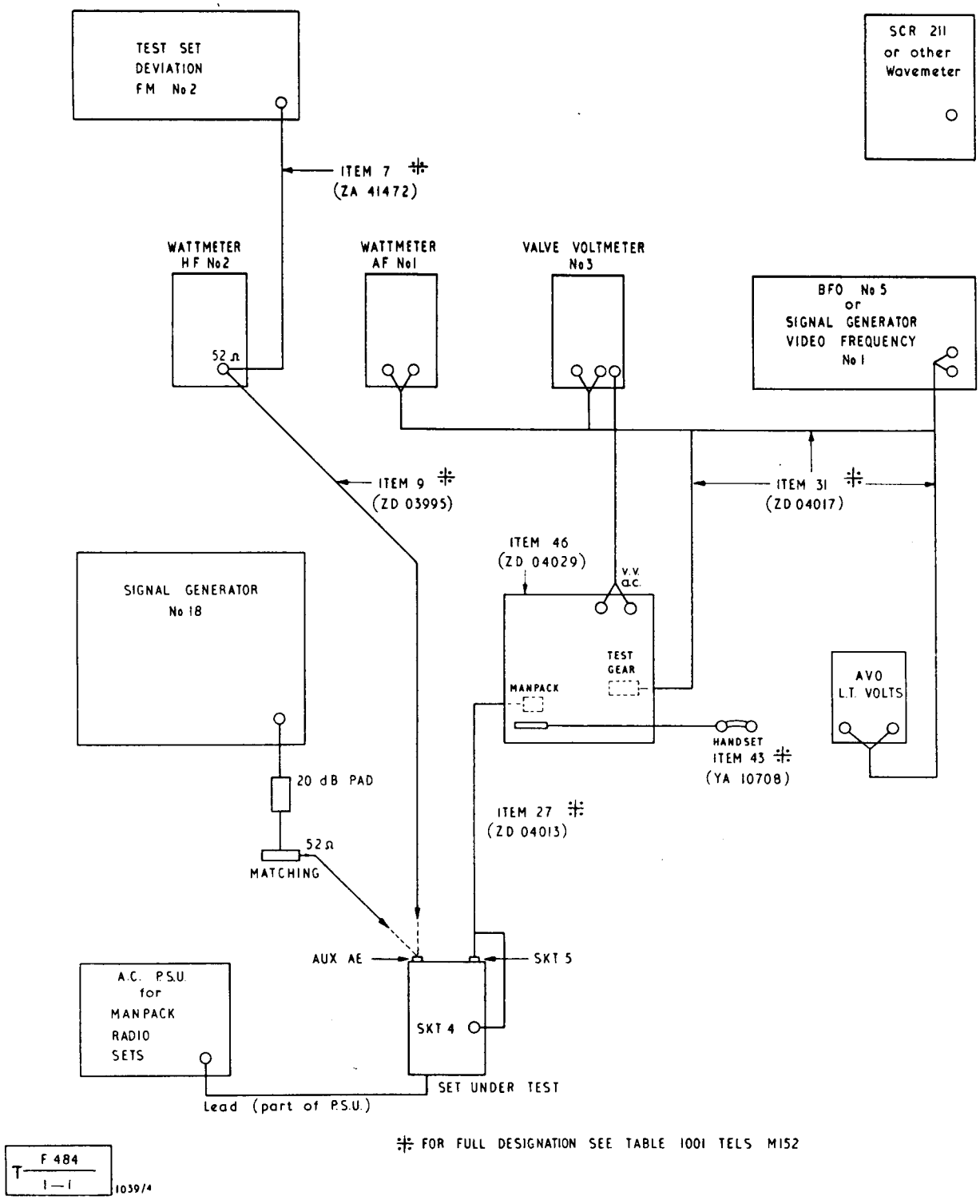

Fig 1 - Test equipment layout using Kits, testing, vehicle and manpack radio sets

Table 2 - Valve voltmeter switch connections

Connector box SC	A41 test point (Tels F 482 Fig 2501a-b)	Reading
Manpack 1	-	-
Manpack 2	Pin 3 to chassis	Limiter grid
Manpack 3	Pin 4 to chassis	M.O. bias
Manpack 4	Pin 1 to ~~chassis~~ Pin 4	A.F.C. bias
Manpack 5	Pin 7 to chassis	Receiver oscillator grid
Manpack 6	Pin 6 to chassis	A.F.C. discriminator output
	Pin 2	Chassis
	Pin 5	Not used

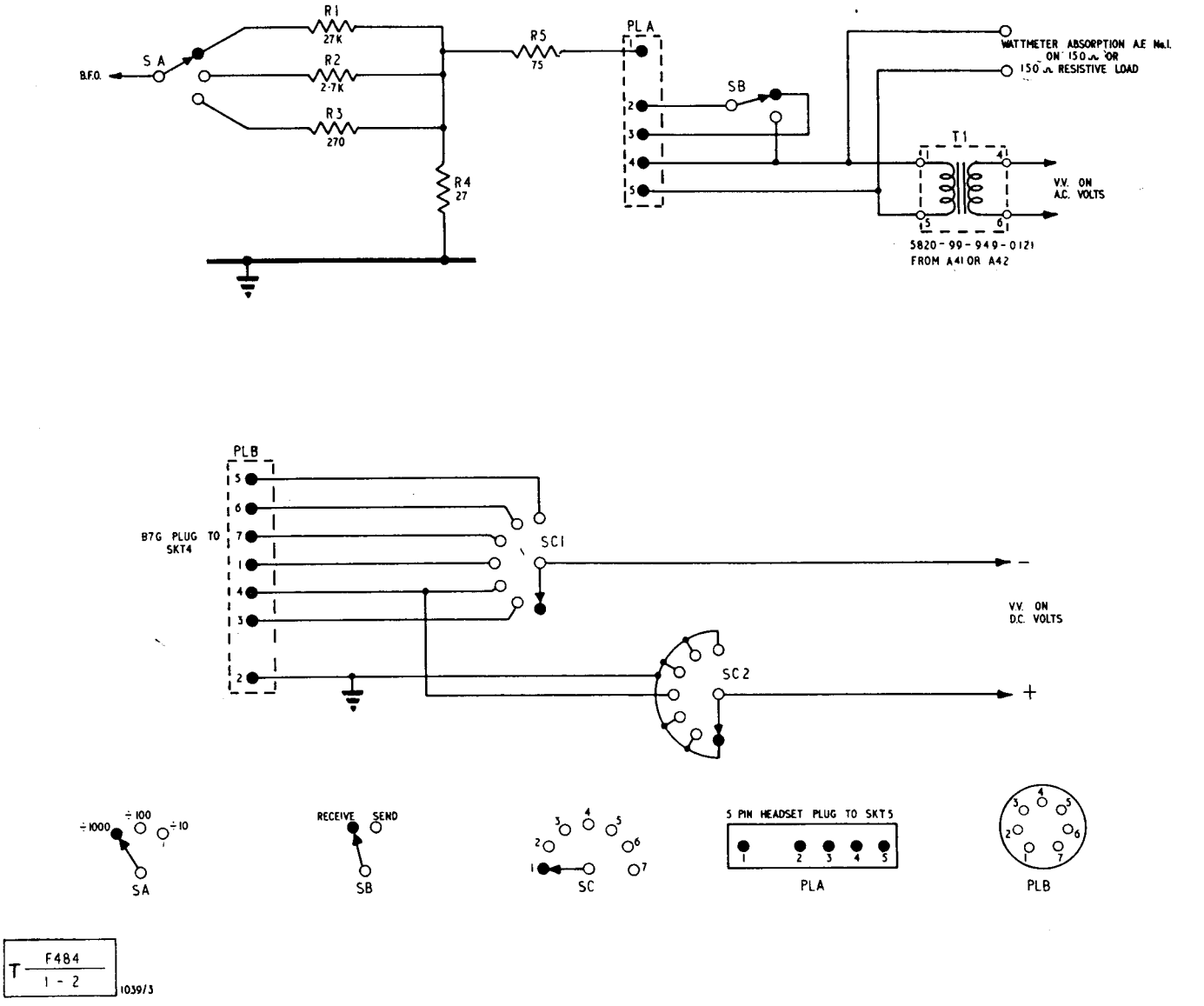

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Fig 2 - Circuit diagram of interconnections in lieu of connector box

Test conditions

14. Table 1 gives the list of preferred test equipment. Tests are described in the text assuming that Kits, testing, vehicle and manpack radio sets are available. The main part of this kit is Connection boxes, vehicle and manpack radio stations (ZD 04029), referred to in the text as the connector box. Fig 1 shows the layout of test equipment.

15. If Kits, testing, vehicle and manpack radio sets is not available, Fig 2 gives an alternative test box that can be built up locally. This gives the correct input and output impedances and connections to the test socket. Table 2 relates the switch positions to A41 test socket pins.

16. The standard r.f. input shall be an e.m.f. of 1.25μV, ie open circuit e.m.f. at s.g. termination.

17. The standard modulation shall be 15kc/s deviation at 1000c/s.

18. The transmitter audio input shall be 250mV from 100Ω.

19. The r.f. and i.f. signal generator impedances shall be 50Ω. The r.f. signal generator output shall be connected to the AUX AE socket of the equipment.

20. The receiver audio output shall be measured into an impedance of 150Ω.

21. The r.f. output power shall be measured by a meter of 50Ω impedance.

A.F. impedances

22. The a.f. output shall be measured into a 150Ω resistive load. The modulation inputs quoted are the open circuit voltages on an a.f. generator with an effective output resistance of 100Ω. (The MP 'Z' switch on the connector box caters for this.)

Signal generator outputs

23. Where an input voltage to the set is quoted this is the open circuit voltage at the terminating unit.

Control switch

24. This shall be at ON unless otherwise stated.

Supply voltages

25. Unless otherwise stated the following tests shall be carried out with normal supply voltages. When carrying out any test involving high filament voltage, switch set on with filament voltage at normal and slowly increase to high; before switching off return filament voltage to normal. If this procedure is not carried out valves will be damaged.

	High	Normal	Low
H.T. voltage (Sender)	150 ±3	130 ±2.6	100 ±2
H.T. voltage (Receiver)	75 ±1.5	65 ±1.3	50 ±1
L.T. voltage (Sender)	6.5 ±0.1	5.6 ±0.1	4.4 ±0.075
L.T. voltage (Receiver)	1.6 ±0.05	1.4 ±0.02	1.1 ±0.015

26. These will normally be obtained from the ~~bench power pack for~~ Power Supply set for bench testing manpack sets ~~this is not available the power pack described in Tels F 364 modified to give the voltages and the current detailed in para 27.~~ The HT marking on the Control - monitor panel do not refer to similar markings on the A41 battery nor to references in para 14 Tels F482 part 1. (24/[illegible] 625-99-949-5446)

General tests

Power consumption

27.

	Voltage	1.4V	-5.6V	65V	130V
Receive	[illegible] Drain	0.47A	-	22mA	-
Send	Max drain	0.47A	0.38A	19mA	55mA

These figures are typical and may vary with individual equipments

Receiver tests

Selectivity

28. (a) Specification: The overall selectivity shall be measured at 54Mc/s and shall be:-

Signal generator output	Total bandwidth kc/s
2.5μV (6dB point)	65 min 90 max
1.25mV (60dB point)	300 max

Centre frequency: 4.3Mc/s ±5kc/s

(b) Method:

(i) Connect Signal generator No 18 via 20dB attenuator pad and 52Ω matching and termination unit to AUX AE socket of transmitter-receiver, radio.

(ii) Connect the test equipment to the set via the connector box. Couple frequency meter loosely to limiter grid (+ve v.v. terminal).

(iii) Set VALVE VOLTMETER switch on test box to position 2 (limiter grid voltage). Set v.v. to 30V d.c. range.

(iv) Inject 25μV (250μV on signal generator) c.w. at 54Mc/s.

(v) Tune transmitter-receiver, radio for maximum limiter grid voltage at 54Mc/s.

(vi) Reduce input to 1.25μV (12.5μV on signal generator) and note the limiter grid voltage with this input.

(vii) Increase the signal generator output by 6dB (ie 2.5μV into set).

(viii) Adjust the frequency of the signal generator above and below 54Mc/s to give the same limiter grid current as in (vi). Measure the intermediate frequencies obtained at these points.

(ix) (1) The difference between the two frequencies in (viii) shall be 65 and 90kc/s.
(2) The mean of the two frequencies shall be 4.3Mc/s ±5[redacted]kc/s.

(x) Increase the signal generator output by 60dB (ie to give set input of 1.25mV) and repeat (viii).

(xi) The difference between the two frequencies shall not exceed 300kc/s.

Sensitivity

29. (a) Specification:

(i) Normal voltage: 1.25μV ±15kc/s deviation at 1kc/s to give ratio $\frac{\text{Signal + noise}}{\text{Noise}}$ of at least 20dB.

(ii) Low voltage: 2.25μV ±15kc/s deviation at 1kc/s to give ratio $\frac{\text{Signal + noise}}{\text{Noise}}$ of at least 20dB.

(b) Method:

(i) Connect the test equipment via the connector box as for previous test.

(ii) Set HANDSETS switch on connector box to SIG NOISE.

(iii) Connect the a.c. probe of the valve voltmeter to the V.V. A.C. terminals on the back of the connector box and set the v.v. to the 15V a.c. range.

(iv) Inject from the signal generator a set input signal of 1.25μV (12.5μV on s.g.) at 54Mc/s deviation 15kc/s at 1kc/s modulation frequency.

(v) Tune set to 54Mc/s for maximum a.c. voltage on the v.v. Note this reading.

(vi) Switch modulation off and again note reading.

(vii) The ratio of the readings in (v) and (vi) shall exceed 10:1 (ie 20dB).

(viii) Repeat (iv) to (vii) at 39Mc/s.

(ix) Repeat (iv) to (viii) at low voltage but with a set input of 2.25μV (22.5μV on s.g.).

30. Note that with reference to para 29 (b)(iv) and (v) an alternative is to inject a c.w. signal from signal generator and tune the set for maximum quieting, ie minimum reading on valve voltmeter.

Limiting characteristic

31. (a) Specification: The audio output shall not change by more than 2.5dB for any r.f. input with standard modulation varied between 3μV and 1mV throughout the frequency range.

(b) Method:

(i) Connect the test equipment via the connector box, HANDSETS switch on connector box to OFF, gain control on set to maximum.

(ii) Inject a 54Mc/s deviated 15kc/s at 1kc/s modulation frequency 3μV (30μV on signal generator) signal to AUX AE socket of equipment.

(iii) Tune set for maximum a.f. output, note the a.f. output.

(iv) Gradually increase the signal generator output to 1mV (10mV on signal generator), noting the a.f. output. The a.f. output shall not vary by more than 2.5dB from the reading at (iii).

(v) Repeat (ii) to (iv) at 39Mc/s deviated 15kc/s at 1kc/s.

Backlash and re-setting accuracy

32. (a) Specification: After setting the cursor accurately at any calibration point the error produced by detuning and retuning on the scale five times in each direction shall not exceed 10kc/s.

(b) Method:

(i) Connect test equipment via the connector box.

(ii) Set VALVE VOLTMETER switch on test box to position 2 (limiter grid voltage).

(iii) Connect Signal generator No 18 via 20dB attenuator pad and 52Ω matching and termination unit to AUX AE socket of transmitter-receiver, radio.

(iv) Inject a 54Mc/s c.w. 25μV (250μV on signal generator) signal and tune set to 54Mc/s. Adjust tuning until the i.f. output from the set is 4.3Mc/s ±500c/s as measured on the frequency meter loosely coupled to the limiter grid. (A convenient point is the +ve V.V. terminal).

(v) Set cursor accurately on 54Mc/s calibration mark and detune set five times in each direction.

(vi) Set calibration mark to cursor. The difference from (iv) shall not exceed 10kc/s as measured on frequency meter.

(vii) Repeat (iv) to (vi) at 39 and 47Mc/s.

Tuning dial lock

33. (a) Specification: Operation of the tuning dial lock shall not change the frequency of the receiver by more than 3kc/s.

(b) Method:

(i) Connect test equipment and signal generator as for previous test.

(ii) Input and conditions as in para 32(b)(iv).

(iii) Lock dial and note the difference in the frequency on frequency meter, it shall not exceed 3kc/s.

(iv) Repeat (ii) and (iii) at 39Mc/s and 47Mc/s.

Calibration accuracy

34. (a) Specification: With the dial corrected at the lowest calibration point the receiver oscillator frequency shall be within 30kc/s of the required frequency when the tuning dial is set to the highest calibration point without disturbing the cursor.

(b) Method:

(i) Connect test equipment via connector box.

(ii) Set VALVE VOLTMETER switch on test box to position 2 (limiter grid voltage).

(iii) Connect Signal generator No 18 via 20dB pad and 52Ω matching and terminating unit to AUX AE socket of set.

(iv) Inject a crystal checked frequency of 54Mc/s c.w. 25μV (250μV on signal generator) and tune set to 54Mc/s. Adjust tuning until the i.f. output from the set is 4.3Mc/s ±500c/s as measured on the frequency meter loosely coupled to the limiter grid.

(v) Adjust cursor accurately on 54Mc/s calibration mark. Cursor must not be disturbed from this setting for the remainder of the test.

(vi) Inject a crystal checked frequency of 39Mc/s c.w. as in (iii).

(vii) Tune set to 39Mc/s as in (iv).

(viii) Adjust tuning of set so that 39Mc/s calibration mark is set on cursor and check the frequency of the i.f. output on frequency meter. The difference shall not exceed 30kc/s.

Discriminator

35. (a) Specification: With an i.f. signal applied to the mixer grid such as to produce maximum output at the limiter grid test point, the discriminator output measured between the discriminator output test point and earth shall be zero at 4.3Mc/s ±3kc/s. The output of the discriminator measured at ±30kc/s shall be not less than 6V and the lesser of these two voltages shall be not less than 75% of the greater. The bandwidth shall be not less than 85kc/s.

(b) Method:

(i) With test equipment connected as for previous test, set VALVE VOLTMETER switch on connector box to position 2 (limiter grid).

(ii) Set v.v. to 30V d.c. range.

(iii) Connect Signal generator No 18 via 20dB attenuator and 52Ω matching and terminating unit to AUX AE socket of equipment.

(iv) Inject a 54Mc/s c.w. signal and tune the set for maximum limiter grid voltage.

(v) Increase output from signal generator until maximum voltage is obtained at limiter grid (approximately 18.5V).

(vi) Set VALVE VOLTMETER switch on connector box to position 6 (a.f.c. discriminator) and slightly adjust receiver tuning for zero output. Measure i.f. frequency on frequency meter, it shall be 4.3Mc/s ±3kc/s.

(vii) Adjust the signal generator 30kc/s above and below 54Mc/s and note the output at these points. They shall not be less than 6V and the lesser of the two voltages shall be at least 75% of the greater.

(viii) Repeat (i) to (vi) at 15kc/s above and below 54Mc/s. The output shall be within 40-60% of the voltage at the respective 30kc/s points.

Audio frequency power output

36. (a) Specification: With normal voltage, a 10μV r.f. input with standard modulation, the maximum audio output shall be not less than 5mW at 1kc/s. With low voltage, a 5μV r.f. input with standard modulation, the audio output shall be not less than 1.5mW.

(b) Method:

(i) With test equipment connected via connector box, HANDSETS switch on connector box to OFF.

(ii) Connect Signal generator No 18 via 20dB attenuator and 52Ω matching and terminating unit to AUX AE socket.

(iii) Inject a 10μV (100μV on s.g.) 54Mc/s deviated 15kc/s at 1kc/s signal and tune set for maximum audio output. Note reading on output meter. It shall be not less than 5mW.

(iv) Repeat (iii) at low supply voltages and an r.f. input of 5μV (50μV on s.g.). The audio output shall be not less than 1.5mW.

Sender tests

Output frequency

37. (a) Specification: With receiver tuned to 54Mc/s the transmitter frequency when switched on shall be within 4kc/s of the receiver frequency. With low voltage and receiver tuned to 54Mc/s the transmitter frequency, when switched on, shall be within 8kc/s of the receiver frequency.

(b) Method:

(i) With test equipment connected via connector box.

(ii) Inject a crystal controlled 54Mc/s signal deviated with standard modulation.

(iii) Set VALVE VOLTMETER switch on connector box to position 6 (a.f.c. discriminator) and tune set for zero output.

(iv) Remove signal generator input from AUX AE socket and connect Connectors, coaxial, ZA 03995, 4 ft (part of Kits, testing, vehicle and manpack radio sets) to AUX AE socket and Wattmeter, h.f., No 2, 52Ω, 1W.

(v) Couple output of frequency meter to wattmeter via the capacitor in connector.

(vi) Set SYSTEM switch on connector box to MANPACK S. The transmitter frequency as measured on the frequency meter shall be within 4kc/s of the receiver frequency.

(vii) Set supply voltages to low and repeat (vi). The transmitter frequency shall be within 8kc/s of the receiver frequency.

Automatic frequency control

38. (a) Specification: With normal voltage and the sender oscillator detuned 500kc/s, the a.f.c. shall restore the sender frequency to its nominal frequency. The total spread on the corrected value shall be not greater than 10kc/s between the positive and negative detuning. With low voltage and the sender oscillator detuned 400kc/s, the total spread on corrected value shall be not greater than 15kc/s.

(b) Method:

(i) With test equipment as for previous test, set SYSTEM switch on connector box to MANPACK S.

(ii) Tune transmitter to 54Mc/s and switch off 65V h.t.

(iii) Detune the transmitter frequency 500kc/s above 54Mc/s by adjustment of C2A and note the frequency when the REC 65V h.t. is switched on.

(iv) Repeat (iii) 500kc/s below 54Mc/s and note frequency.

(v) The difference between the resultant frequencies in (iii) and (iv) shall not exceed 10kc/s.

(vi) Repeat (ii) to (iv) at low voltage. The difference between the resultant frequencies shall not exceed 15kc/s.

(vii) With normal voltage switch off 65V h.t. and retune transmitter to 54Mc/s by C2A. Switch on 65V h.t. and check frequency.

Modulation sensitivity

39. (a) Specification:

(i) With an audio input of 500mV at 1kc/s the deviation shall not exceed 15kc/s.

(ii) With an audio input of 250mV at 1kc/s, the deviation shall be within 5-10kc/s.

(b) Method:

(i) Connect the equipment to the connector box and tune the set to 46Mc/s. Set SYSTEM switch on the connector box to MANPACK S.

(ii) Set B.F.O. switch on connector box to WANDER and adjust the b.f.o. output to give 50V at 1kc/s (check using the valve voltmeter a.c. probe if necessary).

(iii) Set up Test set, deviation, No 2. Tune set to mid frequency.

(iv) Set B.F.O. switch to ÷100 (reset b.f.o. to 50V if necessary) and check that the sender deviation does not exceed 15kc/s at 1kc/s.

(v) Inject an a.f. input of 250mV at 1kc/s and check that the sender deviation is within 5-10kc/s.

(vi) Adjust 1kc/s a.f. input to give 5kc/s deviation.

(vii) Inject an a.f. input of 300c/s at the level set up in (vi). The sender deviation shall be not less than ~~7kc/s~~ 2.5Kc/s or more than 7 Kc/s.

(viii) Repeat (vi) with an a.f. input of 3kc/s. The sender deviation shall be not less than 3.5kc/s or greater than 10kc/s.

R.F. output

40. (a) Specification: With normal voltage the sender r.f. output shall be not less than 0.75W throughout the frequency range. With low voltage the sender r.f. output shall be not less than 0.25W throughout the frequency range.

(b) Method:

(i) Connect the equipment to the connector box.

(ii) Connect the Wattmeter, absorption, h.f., No 2 to the AUX AE socket.

(iii) Set SYSTEM switch on connector box to MANPACK S. Tune the set over the entire frequency band noting the r.f. output. It shall be not less than 0.75W.

(iv) Repeat (iii) at low voltage. The r.f. output shall be not less than 0.25W.

Neutralization

41. (a) Specification: With the aerial circuit loaded and unloaded the difference in a.f.c. voltage shall not exceed 0.2V.

(b) Method:

(i) Connect the equipment to the connector box. Set VALVE VOLTMETER switch on connector box to position 4 (a.f.c. bias).

(ii) Connect the Wattmeter, absorption, No 2 to AUX AE socket.

(iii) Tune set to 53.8Mc/s and note reading on v.v.

(iv) Disconnect wattmeter and note reading on v.v. It shall not vary from (iii) by more than 0.2V.

Short aerial matching circuit

42. (a) Specification: Using the standard artificial aerial consisting of a 20pF capacitor in series with a non-inductive resistor of 33Ω the r.m.s. voltage developed across the resistor shall be not less than 4.2V at any frequency, measured on an a.c. v.v.

(b) Method:

(i) Make up dummy aerial as detailed in 42(a) and connect the capacitor to short aerial socket of set and resistor to chassis.

(ii) Connect a.c. probe of v.v. across 33Ω resistor. Set v.v. to a.c. 10V range.

(iii) Switch set to send by operating pressel switch on handset or if connected via connector box, setting SYSTEM switch to MANPACK S and tune set throughout the frequency range and note the minimum voltage reading. It shall be not less than 4.2V.

Long aerial matching circuit

43. (a) Specification: Using the artificial aerial units specified in Table 3, the r.f. voltage appearing across the appropriate resistor shall be measured by means of an a.c. v.v. Column 4 of the table shows the minimum voltages that must be achieved.

Measuring frequency	Artificial aerial		R.M.S. output voltage
	Non-inductive resistor	Inductor	
38Mc/s	400Ω	18 turns } 27 S.W.G. en cu wire close wound on 1/4 in. dia former	14.5V
46Mc/s	360Ω	22 turns }	15.5V
55Mc/s	290Ω	None }	13.0V

Table 3 - Artificial aerial units

(b) Method:

(i) Make up the artifical aerial consisting of an inductor and resistor in series as detailed in Table 3 and connect the inductor to the long aerial socket of set and resistor to chassis.

(ii) Connect v.v. a.c. probe, 30V a.c. range, to chassis and to junction of inductor and resistor.

(iii) With 38Mc/s artificial aerial connected to long aerial socket tune set to 38Mc/s, switch to send and note reading on v.v. It shall be not less than 14.5V.

(iv) Repeat (iii) for 46Mc/s artificial aerial. It shall be not less than 15.5V.

(v) Repeat (iii) for 55Mc/s artificial aerial (290Ω 1W non-inductive resistor connected between long aerial socket and chassis, no inductor). It shall be not less than 13.0V.

Sealing test

44. (a) Specification: With an initial pressure of 10 lb/sq. in. the time constant of the set shall be not less than 150 hours.

(b) Method:

(i) Raise the internal pressure to 10 lb/sq. in.

(ii) After 14 hours the pressure shall not have dropped below 9 lb/sq. in. (see Tels M 631).

(iii) The set shall be dried using the Oven, drying, Tels (Tels M 601) and the desiccator re-activated.

Class B tests

Spurious responses

45. The i.f. rejection measured at the aerial socket shall be not less than 100dB compared with an unmodulated r.f. carrier of 1.25μV.

46. The image rejection shall be not less than 60dB for any carrier frequency in the range of the transmitter-receiver, radio. The above ratios are to be measured by observation at the limiter grid test point.

Audio fidelity

47. The total harmonic distortion shall be not greater than 7% at 400c/s at any setting of the receiver gain control giving between 1 and 5mW output, and with standard deviation but with an r.f. input of 10μV the audio response of the receiver throughout its range shall be:-

Audio frequency (c/s)	Response
1000	0dB equals 1mW
350	0 to +6dB
2500	-12 to -2dB
3500	at least 10dB down

Frequency stability

48. With normal voltage the frequency drift of the receiver variable oscillator shall not exceed 9kc/s between 2 minutes and 30 minutes after switching on.

49. The frequency of the receiver variable oscillator shall not change by more than 6kc/s when the supply voltages are changed from NORMAL to LOW.

50. With normal voltage the receiver oscillator frequency shall vary less than 8kc/s with an h.t. voltage change of 5V (all other supplies remaining constant).

Calibration error

51. With the dial corrected at any crystal calibration point the maximum dial and marking error at any point between this calibration point and half way to the adjacent calibration points shall not exceed 25kc/s, except that ten errors up to 50kc/s shall be permitted over the whole frequency band of the set.

Parasitic oscillations

52. Both sender and receiver shall be free of parasitic oscillations at any setting of the controls over the band 20 to 100Mc/s.

ELECTRICAL ADJUSTMENTS AND ALIGNMENT

General

53. The electrical alignment and adjustments given in this regulation do not include alignment of the i.f. unit or plug-in units as plug-in units aligned in one radio set are not normally directly interchangeable with those in other sets and generally further alignment will be required. Complete interchangeability can only be obtained with sub-units which have been aligned on specially designed jigs. The repair and alignment of the i.f. units will be described and separately specified in a later issue of additional pages to this regulation or Tels M 160-169.

54. The necessary trimming tools are provided in the Holdalls, tool, telecommunications, repair and alignment.

55. Necessary leads for connecting s.s.g., test equipment etc to the set are contained in the Ancillary test kit, vehicle and manpack radio sets.

Mixer alignment

56. (a) Connect test equipment via connector box. Set VALVE VOLTMETER switch on connector box to position 2 (limiter grid voltage).

(b) Connect Signal generator No 12 using 7.5Ω termination with 43Ω resistor in series, terminated with a 50Ω resistor to pin H of mixer box (care must be taken to ensure that this connection does not come in contact with any other pin on mixer box, should this happen the mixer valve will be damaged).

(c) Inject a signal of 4.3Mc/s ±250c/s and adjust TR1 for maximum output at limiter grid. Input level shall be adjusted during alignment to keep limited grid voltage less than 5V.

Receiver oscillator alignment

57. (a) Connect test equipment as for previous test, VALVE VOLTMETER switch to position 2 (limiter grid voltage), HANDSETS switch to MANPACK PH and headset plugged into connector box.

(b) Set SCR 211 to 4.3Mc/s and couple to +ve terminal of v.v.

(c) Connect Signal generator No 18 via 52Ω matching and termination unit to C23A, and inject 37.8Mc/s c.w. signal.

(d) Set tuning dial to bottom datum line (gang fully meshed).

(e) With trimming tool slacken locknut of L14, turn core fully anti-clockwise and then screw core slowly clockwise, ie in, until beat note is heard in phones (gain control set as appropriate), lightly tighten locknut.

(f) Inject 55Mc/s c.w. signal and tune set to 55Mc/s. Turn C50A slotted adjuster fully clockwise, ie trimmer fully up taking care not to overturn or the adjuster will slip on the trimmer, now turn slotted adjuster anticlockwise until beat note is heard, adjust for zero beat at 4.3Mc/s.

(g) Inject 37.8Mc/s c.w. signal, tune set to datum line and adjust L14 for zero beat at 4.3Mc/s, if the adjustment is large a small overrun on the adjustment will save time.

(h) Repeat (f) at 55Mc/s and adjust C50A, overrun slightly if adjustment is large.

(j) Repeat (f) and (g) until at datum line and 55Mc/s, frequency meter reads to within 4.3Mc/s ±5kc/s. Finish at 55Mc/s.

Receiver r.f. alignment

58. (a) Connect test equipment via connector box. Set VALVE VOLTMETER switch on connector box to position 2 (limiter grid voltage).

(b) Inject 39.2Mc/s signal from Signal generator No 18 to AUX AE socket and set tuning dial to 39.2Mc/s.

(c) Adjust in turn L13, L10 and L7 for maximum output at limiter grid.

(d) With tuning dial set at 53.8Mc/s inject 53.8Mc/s c.w. signal and adjust in turn C23A, C18A and C12A for maximum output at limiter grid.

(e) Adjustments (b) to (d) shall be repeated in turn until no further adjustment is required. Note that as the sensitivity of the receiver improves the signal generator level shall be progressively reduced to maintain an output level of approximately 2.5V.

Transmitter alignment

59. (a) Connect test equipment via connector box. Set VALVE VOLTMETER switch on connector box to position 4 (a.f.c. bias).

(b) With r.f. power output meter connected to AUX AE socket, set SYSTEM switch on connector box to MANPACK S.

(c) Switch off 65 and 135V and adjust C11 to about 1/4 mesh. Tune set to 39.2Mc/s, switch on 135V and note reading on d.c. v.v. (this should be in the order of 1.6V), adjust C11 to obtain this figure.

(d) Switch on 65V h.t. and adjust L1 to obtain the reading noted in (c). Adjust L7 for maximum output power, re-adjust L1 for the noted voltage on d.c. v.v.

(e) Tune set to 53.8Mc/s and adjust C2A for voltage as in (c) on v.v., switch 65V h.t. on and off, note that the reading remains the same in both the on and off positions.

(f) Adjust C12A for maximum output power, re-adjust C2A.

(g) Tune set to 39.2Mc/s and adjust L1 and L7 as before.

(h) Tune set to 53.8Mc/s and adjust C2A and C12A as before.

(j) Repeat (g) and (h) so that on switching 65V h.t. on and off the reading on the v.v. does not change. Finish the alignment at 53.8Mc/s.

(k) Tune set throughout the frequency range, any variation of reading on v.v. must be smooth and a variation of more than 0.5V-3V indicates that alignment is incorrect. The coil L1 should have a setting similar to coils L10 and L13.

Adjustment of aerial circuit

60. (a) With transmitter tuned to 39.2Mc/s, adjust L7 for maximum power output.

(b) With transmitter tuned to 53.8Mc/s, adjust C12A for maximum power output.

Neutralization

61. (a) Connect test equipment via connector box. Set VALVE VOLTMETER switch on connector box to position 4 (a.f.c. bias).

(b) With AUX AE socket connected to r.f. power output meter 52Ω socket, tune transmitter to 53.8Mc/s and note the a.f.c. bias.

(c) Disconnect the r.f. power output meter at AUX AE socket and note a.f.c. bias.

(d) Adjust C11 so that the a.f.c. bias does not vary by more than 0.2V with AUX AE unloaded or loaded. Check the alignment of C2A and C12A as described in para 58 and 59 each time C11 is adjusted and before checking neutralization.

Calibrator oscillator output

62. (a) Connect test equipment via connector box. Set SYSTEM switch to MANPACK R and HANDSETS switch to OFF. Set radio set gain control to maximum.

(b) Tune set to calibration point at 38.7Mc/s for maximum output on output meter. The meter must read not less than 1mW.

(c) Repeat (b) at 40.85Mc/s, calibration point. Output must be not less than 1mW.

(d) Repeat at 43, 45.15, 47.3, 49.45, 51.6 and 57.7Mc/s calibration points. At the points where the output is less than 1mW adjust C53 to increase the output to 1mW, do this on all the calibration points in turn and then recheck. Final adjustment of C53 should given an output at all calibration points of not less than 1mW and the outputs should be as uniform as possible.

Knifing and calibration

63. This will be carried out as a base repair only. Field workshops will not, under any circumstances, change or attempt to knife the vanes of the gang capacitor.

(a) Connect test equipment via connector box. Set VALVE VOLTMETER switch to position 2 (limiter grid voltage), SYSTEM switch to MANPACK R and HANDSETS switch to MANPACK PH. Plug in headset to connector box.

(b) Carry out para 57 alignment of oscillator ends.

(c) Using the Wavemeter, standard, No 2, Tels Z 210-219, tune TR A41 throughout frequency range starting at 55Mc/s and note the frequency at every 500kc/s calibration mark. The error must be less than ±25kc/s, where it exceeds this value adjust the sector, about to mesh, of the split vane of C60 rotor, by a slight bend until frequency error is below 25kc/s, adjustment to these vane sectors should leave a smooth follow-on from one vane to the next, sometimes a slight twist is required, continue this down to the 38Mc/s mark. The phones will indicate as the points are approached by a quieting of the noise.

(d) Retune TR A41 to 55Mc/s and check at every 200kc/s calibration mark. The error shall not exceed 25kc/s. Where it exceeds this, adjust the split vane sector about to mesh as before, check at every 200kc/s down to 38Mc/s.

(e) All errors must show 25kc/s or less except that ten random errors up to 50kc/s are allowed.

(f) Carry out r.f. alignment, para 58 and receiver sensitivity check, para 29.

FAULT FINDING DATA

I.F. sensitivity

64. Inject a 4.3Mc/s ±250c/s c.w. signal from Signal generator No 12 via 7.5Ω terminating unit with 43Ω resistor in series terminated by 50Ω resistor to pin H of mixer box. Set signal generator output to give 2.5V at limiter grid. The signal generator output shall not exceed 0.2mV.

I.F. selectivity

65. Input and conditions as para 64, the detune frequencies at the two 6dB points shall be noted and must meet the following requirements where f_1 and f_2 are the two detune frequencies noted:-

(a) $f_1 - f_2$ shall be not greater than 10kc/s.

(b) $f_1 + f_2$ shall be not greater than 90kc/s or less than 65kc/s.

(c) The bandwidth at the 60dB points shall be not greater than 300kc/s.

(d) The peak response between the two frequencies noted in the 6dB points (ie pass band) shall be not greater than 2dB above the level at 4.3Mc/s.

Image rejection

66. (a) With receiver tuned to mid frequency inject a c.w. signal of 1.25μV to AUX AE socket. Note limiter grid voltage.

(b) Increase r.f. frequency by 8.5Mc/s and tune receiver for maximum output at limiter grid. Note input level to obtain the same limiter grid voltage as in (a).

(c) The difference between the r.f. inputs in (a) and (b) shall be not less than 60dB.

I.F. rejection

67. With receiver tuned to mid frequency inject a signal of 4.3Mc/s c.w. to AUX AE socket and adjust signal level to obtain the same output as in para 66(a). The signal level shall be not less than 100dB with reference to that set in para 66(a).

High voltage test

68. (a) Connect test equipment via connector box. Set VALVE VOLTMETER switch to position 4 (a.f.c. bias).

(b) With normal voltage tune set to 53.8Mc/s, set SYSTEM switch on connector box to MANPACK S and note the reading on the v.v., this should be in the order of 1.6V.

(c) Change supply voltages to high (para 25) and note the change of reading on the v.v. This change must not exceed 20% of the reading noted in the normal voltage condition.

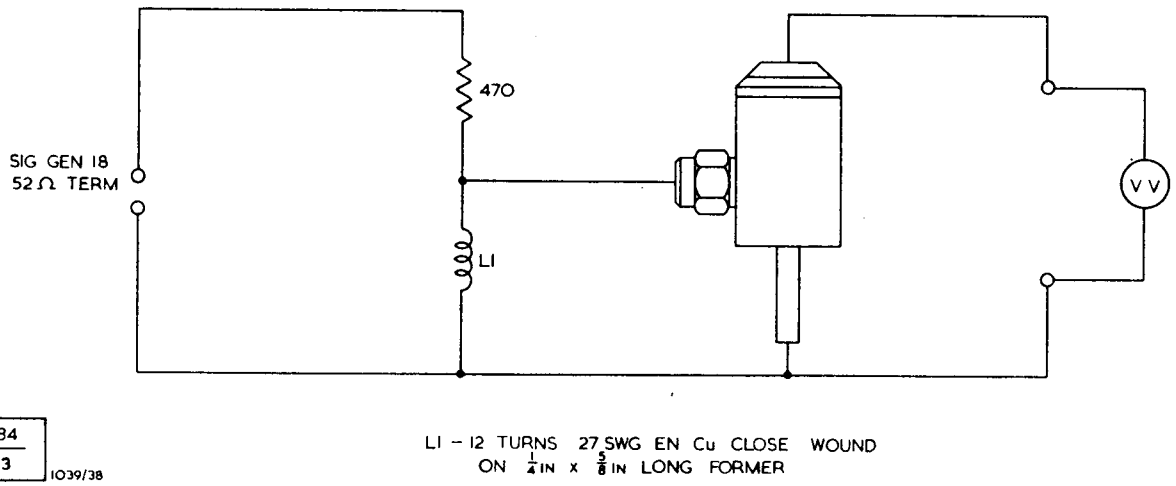


Fig 3 - Details of test pad and connections

Aerial matching unit (ZA 53400)

69. (a) Connect 52Ω termination of Signal generator No 18 to test pad manufactured as detailed in Fig 3.

(b) Connect probe of Amplifier, wide band, ZD 04494, to matching unit, connect v.v. as shown on Fig 3 and output of amplifier to probe on v.v.

(c) Switch amplifier to 20-50Mc/s x 10 and v.v. to 1.5V a.c.

(d) Inject a 100mV 44Mc/s c.w. signal and slowly tune s.g., keeping meter steady on the 'Set carrier' mark, for maximum reading on v.v. It must lie between 44 and 47Mc/s and the v.v. reading must not be less than 130mV (1.3V on v.v.).

Connector, coaxial, 4 ft 6 in. long
(See Fig 4001)

70. Do not insert cable connecting pin into its appropriate socket without first connecting the cable as it is extremely difficult to extract.

(a) Trim cable by removing approximately 1 in. of outer cover and 1/2 in. of braid. Dismantle the plug or socket, detach the connecting pin and lay the piece parts carefully on one side.

(b) Take the screw collar and rubber sleeve and thread on to the cable. Encircle the braid with the split metal sleeve, completely dividing the sleeve into two halves, if necessary, by means of a screwdriver or fine wedge. Clamp gently over braid and slide the rubber sleeve up and over to hold the two halves in position.

(c) Splay the free ends of braid and fit the lipped washer, lip towards braid. Push up tightly trapping braid, trimming if necessary.

(d) Remove all but 1/16 in. of polythene insulant, trim centre conductor to 3/32 in. and with a hot iron, quickly solder to cable connecting pin. Fit the two halves of the tapered split grip around rubber sleeve, braod ends against large shoulder of sleeve. Assemble to main plug or socket body and retain with screw collar.

Method of securing the socket to cable

71. Note that before securing socket to prepared cable, ensure that position of cap and cable entry gland afford a straight entry.

(a) Prepare cable as shown.

(b) Slide the union nut, rubber sleeve, and metal outer sleeve over cable. Flare out braid and position the metal inner sleeve between braid and inner core and clamp with outer sleeve. Trim off surplus braid protruding beyond flanges, then position the rubber sleeve over boss of outer sleeve.

(c) Remove cap from body of socket, solder conductor into hole of socket, and tighten union nut. Replace cap.

~~Note: The next page is Page 1001~~

Note: These Pages 29 to 31, Issue 1 contain additional information.

TRANSMITTER, RECEIVER, RADIO, A41, NO 2

INTRODUCTION

72. The information contained in the previous paragraphs applies equally to the No 2 set. The following paragraphs deal with the additional data required for the No 2 set.

73. The valve voltmeter switch connections given in Table 2 carry the same readings but the test point pin designations differ. In the No 1 set the pins are numbered 1 to 7 and in the No 2 set they are lettered correspondingly A to F, and H.

74. In the instructions for removing the I.F. unit chassis, para 8(b) is to be disregarded for the No 2 set as C13 is not fitted.

75. Refer to Tels A 411 and A 412 for advice on the repair of printed boards and transistor circuits.

SPECIFICATION TFSTS

76. Carry out tests under the test conditions laid down for the No 1 set. Carry out the muting test after the A.F. power output test (para 36) which should be done with the system switch to ON.

Muting control

77. (a) Specification: The muting control must reduce the noise level by at least 20dB.

(b) Method:

(i) With test equipment and signal generator set up as in para 36b(i) and (ii), set the s.g. to 54Mc/s deviated 15kc/s at 1kc/s modulation and tune the set to 54Mc/s.

(ii) Turn the system switch to MUTE and MUTE control fully clockwise.

(iii) Switch the s.g. carrier off and note the noise output level from the set.

(iv) Turn the MUTE control RV104 (front panel) slowly anticlockwise until the noise output reduces sharply.

(v) Check that the reduction in noise level is greater than 20dB.

(vi) Switch the s.g. carrier on. Increase its output until the set output increases by not less than 20dB. Check that the s.g. output is less than 1.25μV.

(vii) Repeat the above tests at 39Mc/s.

ELECTRICAL ADJUSTMENTS AND ALIGNMENT

General

78. The information contained in para 53-55 also applies to the No 2 set. A lead for connecting the connector box to the set audio socket in place of Item 27 (Fig 1) is being produced and will be issued later.

79. The alignment and repair information given in para 56-61 and 63 on, are the same for both sets but para 62 only applies to the No 1 set. The following method applies to the No 2 set.

Calibration circuit alignment

80. (a) Connect the test equipment via the connector box. Set SYSTEM switch to MANPACK-R and HANDSETS switch to OFF. Set the radio set volume control to maximum.

(b) Tune set to 46Mc/s and adjust C191 to obtain approximately 5V at the limiter grid. Adjust C53 to approximately half capacitance, turn the system switch to CURSOR and the volume control to maximum. Check, with reference to the scale, that a calibration signal is obtained at 38Mc/s and intervals of 1Mc/s throughout the frequency band.

(c) Connect oscilloscope to pin 1 on the calibration board and switch to CHAN. Adjust RV102 until the 1st divider stage is set to ÷4, and adjust RV103 until the 2nd divider stage is set to ÷5. The waveform should be as shown in Fig 4.

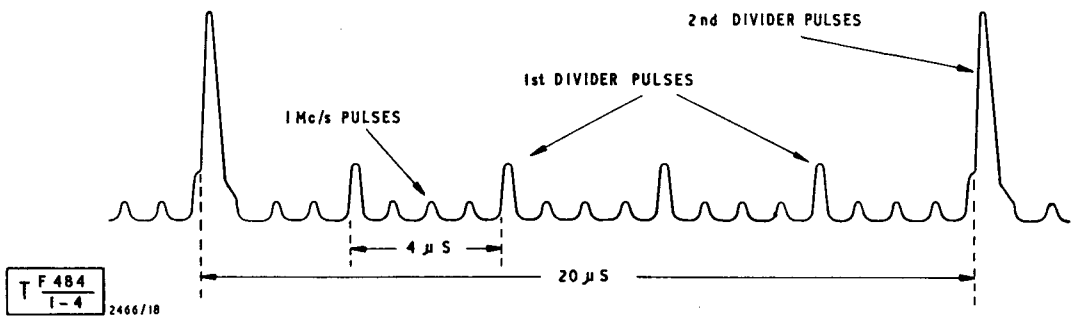


Fig 4 - Calibrator output waveform, No 2 set

(d) Check by adjustment of RV102 that the 1st divider can be set to ÷3, ÷4 and ÷5. Note the number of turns of RV102 over which the 1st divider remains at ÷4. Reset RV102 to the centre of this range.

(e) Check by adjustment of RV103 that the 2nd divider can be set to ÷4, ÷5 and ÷6. Note the number of turns of RV103 over which the 2nd divider remains at ÷5. Reset RV103 to the centre of this range.

(f) Switch supplies to low voltage condition and check that the correct division ratios are maintained.

Calibration circuit output

81. With switch S101 in the CHAN position, tune for maximum output at 38.6, 46.6 and 54.6Mc/s and adjust C53 such that the readings at these three points are at the lowest possible level above 0.5mW.

82. Check that the output at the following frequencies exceeds 0.5mW and adjust C53 if necessary to keep the output to the lowest possible level above 0.5mW. Adjust C191 if necessary to obtain 0.5mW output at the 1Mc/s calibration points.

83. Check at 1Mc/s intervals from 38.6, to 54.6Mc/s with S101 in the CHAN position and at 1Mc/s intervals from 38 to 54Mc/s with S101 in the CURSOR position.

Note: The next page is Page 1001

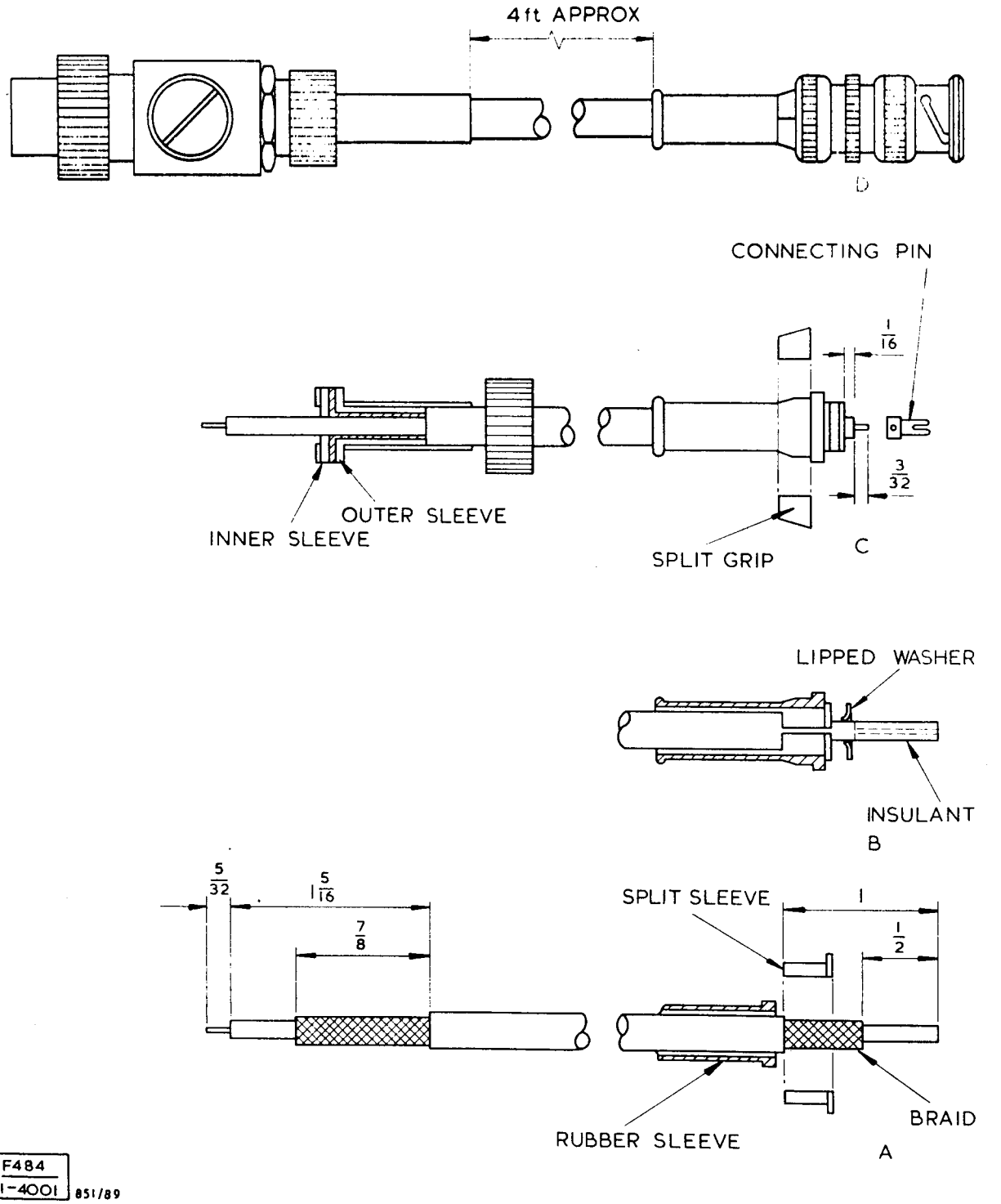


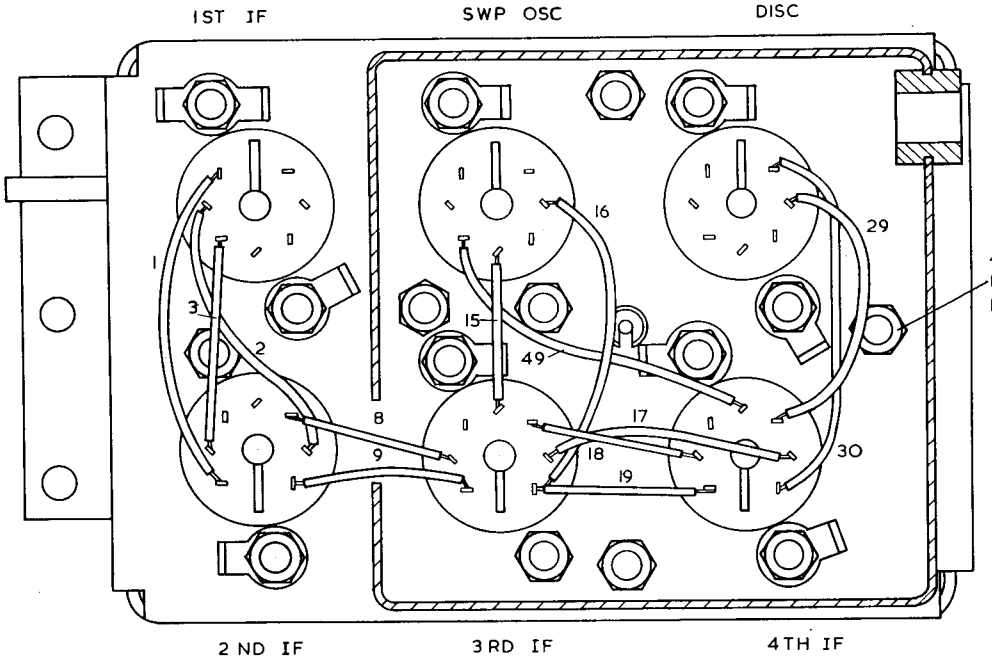
Fig 4001 - Connector, coaxial, 4 ft 6 in. long

Table 4001 - I.F. chassis - wiring details

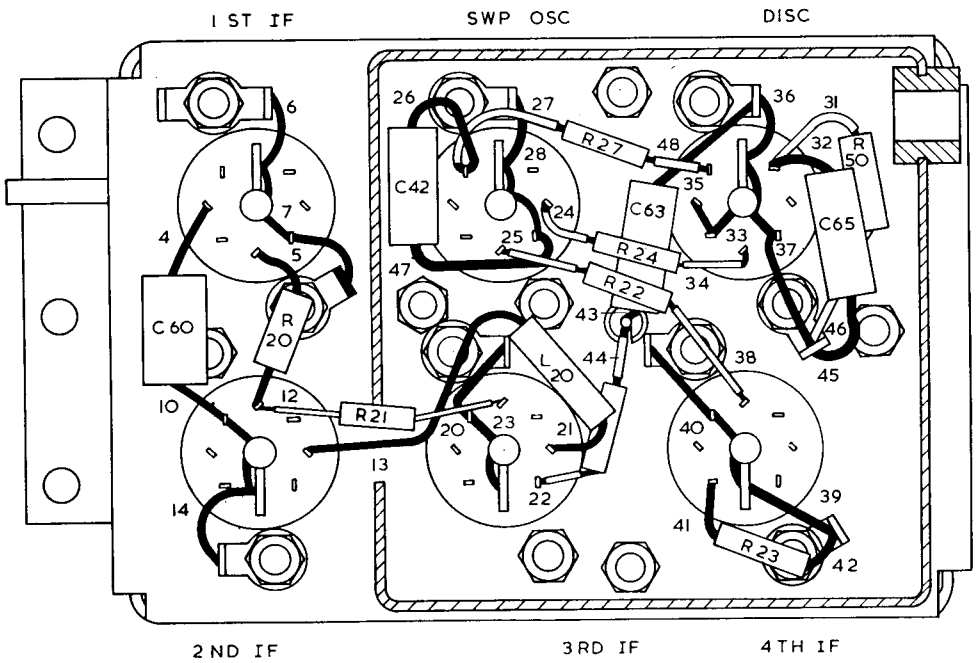
Lead No	Colour	Route			View
1	Yellow	1st i.f. pin 7	-	2nd i.f. pin 1	A
2	Yellow	1st i.f. pin 6	-	2nd i.f. pin 6	A
3	Yellow	1st i.f. pin 5	-	2nd i.f. pin 2	A
4	Yellow	1st i.f. pin 6	-	C60	B
5	Bare	1st i.f. pin 4	-	R20	B
6	Bare	1st i.f. centre tag	-	Earthing tag	B
7	Yellow	1st i.f. centre tag	-	1st i.f. pin 3 then to earth	B
8	Yellow	2nd i.f. pin 5	-	3rd i.f. pin 2	A
9	Yellow	2nd i.f. pin 7	-	3rd i.f. pin 1	A
10	Yellow	2nd i.f. pin 3	-	C60	B
11	Bare	2nd i.f. pin 4	-	R20	B
12	Yellow	2nd i.f. pin 4	-	R21	B
13	Yellow	2nd i.f. pin 6	-	L20	B
14	Bare	2nd i.f. centre tag	-	Earthing tag	B
15	Yellow	3rd i.f. pin 4	-	Sweep oscillator pin 4	A
16	Yellow	3rd i.f. pin 7	-	Sweep oscillator pin 2	A
17	Yellow	3rd i.f. pin 6	-	4th i.f. pin 6	A
18	Yellow	3rd i.f. pin 5	-	4th i.f. pin 2	A
19	Yellow	3rd i.f. pin 7	-	4th i.f. pin 1	A
20	Yellow	3rd i.f. pin 4	-	R21	B
21	Yellow	3rd i.f. pin 6	-	L20	B
22	Yellow	3rd i.f. pin 7	-	R48	B
23	Bare	3rd i.f. centre tag	-	3rd i.f. pin 3 then to earth	B
24	Yellow	Sweep oscillator pin 2	-	R24	B
25	Yellow	Sweep oscillator pin 4	-	R22	B
26	Bare	Sweep oscillator pin 7	-	C42	B
27	Yellow	Sweep oscillator pin 7	-	R27	B
28	Bare	Sweep oscillator centre tag	-	Sweep oscillator pin 3 then to earth	B
29	Yellow	Discriminator pin 2	-	4th i.f. pin 5	B
30	Yellow	Discriminator pin 1	-	4th i.f. pin 7	B
31	Yellow	Discriminator pin 1	-	R50	B
32	Bare	Discriminator pin 1	-	C65	
33	Bare	Discriminator centre tag	-	Discriminator pin 5 then to pin 6	B
34	Yellow	Discriminator pin 4	-	R24	B
35	Yellow	Discriminator pin 7	-	R27	B
36	Bare	Discriminator centre tag	-	Earthing tag	B
37	Bare	Discriminator centre tag	-	Discriminator pin 3 then to earth	B
38	Yellow	4th i.f. pin 4	-	R22	B
39	Bare	4th i.f. centre tag	-	Earthing tag	B
40	Bare	4th i.f. centre tag	-	Pin 3 then to earth	B
41	Bare	4th i.f. pin 1	-	R23	B
42	Bare	R23	-	Earthing tag	B
43	Bare	C63	-	Stand off insulator	B
44	Yellow	R48	-	Stand off insulator	B
45	Bare	C65	-	Earthing tag	B
46	Yellow	R50	-	Earthing tag	B
47	Bare	Sweep oscillator tag 3	-	C42	B
48	Bare	C63	-	Earthing tag	B
49	Yellow	Sweep oscillator pin 5	-	4th i.f. pin 4	A

Note: These Pages 1003 and 1004, Issue 2, supersede Pages 1003 and 1004, Issue 1, dated 5 Oct 62. Fig 4002 has been amended.

VIEW 'A'



VIEW 'B'



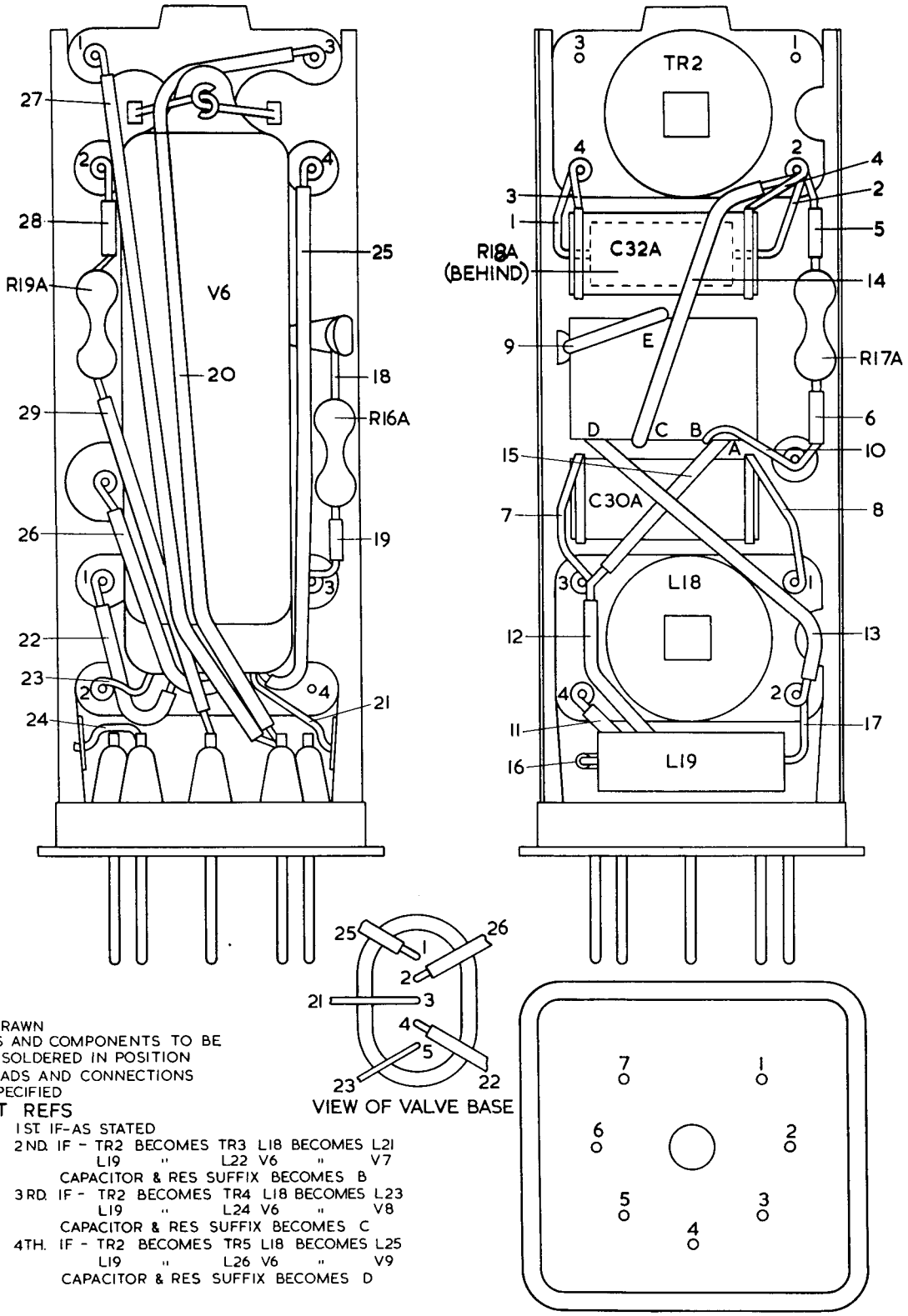
NOTE:-
SLEEVING ON RESISTORS TO BE
1mm I/D 2·5mm O/D
ALL OTHER SLEEVING 0·5mm I/D 2mm O/D
ALL WIRING TO BE AS SHORT AND
DIRECT AS POSSIBLE.

T F484 / 2-4002 1039/6

Fig 4002 – I.F. chassis wiring

Table 4002 - 1st, 2nd, 3rd and 4th i.f. units - wiring details

Lead No	Type	Origin	To
1	Bare	R18A	TR2 pin 4
2	Bare	R18A	TR2 pin 2
3	Bare	C32A	TR2 pin 4
4	Bare	C32A	TR2 pin 2
5	Sleeved	R17A	TR2 pin 2
6	Sleeved	R17A	Terminal seal
7	Bare	C30A	L18 pin 3
8	Bare	C30A	L18 pin 1
9	Bare	Capacitor block E	Earth tag
10	Sleeved	Capacitor block B	Terminal seal
11	Sleeved	L18 pin 4	Base pin 2
12	Sleeved	L18 pin 3	Base pin 1
13	Sleeved	Capacitor block D	L18 pin 2
14	Sleeved	Capacitor block C	TR2 pin 2
15	Sleeved	Capacitor block A	L18 pin 3
16	Sleeved	L19	Base pin 6
17	Bare	L19	L18 pin 2
18	Bare	R16A	Earth tag
19	Sleeved	R16A	L18 pin 3
20	Sleeved	TR2 pin 3	Base pin 7
21	Bare	V6 pin 3	Earth tag
22	Sleeved	V6 pin 4	L18 pin 1
23	Bare	V6 pin 5	L18 pin 2
24	Bare	Base pin 3	Earth tag
25	Sleeved	V6 pin 1	TR2 pin 4
26	Sleeved	V6 pin 2	Terminal seal
27	Sleeved	TR2 pin 1	Base pin 5
28	Sleeved	R19A	TR2 pin 2
29	Sleeved	R19A	Base pin 4



NOTES

1. WIRE AS DRAWN
2. ALL LEADS AND COMPONENTS TO BE SECURELY SOLDERED IN POSITION
3. SLEEVE LEADS AND CONNECTIONS WHERE SPECIFIED

CIRCUIT REFS

1ST IF-AS STATED
2ND IF - TR2 BECOMES TR3 L18 BECOMES L21
L19 " L22 V6 " V7
CAPACITOR & RES SUFFIX BECOMES B
3RD IF - TR2 BECOMES TR4 L18 BECOMES L23
L19 " L24 V6 " V8
CAPACITOR & RES SUFFIX BECOMES C
4TH IF - TR2 BECOMES TR5 L18 BECOMES L25
L19 " L26 V6 " V9
CAPACITOR & RES SUFFIX BECOMES D

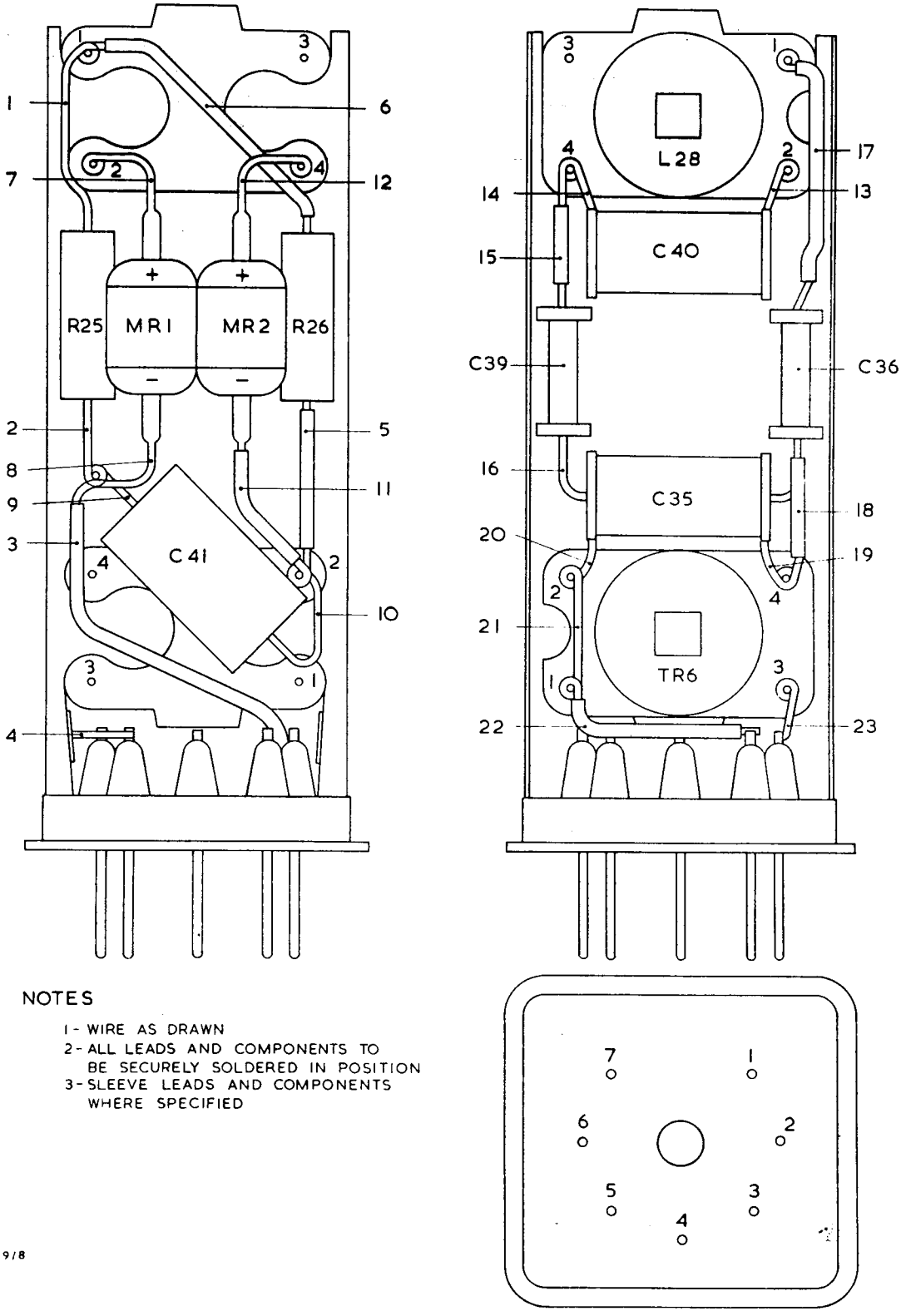
1039/7

T F 484 / 1-4003

Fig 4003 - 1st, 2nd, 3rd and 4th i.f. units - wiring details

Table 4003 - Discriminator unit - wiring details

Lead No	Type	Origin	To
1	Sleeved	R25	L28 pin 1
2	Bare	R25	Terminal seal
3	Sleeved	Base pin 7	Terminal seal
4	Bare	Base pin 3	Earth tag
5	Sleeved	R26	TR6 pin 2
6	Sleeved	R26	L28 pin 1
7	Bare	MR1	L28 pin 2
8	Bare	MR1	Terminal seal
9	Bare	C41	Terminal seal
10	Bare	C41	TR6 pin 2
11	Sleeved	MR2	TR6 pin 2
12	Bare	MR2	L28 pin 4
13	Bare	C40	L28 pin 2
14	Bare	C40	L28 pin 4
15	Sleeved	C39	L28 pin 4
16	Bare	C39	Earth tag
17	Sleeved	C36	L28 pin 1
18	Sleeved	C36	TR6 pin 4
19	Bare	C35	TR6 pin 4
20	Bare	C35	TR6 pin 2
21	Bare	TR6 pin 2	TR6 pin 1
22	Sleeved	Base pin 1	TR6 pin 1
23	Bare	Base pin 2	TR6 pin 3



NOTES

1 - WIRE AS DRAWN
2 - ALL LEADS AND COMPONENTS TO BE SECURELY SOLDERED IN POSITION
3 - SLEEVE LEADS AND COMPONENTS WHERE SPECIFIED

T F484 / 1-4004 1039/8

Fig 4004 - Discriminator unit - wiring details

Table 4004 - Sweep oscillator unit - wiring details

Lead No	Type	Origin	To
1	Bare	C61	Pin 2 base X
2	Bare	C61	Pin 1 base Z
3	Sleeved	R44	Pin 2 base X
4	Sleeved	R44	Pin 2 base Z
5	Bare	R46	Pin 1 base X
6	Bare	R46	Pin 3 base X
7	Bare	R45	Pin 2 base Z
8	Bare	R45	Pin 4 base Z
9	Sleeved	Base pin 1	Pin 3 base X
10	Sleeved	Base pin 2	Pin 1 base Z
11	Bare	C59	Pin 4 base X
12	Bare	C59	Pin 3 base Z
13	Bare	R42	Pin 1 base Z
14	Bare	R42	Pin 3 base Z
15	Sleeved	Base pin 5	Pin 4 base X
16	Sleeved	Base pin 4	Pin 4 base Z
17	Sleeved	C62	Pin 1 base X
18	Sleeved	C62	Pin 2 base Z
19	Sleeved	R43	Earth tag
20	Sleeved	R43	Pin 3 base Z
21	Sleeved	V13 pin 1	Pin 2 base Z
22	Sleeved	V13 pin 2	Pin 4 base Z
23	Bare	V13 pin 3	Earth tag
24	Bare	Base pin 3	Earth tag
25	Sleeved	V13 pin 4	Pin 3 base Z
26	Sleeved	V13 pin 5	Base pin 6

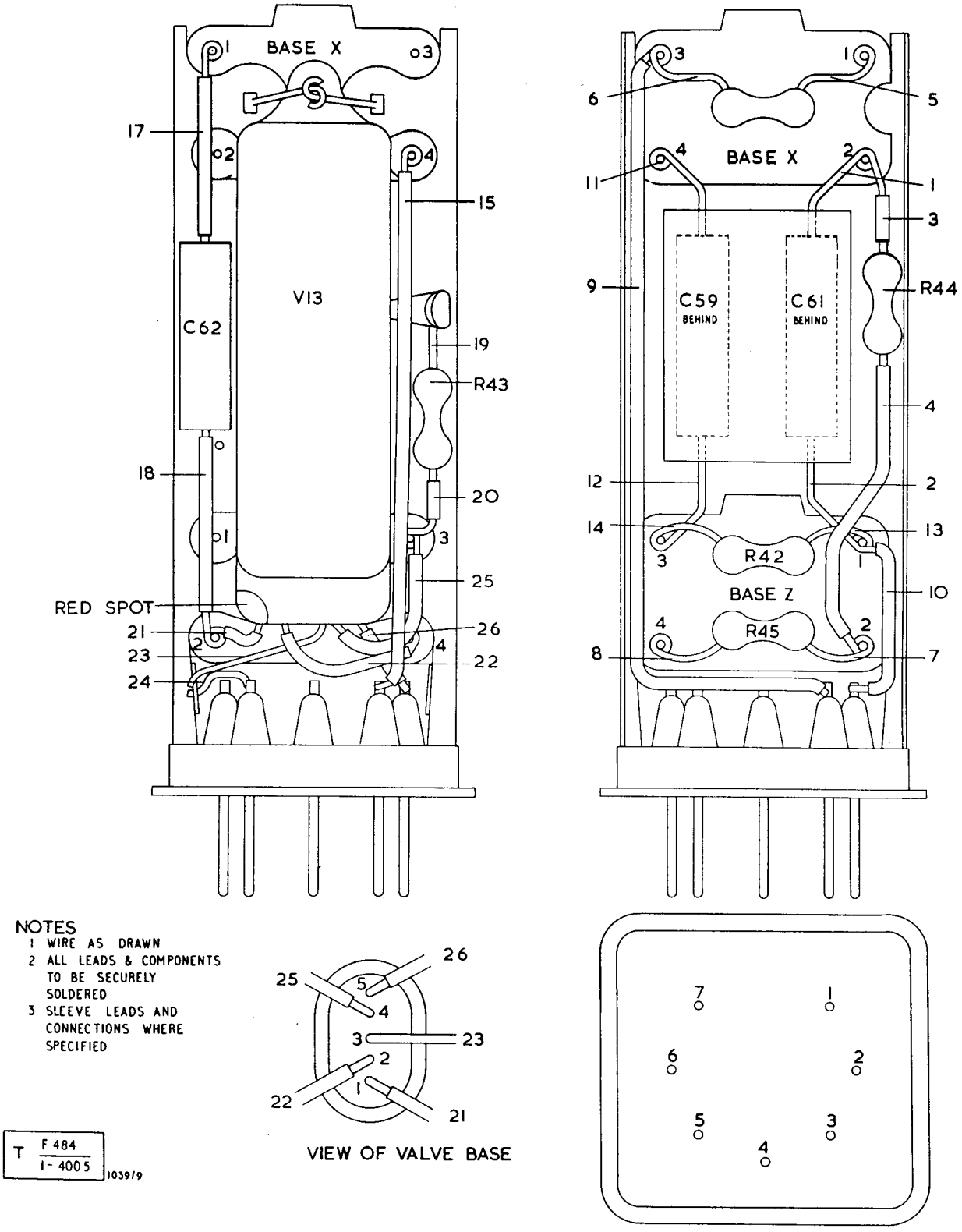
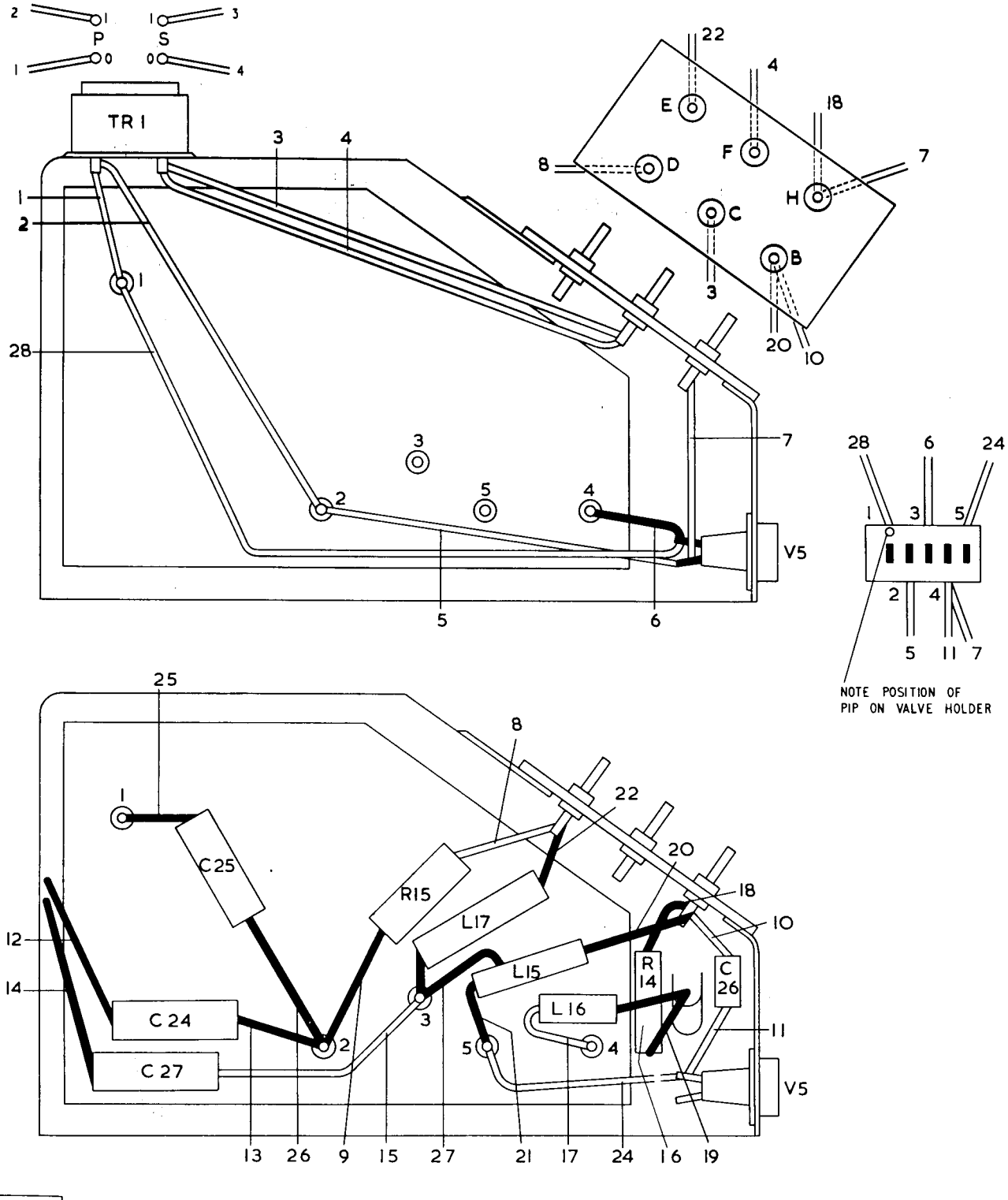


Fig 4005 - Sweep oscillator unit - wiring details

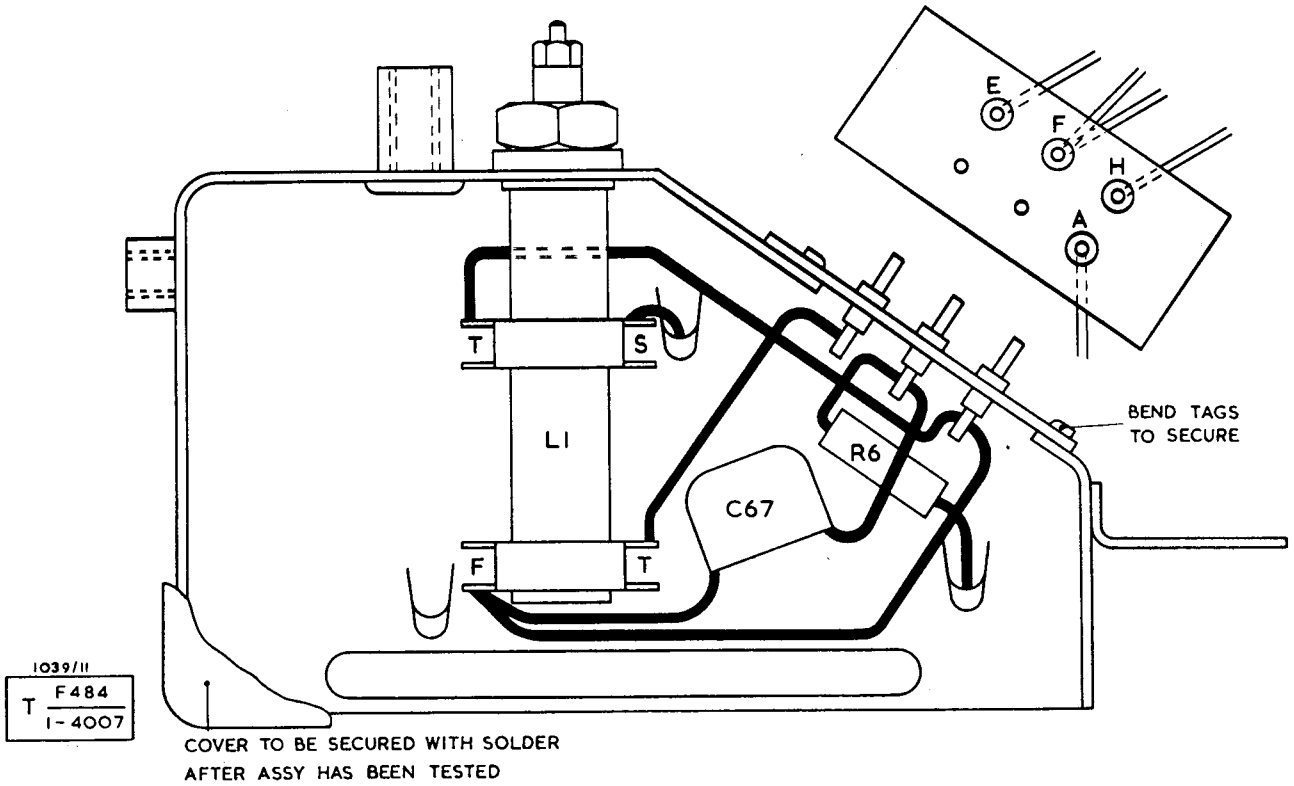
Table 4005 - Mixer unit - wiring details

Lead No	Colour	Route
1	Violet	TR1/PO - tag 1
2	Violet	TR1/PO - tag 2
3	Violet	TR1/S1 - C
4	Violet	TR1/SO - F
5	Violet	2 - pin 2
6	Bare	3 - pin 4
7	Violet	4 - H
8	Violet	R15 - D
9	Bare	R16 - tag 2
10	Violet	C26 - B
11	Violet	C26 - 4
12	Bare	C24 - earth
13	Bare	C24 - tag 2
14	Bare	C27 - earth
15	Violet	C27 - tag 3
16	Bare	L16 - earth
17	Violet	L16 - tag 4
18	Bare	R14 - H
19	Bare	R14 - earth
20	Bare	L15 - B
21	Bare	L15 - tag 5
22	Bare	L17 - E
23	Bare	L17 - tag 3
24	Violet	Pin 5 - 5
25	Bare	C25 - tag 1
26	Bare	C25 - tag 2
27	Violet	L15T - tag 3
28	Violet	1 - pin 1



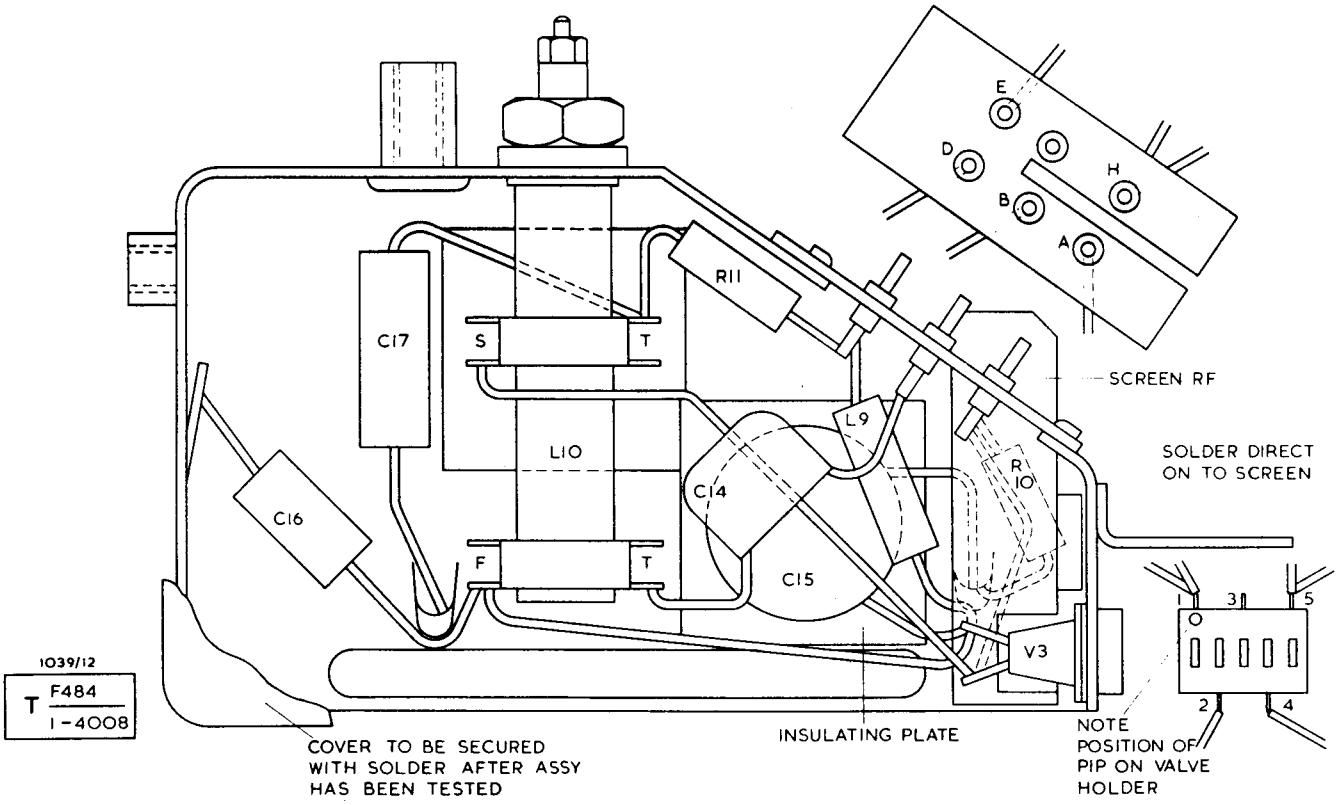
T F 484 / 1-4006 1039/10

Fig 4006 - Mixer unit - wiring details



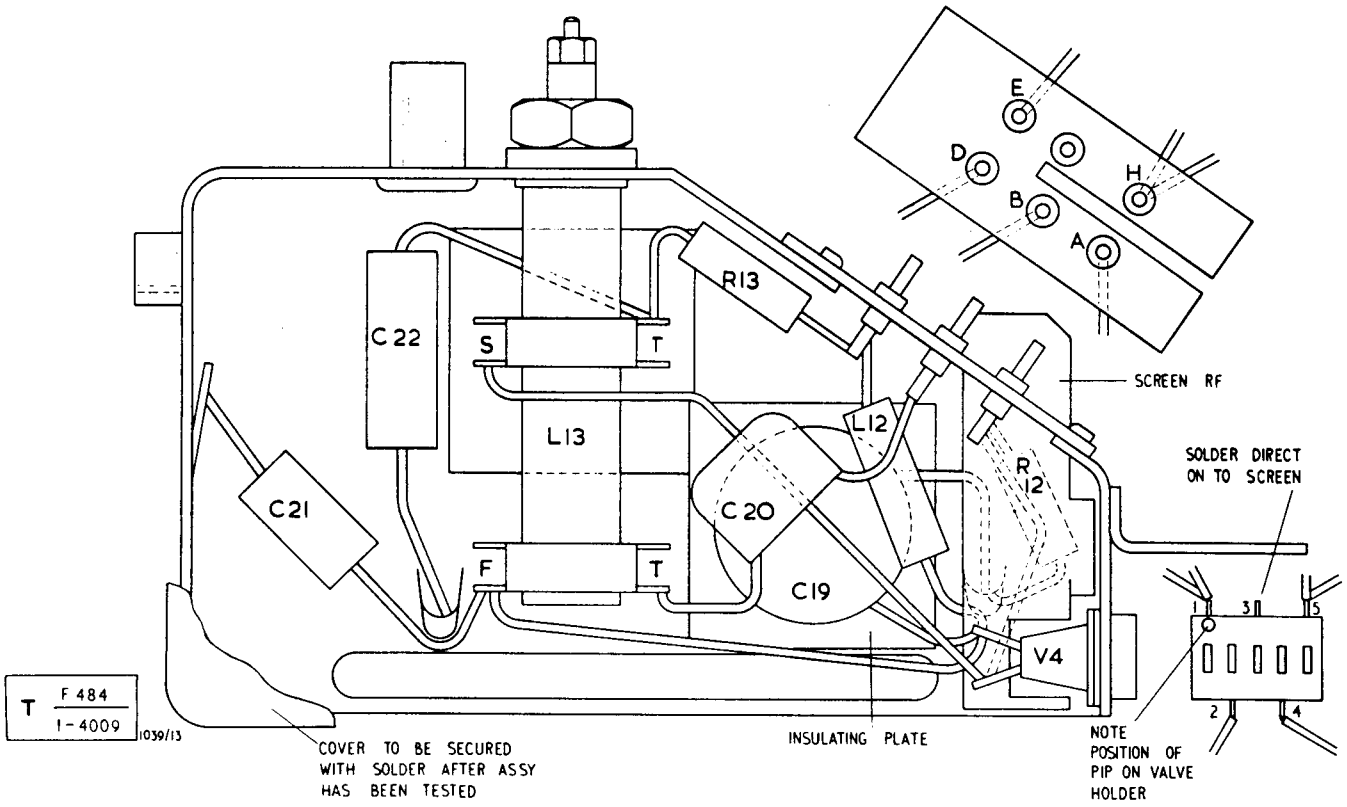
Operation	Route	Wire	Sleeving
1	A to L1 F	26 S.W.G. t.c.	Violet 1/2 mm
2	E to L1 T	26 S.W.G. t.c.	Violet 1/2 mm
3	H to L1 T	26 S.W.G. t.c.	Violet 1/2 mm
4	Earth to L1 S	-	-
5	R6 to F	-	-
6	R6 to earth	-	-
7	C67 to F	26 S.W.G. t.c.	Violet 1/2 mm
8	C67 to L1 F	26 S.W.G. t.c.	Violet 1/2 mm

Fig 4007 - Transmitter oscillator unit - wiring details



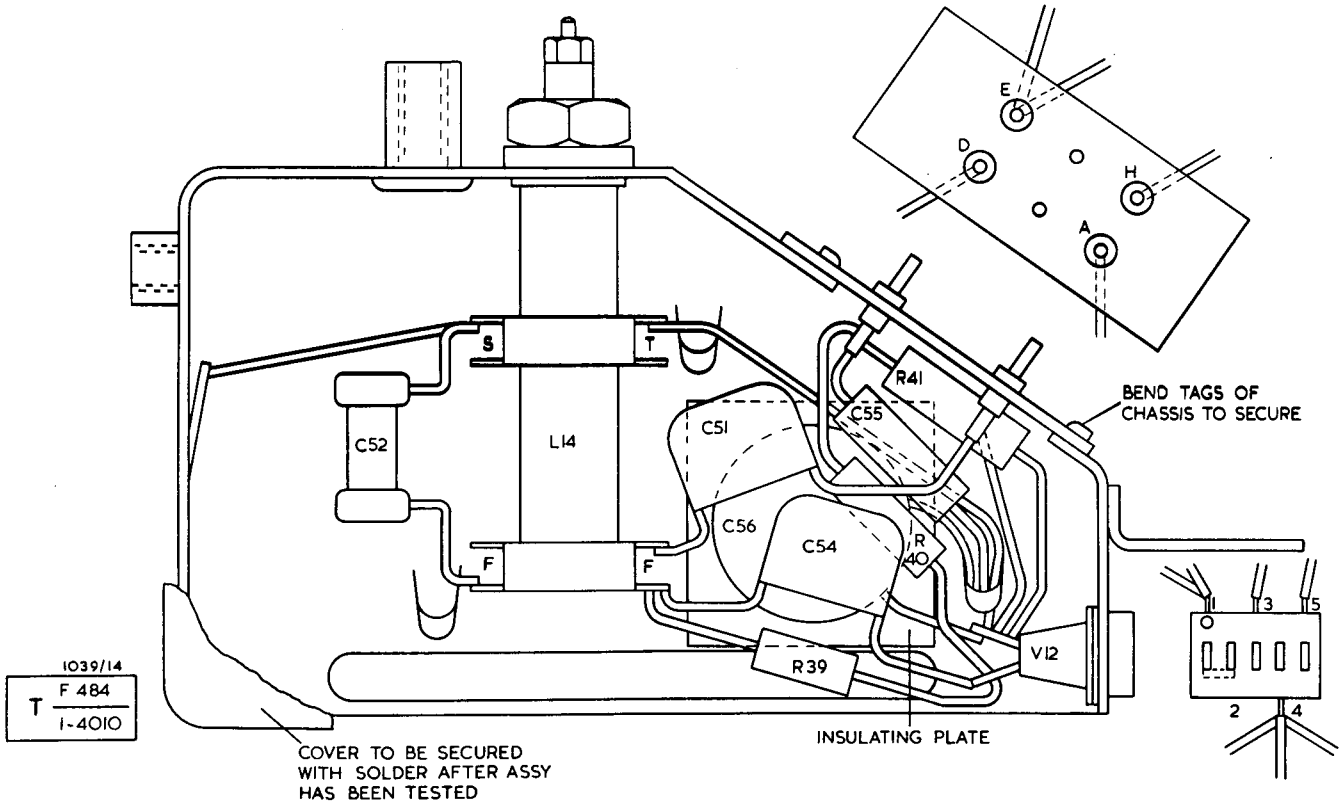
Operation	Route	Wire	Sleeving
1	R10 to H	–	–
2	R10 to earth	–	–
3	H to pin 4 V3	26 S.W.G. t.c.	Violet 1/2 mm
4	C15 to earth	–	–
5	C15 to pin 5 V3	–	Violet 1 mm
6	L9 to E	–	–
7	L9 to pin 5 V3	–	–
8	Fit screen	–	–
9	R11 to D	–	–
10	R11 to L10 T	–	–
11	C17 to L10 T	–	Violet 1 mm
12	C17 to earth	–	–
13	C16 to L10 F	–	–
14	C16 to earth	–	–
15	L10 S to pin 2 V3	26 S.W.G. t.c.	Violet 1/2 mm
16	L10 F to pin 1 V3	26 S.W.G. t.c.	Violet 1/2 mm
17	A to pin 1 V3	26 S.W.G. t.c.	Violet 1/2 mm
18	C14 to B	–	–
19	C14 to L10 T	–	–

Fig 4008 - Unit, r.f., No 1 - wiring details



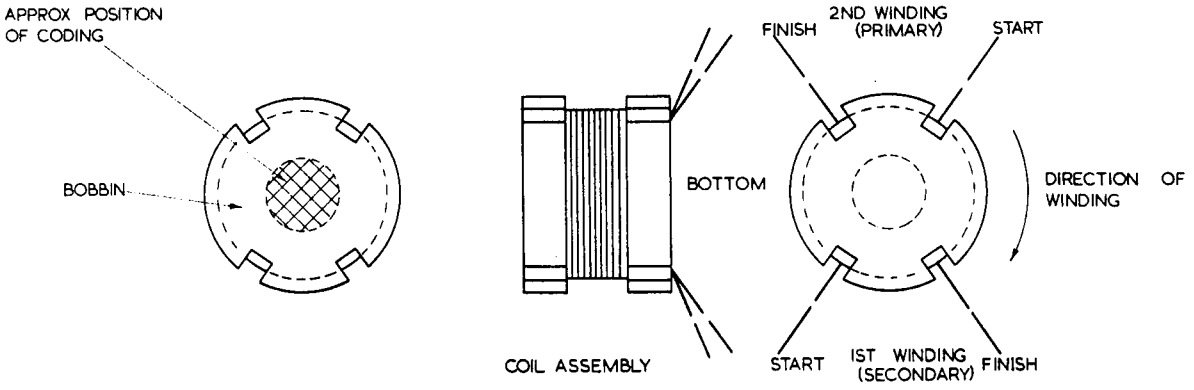
Operation	Route	Wire	Sleeving
1	R12 to H	–	–
2	R12 to earth	–	–
3	H to pin 4 V4	26 S.W.G. t.c.	Violet 1/2 mm
4	C19 to earth	–	–
5	C19 to pin 5 V4	–	Violet 1 mm
6	L12 to E	–	–
7	L12 to pin 5 V4	–	–
8	Fit screen	–	–
9	R13 to D	–	–
10	R13 to L13 T	–	–
11	C22 to L13 T	–	–
12	C22 to earth	–	–
13	C21 to L13 F	–	–
14	C21 to earth	–	–
15	L13 S to pin 2 V4	26 S.W.G. t.c.	Violet 1/2 mm
16	L13 F to pin 1 V4	26 S.W.G. t.c.	Violet 1/2 mm
17	A to pin 1 V4	26 S.W.G. t.c.	Violet 1/2 mm
18	C20 to B	–	Violet 1/2 mm
19	C20 to L13 T	–	–

Fig 4009 - Unit, r.f., No 2 - wiring details



Operation	Route	Wire	Sleeving
1	L14 T to pin 5 V12	26 S.W.G. t.c.	Violet 1/2 mm
2	C56 to earth	–	Violet 1 mm
3	C56 to pin 1 V12	–	Violet 1 mm
4	Pin 1 V12 to pin 2 V12	26 S.W.G. t.c.	–
5	H to pin 3 V12	26 S.W.G. t.c.	Violet 1/2 mm
6	R40 to E	–	Violet 1 mm
7	R40 to pin 4 V12	–	Violet 1 mm
8	C55 to E	–	–
9	C55 to earth	–	–
10	R41 to D	–	–
11	R41 to pin 1 V12	–	Violet 1 mm
12	C54 to L14 F	–	–
13	C54 to pin 4 V12	–	–
14	R39 to L14 F	–	–
15	R39 to pin 4 V12	–	–
16	C51 to L14 F	–	Violet 1 mm
17	C51 to A	–	Violet 1 mm
18	L14 S to earth	26 S.W.G. t.c.	Violet 1/2 mm
19	C52 to L14 S	–	–
20	C52 to L14 F	–	–

Fig 4010 – Unit receiver oscillator – wiring details

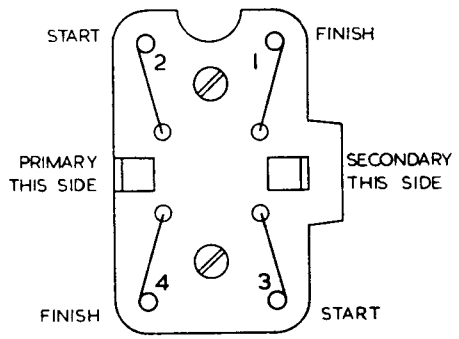


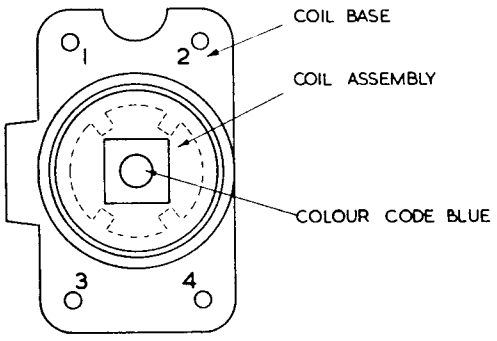
WINDING DETAILS
1ST WINDING $\frac{4}{5}$ TURN OF 3/46 CU EN SILK COVERED WIRE
2ND WINDING 42 $\frac{4}{5}$ TURNS OF 3/46 CU EN SILK COVERED WIRE

LEADS BROUGHT OUT IN CHANNELS AND LEFT $\frac{1}{4}$ IN LG. STRIP AND TIN TO WITH $\frac{3}{16}$ IN OF BOBBIN

NOTE
ALL COIL WINDINGS TO BE LEAD OUT THRO APPROPRIATE HOLES IN BASE AND TERMINATED ROUND OUTSIDE OF PINS

T F 484 / 1-4011 1039/15





Secure coil assembly to base by Araldite B then bake by the approved method.

Impregnate with wax by the approved method and drain off excess from coil and recesses in base.

Solder leads to respective pins. (Primary: start 2 finish pin 4, secondary: start pin 3 finish pin 1).

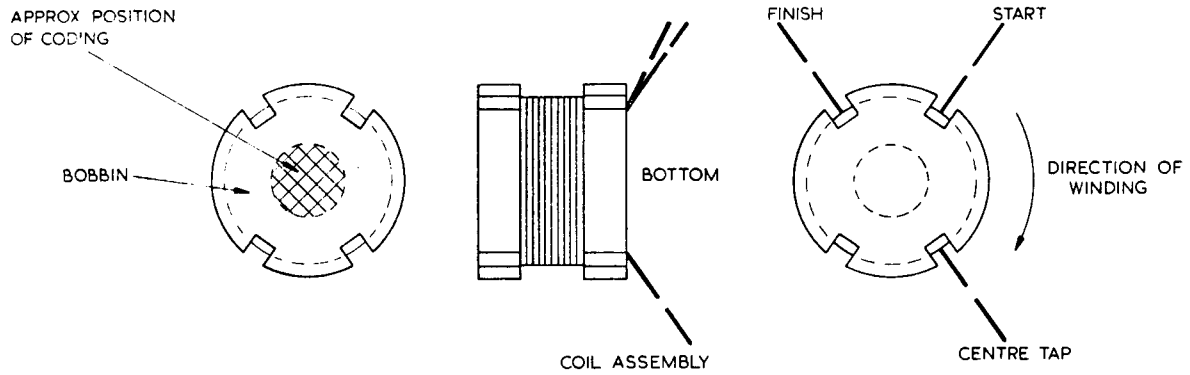
Insert screen in recess of base and bend over the two tabs as shown; thus securing.

Apply silicone compound to core then insert in coil, ensuring that core is adjustable on thread.

Maximum primary inductance (with shell in position flush with bobbin) shall be between 26.0μH–27.6μH.

Q at maximum inductance shall be not less than 70 at 4.3Mc/s.

Fig 4011 - Winding details T2, 3, 4 and 5



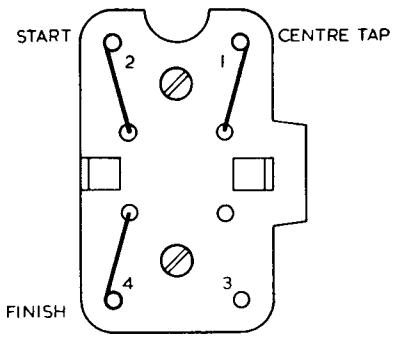
WINDING DETAILS

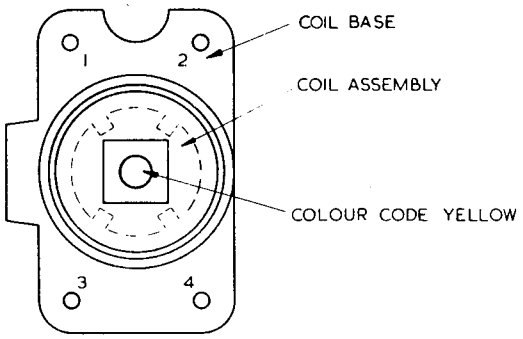
44 4/5 TURNS OF 3/46 CU EN. SILK COVERED WIRE
CENTRE TAPPED AT 22 3/10 TURNS RANDOM WOUND

LEADS BROUGHT OUT IN CHANNELS AND LEFT 3/4 in LONG STRIP AND TIN TO WITHIN 3/16 in OF BOBBIN

NOTE
ALL COIL WINDINGS TO BE LEAD OUT THROUGH APPROPRIATE HOLES IN BASE AND TERMINATED ROUND OUTSIDE OF PINS

T F 484 / 1-4012 1039/16





Secure coil assembly to base by Araldite B then bake by the approved method.

Impregnate with wax by the approved method and drain off excess from coil and recesses in base.

Solder leads to respective pins. (Start pin 2 finish pin 4, centre tap pin 1).

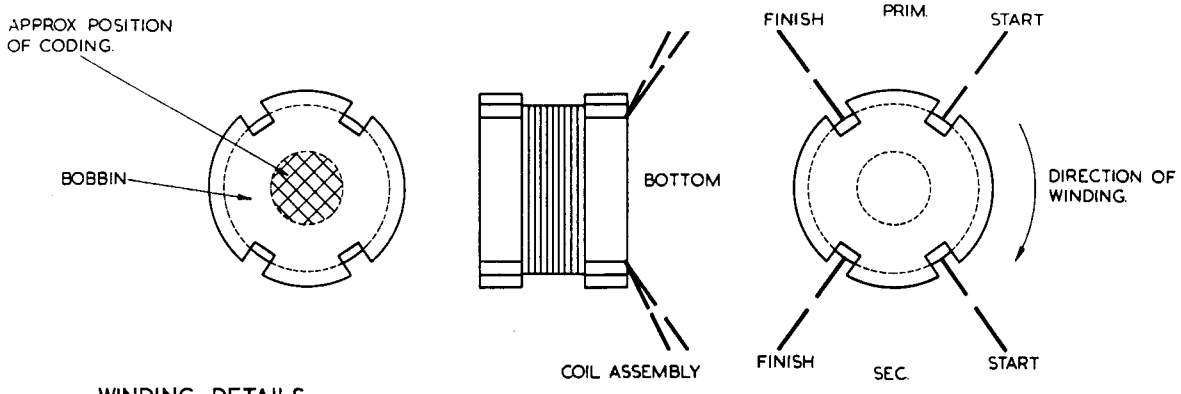
Insert screen in recess of base and bend over the two tabs as shown; thus securing.

Apply silicone compound to core then insert in coil assembly, ensuring that core is adjustable on thread.

Maximum primary inductance (with shell in position flush with bobbin) shall be between 29.3μH–31.5μH.

Q at maximum inductance shall be not less than 65 at 4.3Mc/s.

Fig 4012 - Winding detail L28



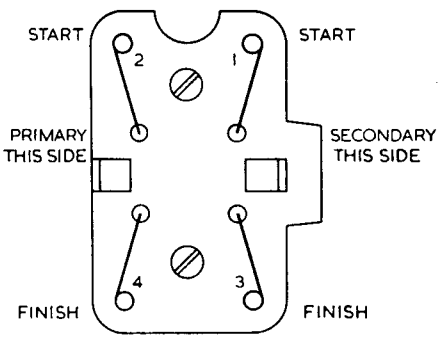
WINDING DETAILS.

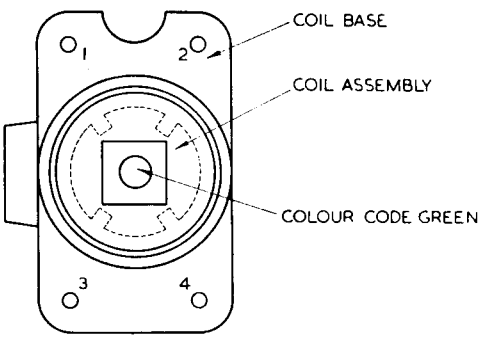
SECONDARY 1⅛ TURNS OF 3/46 CU. EN. SILK COVERED WIRE.
PRIMARY 44⅘ TURNS OF 3/46 CU. EN. SILK COVERED WIRE.

LEADS BROUGHT OUT IN CHANNELS AND LEFT $\frac{3}{4}$ IN. LONG STRIP AND TIN TO WITHIN $\frac{3}{16}$ IN. OF BOBBIN.

NOTE:-
ALL COIL WINDING TO BE LEAD OUT THRO' APPROPRIATE HOLES IN BASE AND TERMINATED ROUND OUTSIDE OF PINS.

T F484/1-4013 1039/17





Secure coil assembly to base assembly by Araldite B then bake by the approved method.

Impregnate with wax by the approved method and drain off excess from coil and recesses in base.

Solder leads to respective pins. (Primary: start pin 2, finish pin 4, secondary: start pin 1, finish pin 3.)

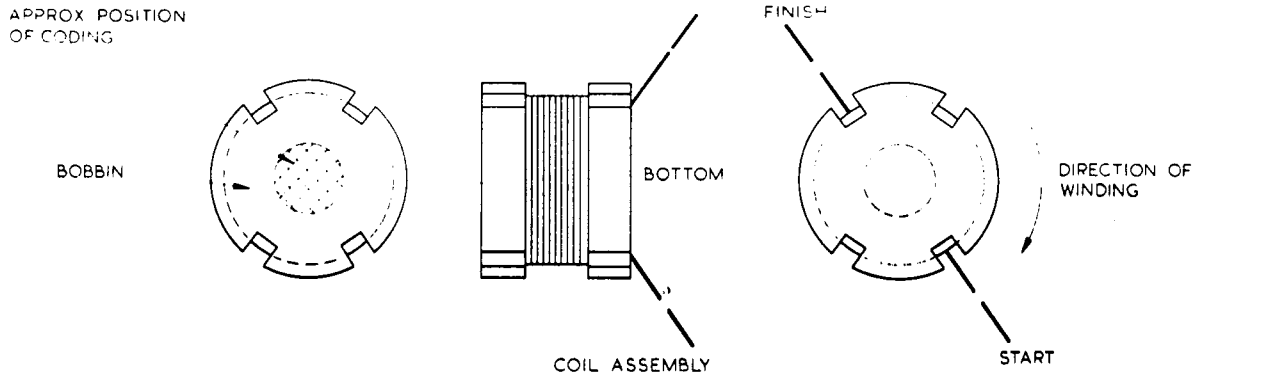
Insert screen in recess of base and bend over the two tabs as shown; thus securing.

Apply silicone compound to core then insert in coil assembly, ensuring that core is adjustable on thread.

Maximum primary inductance (with shell in position flush with bobbin) shall be between 29.3μH–31.5μH.

Q at maximum inductance shall not be less than 65 at 4.3Mc/s.

Fig 4013 – Winding detail T6



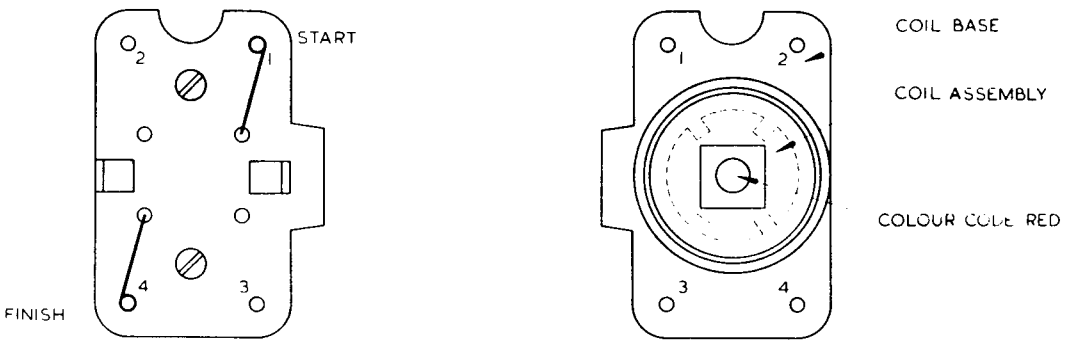
WINDING DETAILS

$42\frac{1}{2}$ TURNS OF 3/46 CU EN SILK COVERED WIRE – RANDOM WOUND

LEADS BROUGHT OUT IN CHANNELS & LEFT $\frac{3}{4}$ in LONG STRIP & TIN TO WITHIN $\frac{3}{16}$ in OF BOBBIN

NOTE
ALL COIL WINDINGS TO BE LEAD OUT THRO APPROPRIATE HOLES IN BASE AND TERMINATED ROUND OUTSIDE OF PINS

T F484 / I-4014 1039/18



Secure coil assembly to base by Araldite B then bake by the approved method.

Impregnate with wax by the approved method and drain off excess from coil and recesses in base.

Solder leads to respective pins. (Start pin 1, finish pin 4).

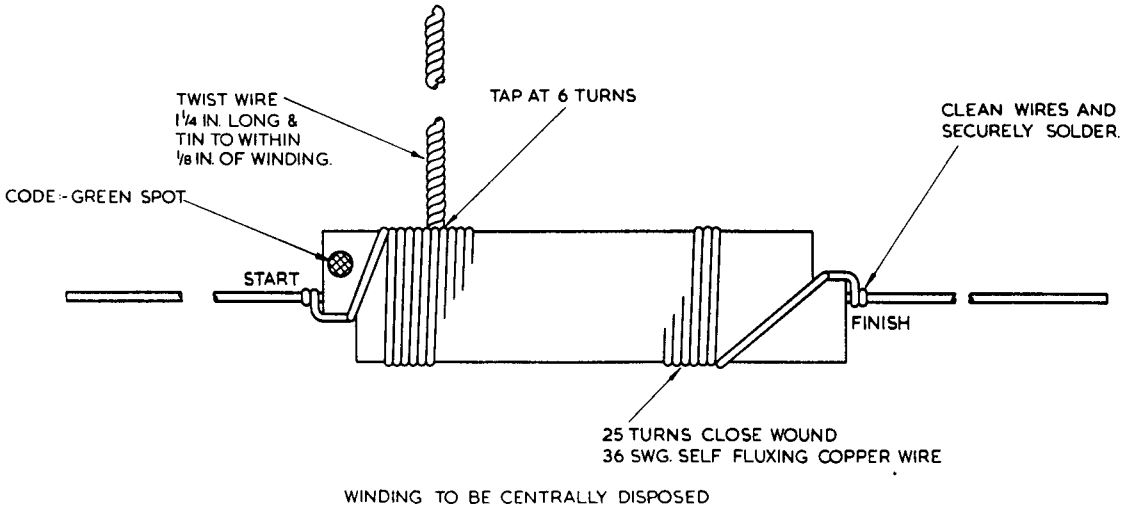
Insert screen in recess of base and bend over the two tabs as shown; thus securing.

Apply silicone compound to core then insert in coil assembly, ensuring that core is adjustable on thread.

Maximum primary inductance (with shell in position flush with bobbin) shall be between 25.8μH–27.4μH.

Q at maximum inductance shall be not less than 70 at 4.3Mc/s.

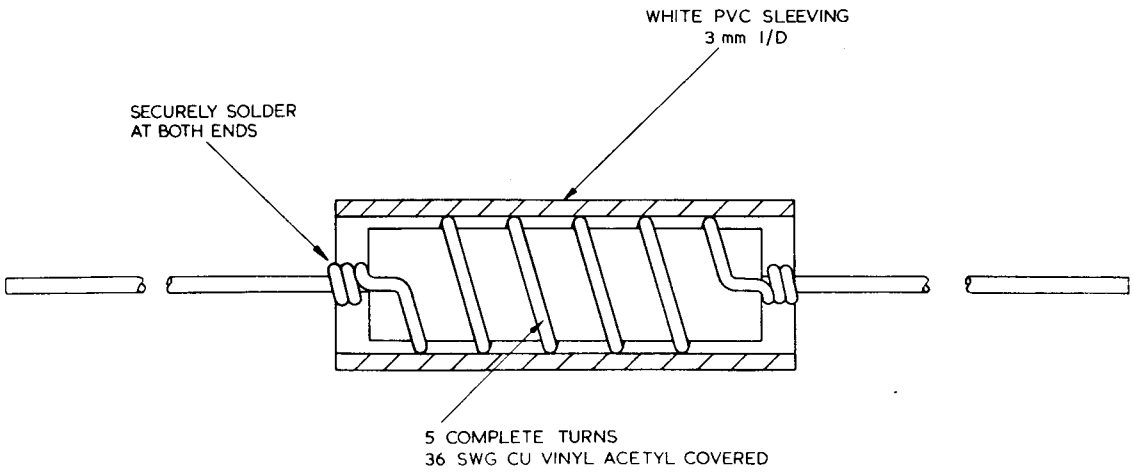
Fig 4014 - Winding details L18, L21, L23 and L25



T F484 / 1-4015 1039/19

THICKLY COAT WITH
POLYSTYRENE LACQUER.

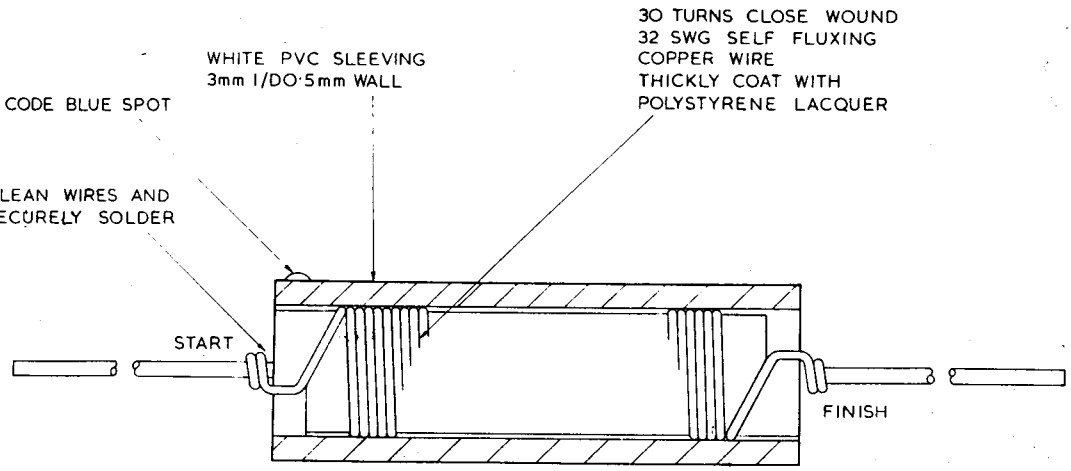
Fig 4015 - Winding detail L15



T F484 / 1-4016 1039/20

Fig 4016 - Winding detail L3

Note: These Pages 1021 and 1022, Issue 2, supersede Pages 1021 and 1022, Issue 1, dated 5 Oct 62. Fig 4019 has been amended.



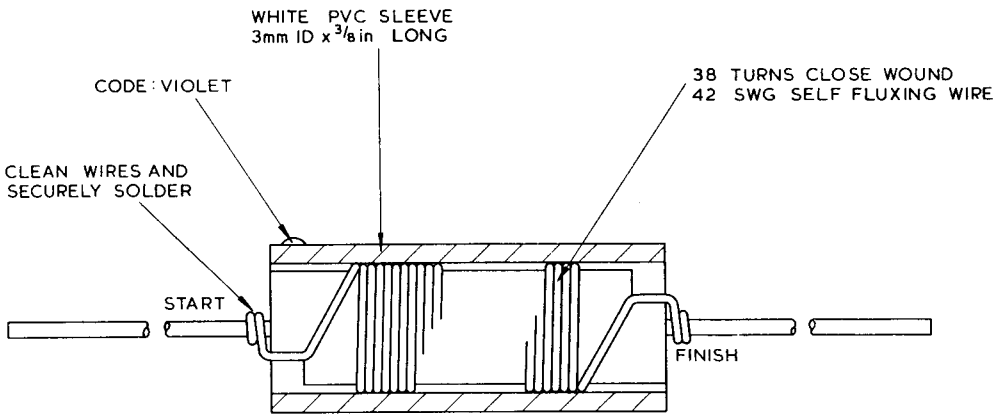
WINDING TO BE CENTRALLY DISPOSED

NOTE

SLEEVING TO BE SOAKED IN TRICHLORETHYLENE UNTIL EXPANDED ENOUGH TO POSITION OVER CORE SLEEVE WILL CONTRACT WHEN DRY & BECOME A TIGHT FIT OVER INDUCTOR.

T F 484 / 2-4017 1039/21

Fig 4017 - Winding details L4, L17 and L20



WINDING TO BE CENTRALLY DISPOSED

NOTE

SLEEVE TO BE SOAKED IN TRICHLORETHYLENE UNTIL EXPANDED ENOUGH TO POSITION OVER CORE SLEEVE WILL CONTRACT WHEN DRY AND BECOME A TIGHT FIT OVER INDUCTOR

T F484 / 2-4018 1039/22

Fig 4018 - Winding details L19, L22, L24, L26 and L30

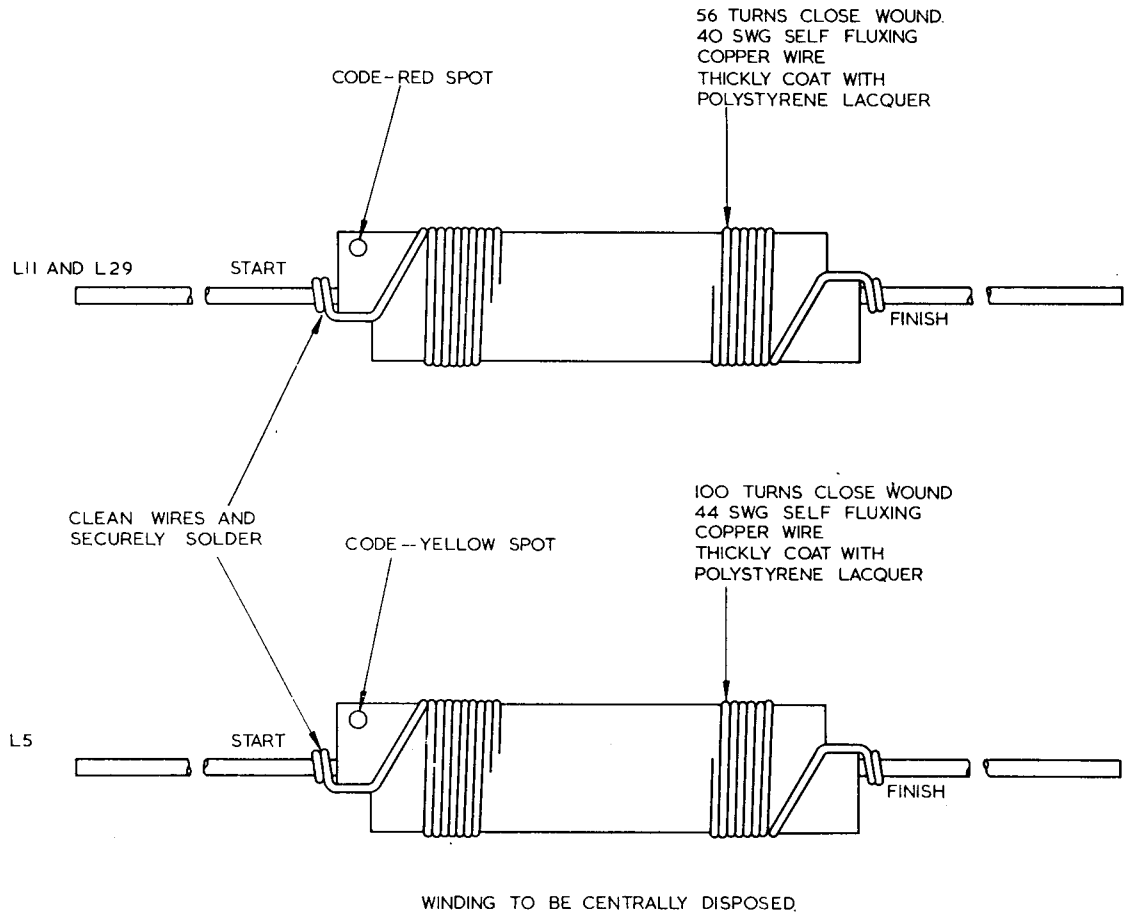


Fig 4019 - Winding details L11, L29 and L5

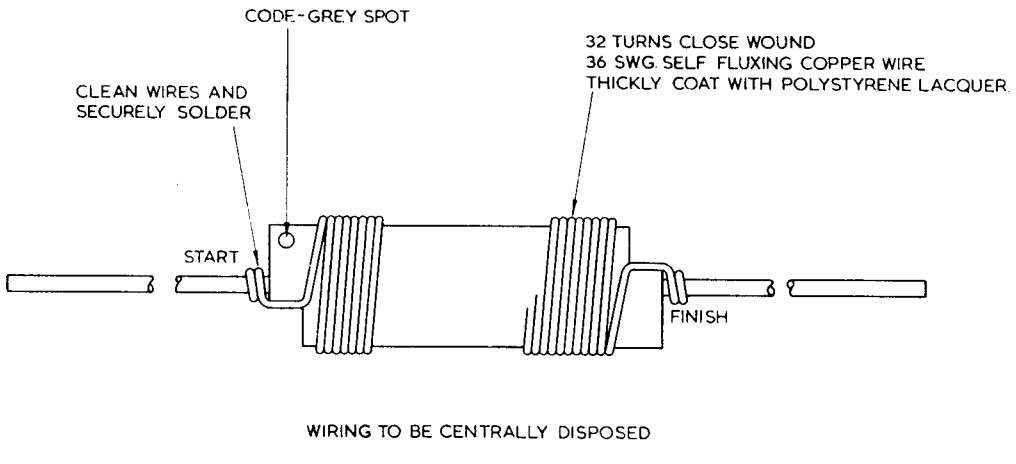
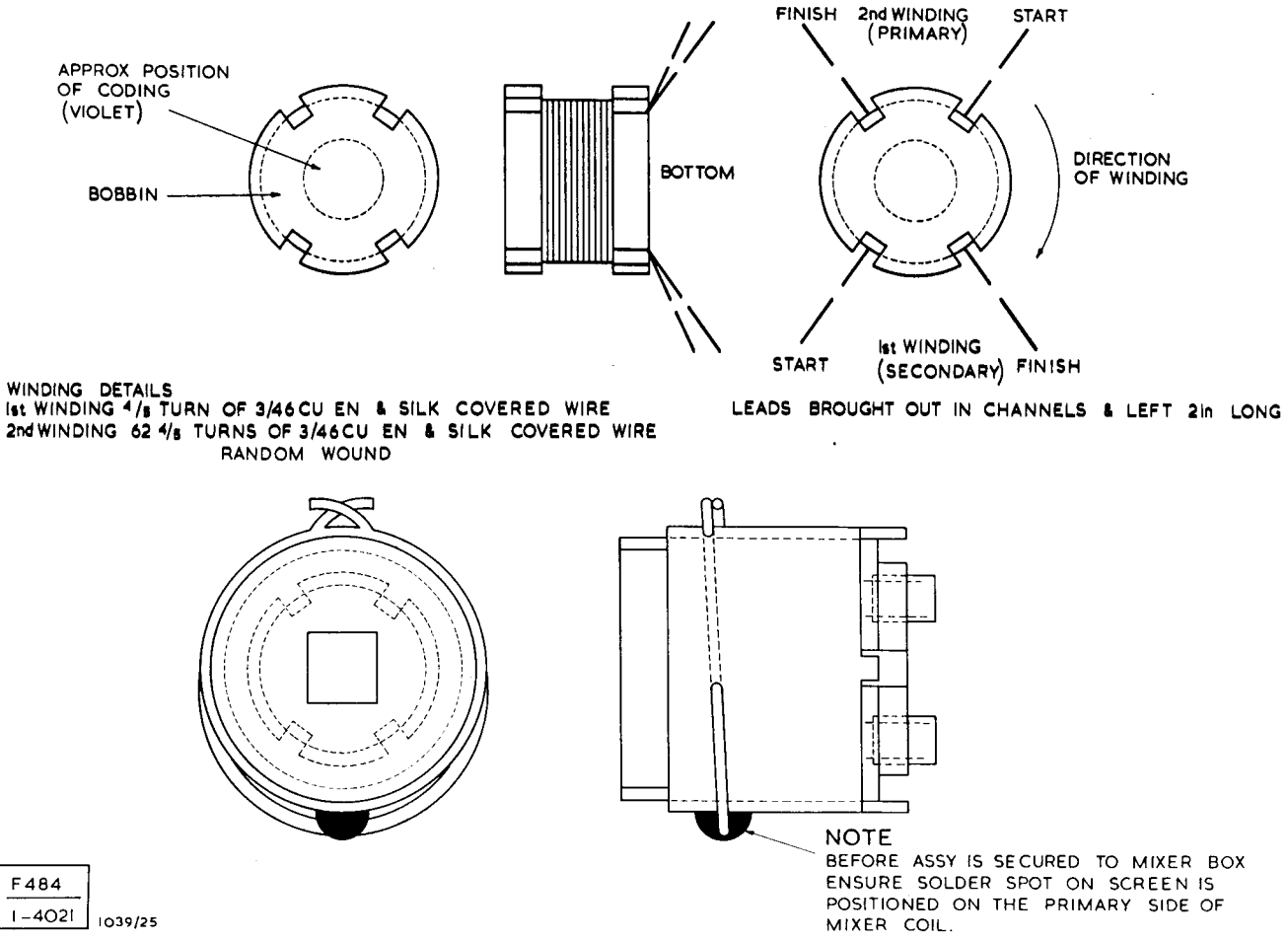


Fig 4020 - Winding details L16, L12 and L9



Secure coil assembly to base with Araldite D.

Allow to set before completion of assembly then dip in wax.

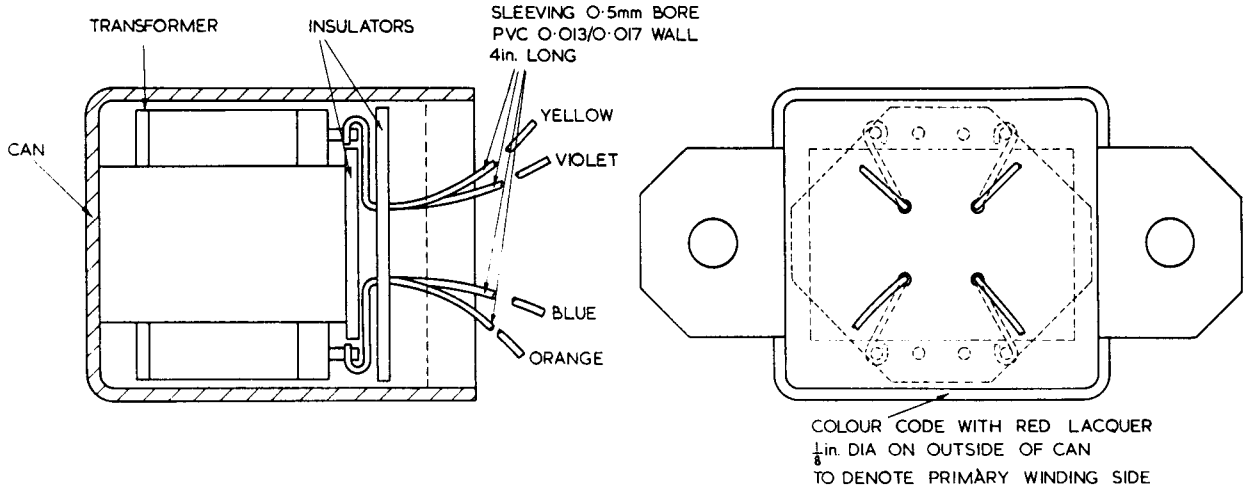
Wire ends soldered inside spills.

Two tags of screen bent over to retain base.

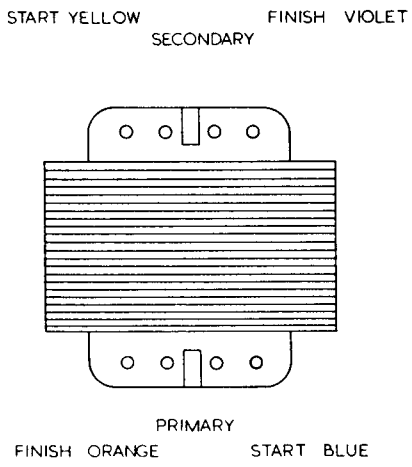
Maximum inductance (with shell in position flush with bobbin) shall be between 58.5μH-63.0μH.

Q at maximum inductance shall be not less than 55 at 2.5Mc/s.

Fig 4021 - Winding and assembly details T1



TRANSFORMER ASSEMBLY



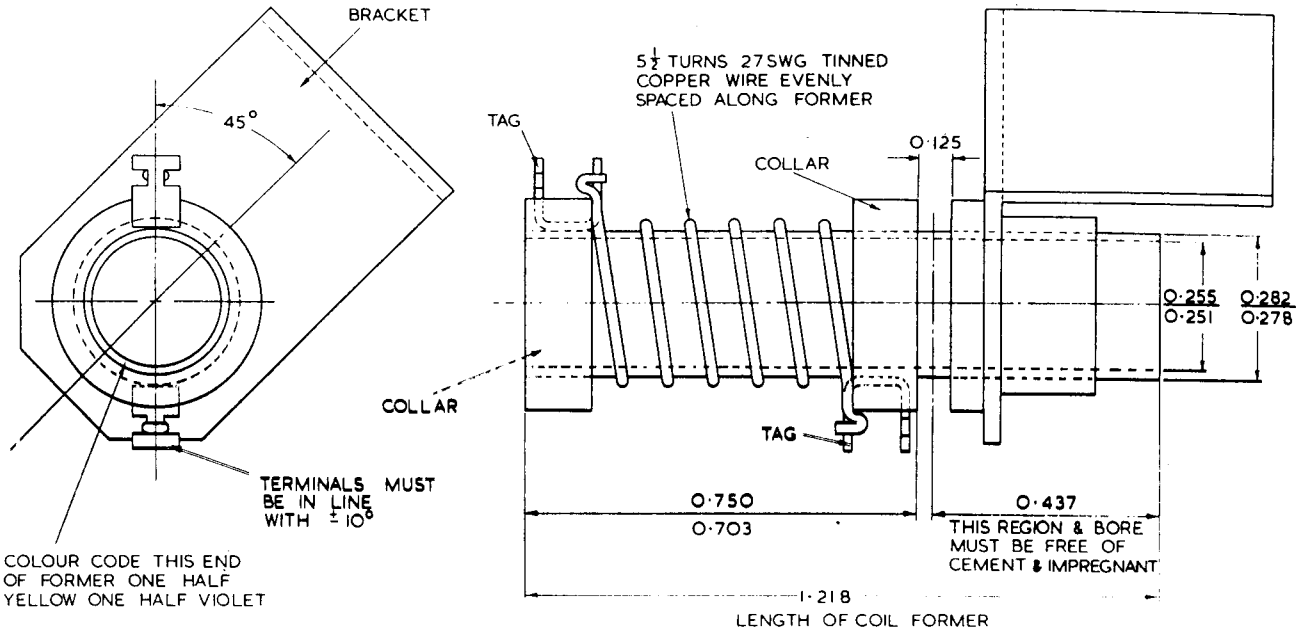
T F 484 / 1 – 4022 1039/26

25 E laminations (radio metal)
23 I laminations (radio metal)
Laminations to be lacquered with HG-MEG AD3 and assembled as shown while still wet.

Winding: No 1 (secondary) 346 turns 38 S.W.G. 0.006 dia enamelled copper wire, 2 turns 3/8 in. white lassothene tape between windings. D.C. resistance 13Ω ±10%.
No 2 (primary) 4000 turns 47 S.W.G. 0.002 dia enamelled copper wire, 2 turns 3/8 in. white lassothene tape to cover both windings. D.C. resistance 1600Ω ±10%.

Primary inductance to be 12.5H ±20% at 500c/s and at 1kc/s with 5V r.m.s. and 3mA d.c. Insulation resistance at 500V d.c., between winding and windings and core should be greater than 100MΩ.

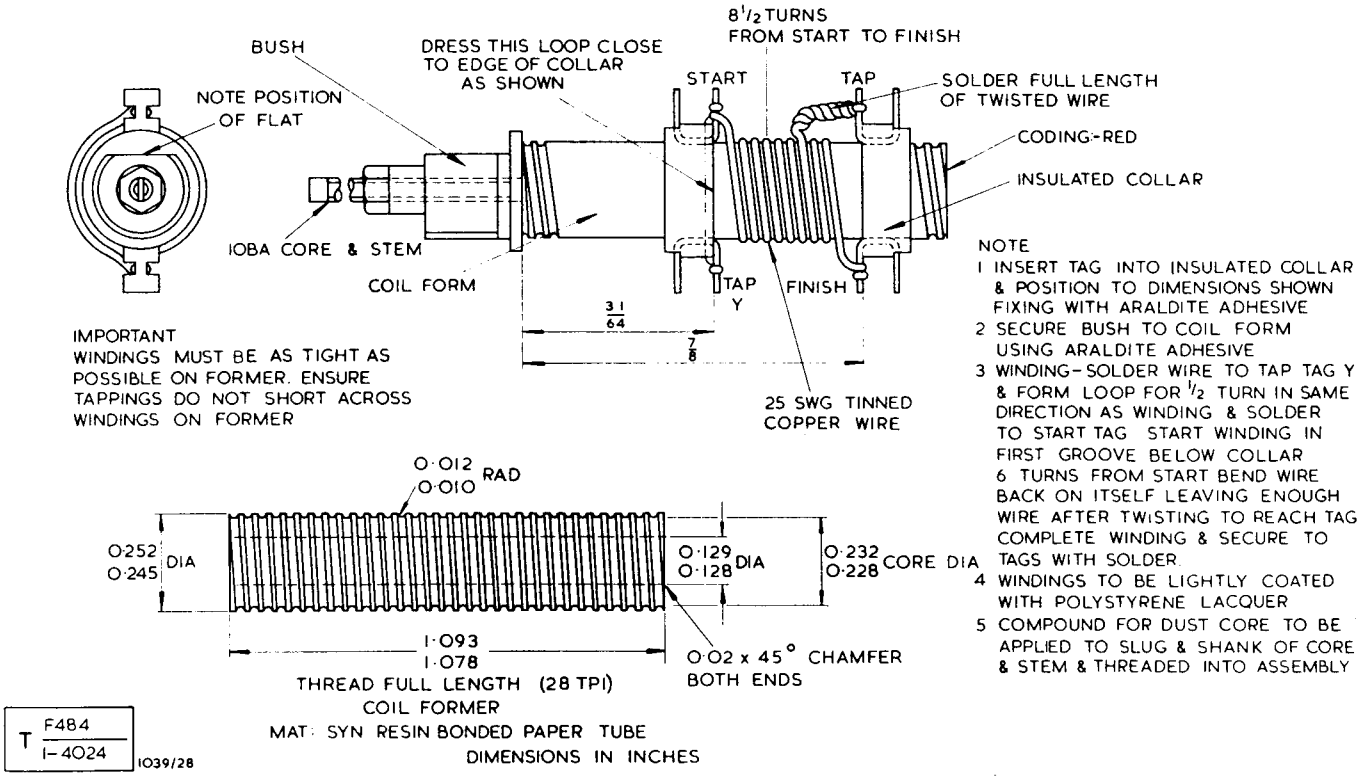
Fig 4022 - Winding detail T7



POSITION COLLARS TO DIMENSIONS SHOWN INSERT TAGS AND BEND INTO POSITION SECURE TO COIL FORM USING ARALDITE ADHESIVE LIGHTLY COAT WINDING WITH POLYSTYRENE LACQUER

T F 484 / 1-4023 1039/27

Fig 4023 - Winding detail L8



NOTE
1 INSERT TAG INTO INSULATED COLLAR & POSITION TO DIMENSIONS SHOWN FIXING WITH ARALDITE ADHESIVE
2 SECURE BUSH TO COIL FORM USING ARALDITE ADHESIVE
3 WINDING - SOLDER WIRE TO TAP TAG Y & FORM LOOP FOR ½ TURN IN SAME DIRECTION AS WINDING & SOLDER TO START TAG START WINDING IN FIRST GROOVE BELOW COLLAR 6 TURNS FROM START BEND WIRE BACK ON ITSELF LEAVING ENOUGH WIRE AFTER TWISTING TO REACH TAG COMPLETE WINDING & SECURE TO TAGS WITH SOLDER
4 WINDINGS TO BE LIGHTLY COATED WITH POLYSTYRENE LACQUER
5 COMPOUND FOR DUST CORE TO BE APPLIED TO SLUG & SHANK OF CORE & STEM & THREADED INTO ASSEMBLY

T F484 / 1-4024 1039/28

Fig 4024 - Winding details L10 and L13

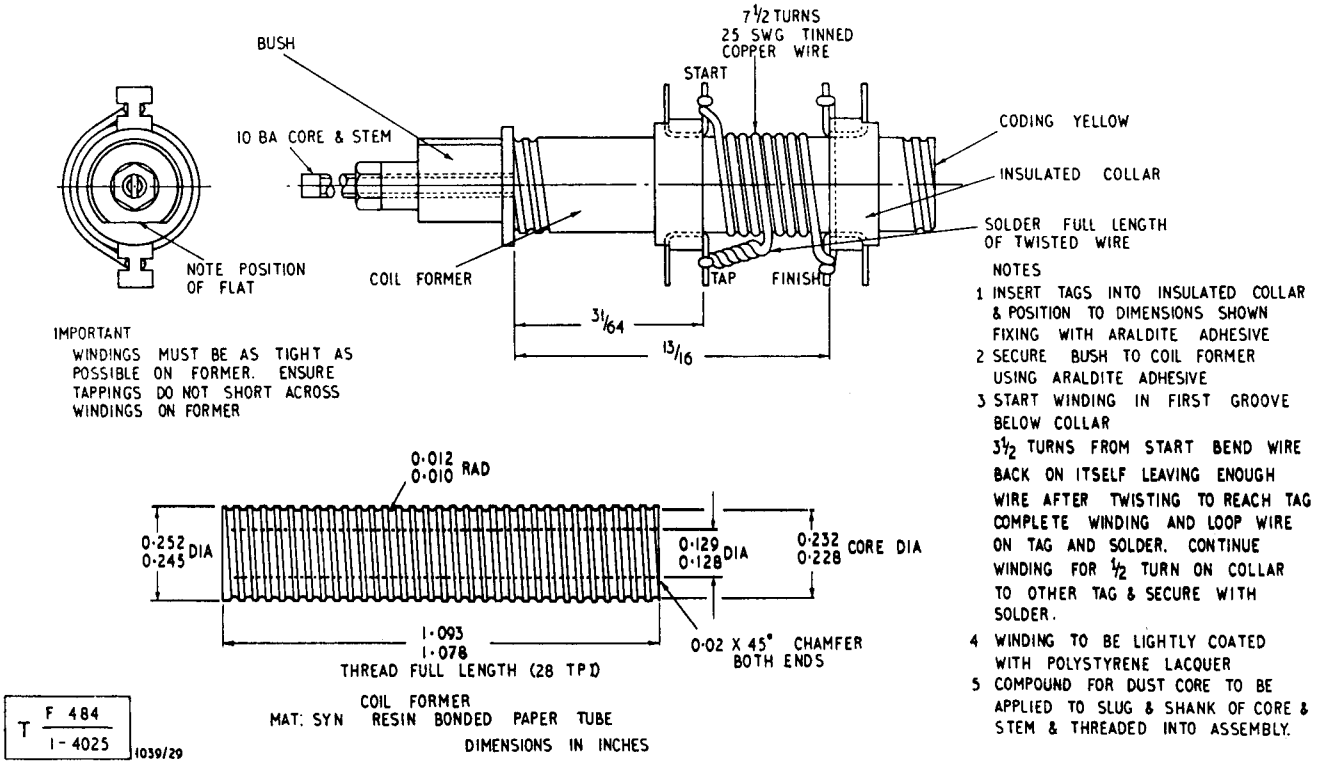


Fig 4025 - Winding detail L14

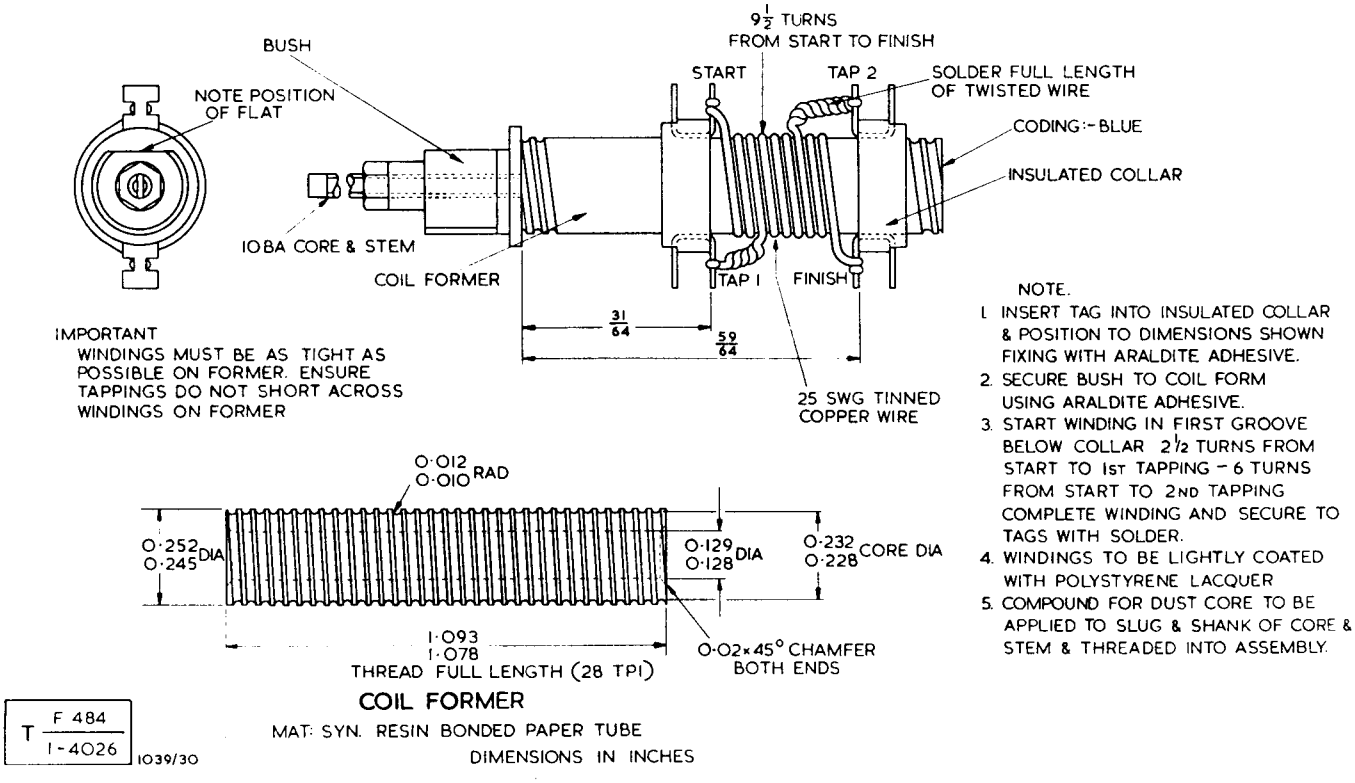
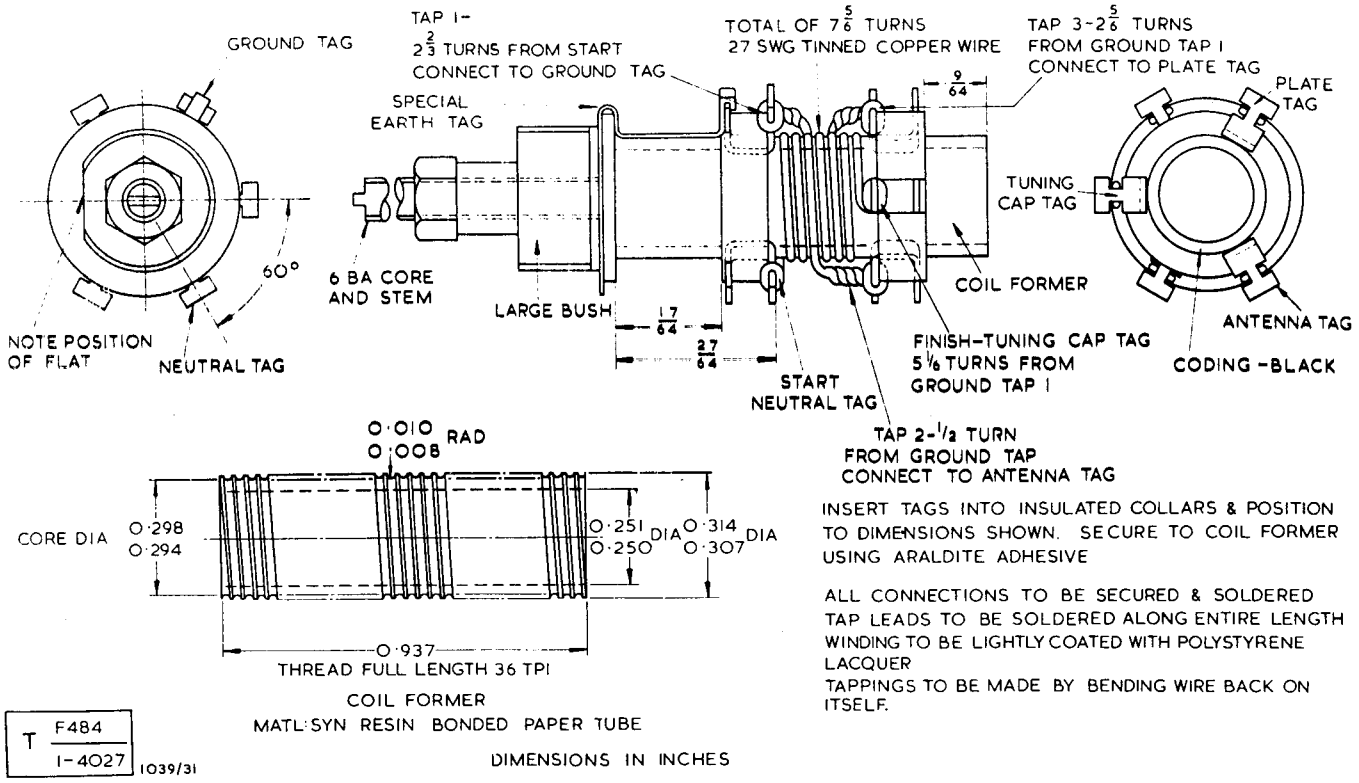


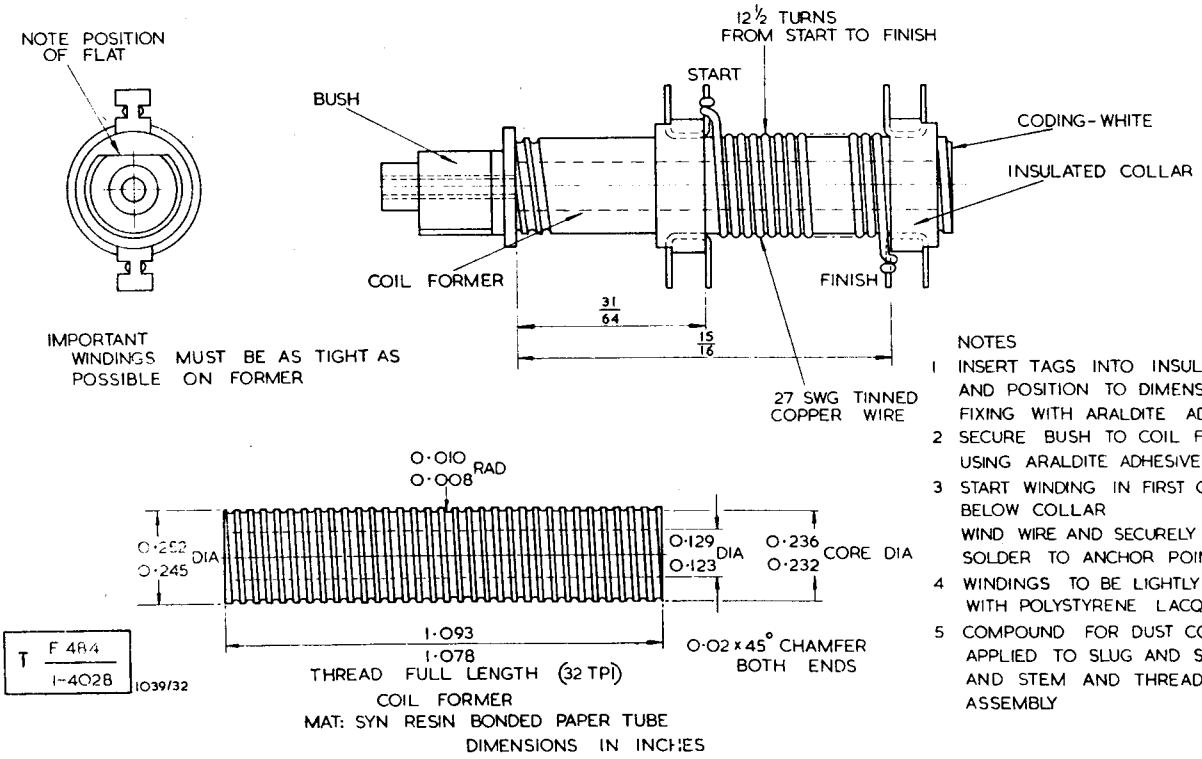
Fig 4026 - Winding detail L1



INSERT TAGS INTO INSULATED COLLARS & POSITION TO DIMENSIONS SHOWN. SECURE TO COIL FORMER USING ARALDITE ADHESIVE

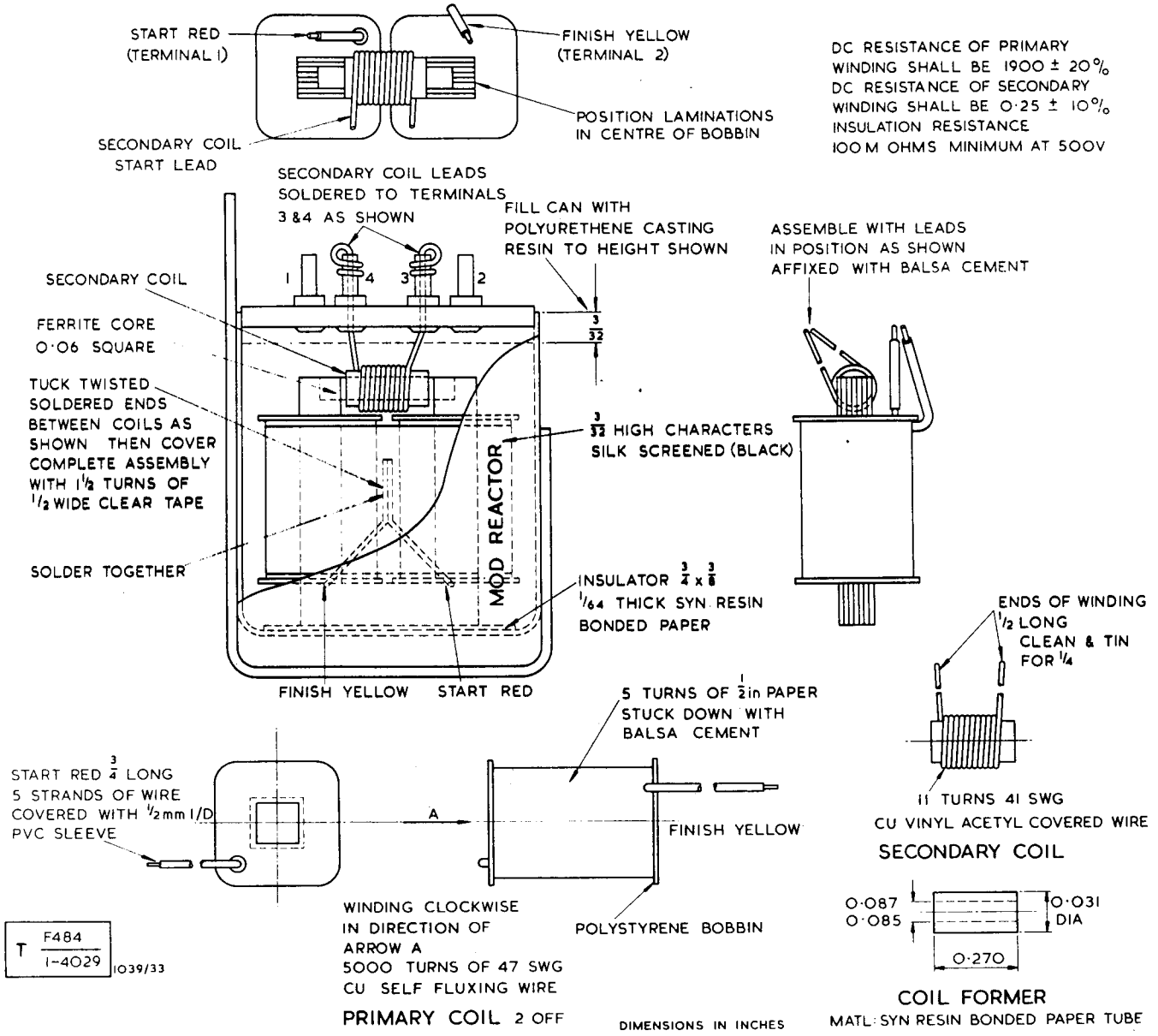
ALL CONNECTIONS TO BE SECURED & SOLDERED
TAP LEADS TO BE SOLDERED ALONG ENTIRE LENGTH
WINDING TO BE LIGHTLY COATED WITH POLYSTYRENE LACQUER
TAPPINGS TO BE MADE BY BENDING WIRE BACK ON ITSELF.

Fig 4027 - Winding detail L7



NOTES
1 INSERT TAGS INTO INSULATED COLLAR AND POSITION TO DIMENSIONS SHOWN FIXING WITH ARALDITE ADHESIVE
2 SECURE BUSH TO COIL FORMER USING ARALDITE ADHESIVE
3 START WINDING IN FIRST GROOVE BELOW COLLAR
WIND WIRE AND SECURELY SOLDER TO ANCHOR POINTS
4 WINDINGS TO BE LIGHTLY COATED WITH POLYSTYRENE LACQUER
5 COMPOUND FOR DUST CORE TO BE APPLIED TO SLUG AND SHANK OF CORE AND STEM AND THREADED INTO ASSEMBLY

Fig 4028 - Winding detail L6



D.C. resistance of secondary winding, terminals 3 and 4, shall be 0.25Ω ±10%

The d.c. resistance of the primary winding, terminals 1 and 2, shall be 1900Ω ±20%

With terminals 1 and 2 strapped together the d.c. resistance between primary and case shall be greater than 1MΩ at 200V d.c.

With terminals 3 and 4 strapped together, the d.c. resistance between secondary and case shall be greater than 30,000Ω at 200V d.c.

With terminals 3 and 4 strapped together and terminals 1 and 2 connected to the case of the modulator reactor the capacitance at 50Mc/s between case and terminals 3 and 4 shall not exceed 2.5pF.

Fig 4029 - Winding and assembly details X1

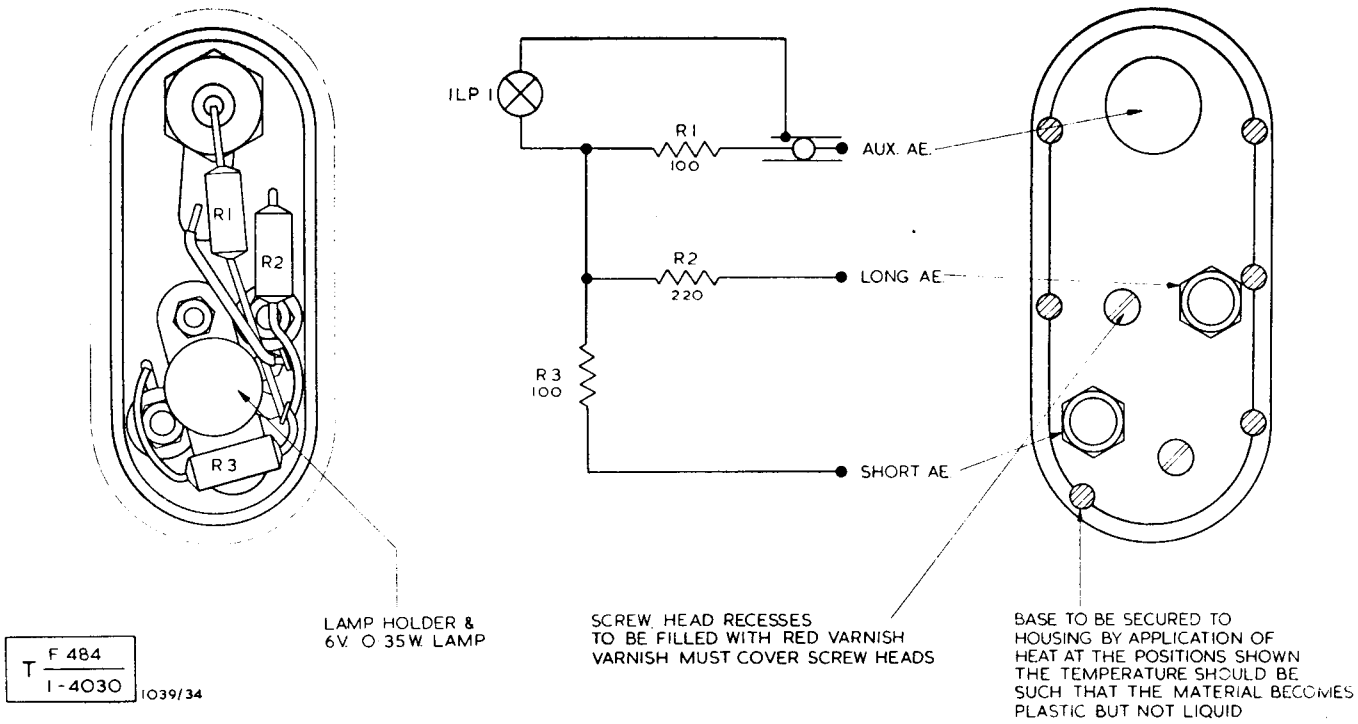
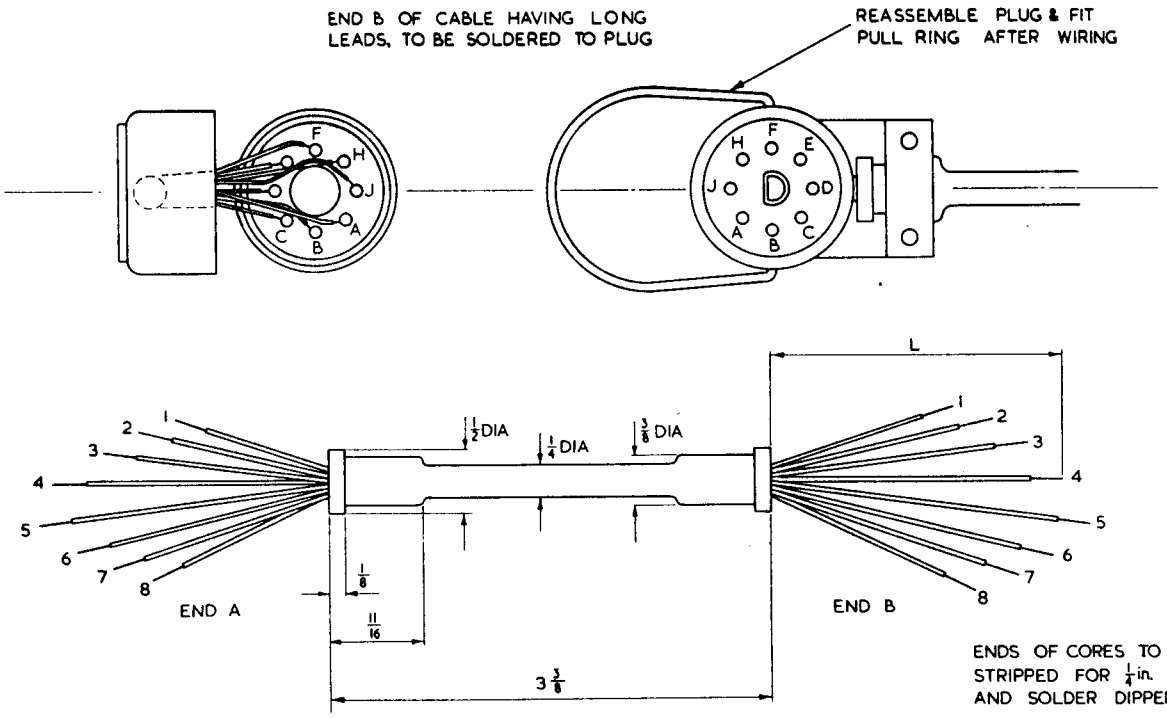


Fig 4030 - Indicator condition



DESCRIPTION–

A SHORT 8 CORE FLEXIBLE CABLE, EACH CORE INSULATED WITH RUBBER & THE WHOLE MOULDED IN A RUBBER SHEATH TO THE DIMENSIONS SHOWN EACH CORE TO HAVE 25 WIRES OF 42 SWG TINNED COPPER WIRE

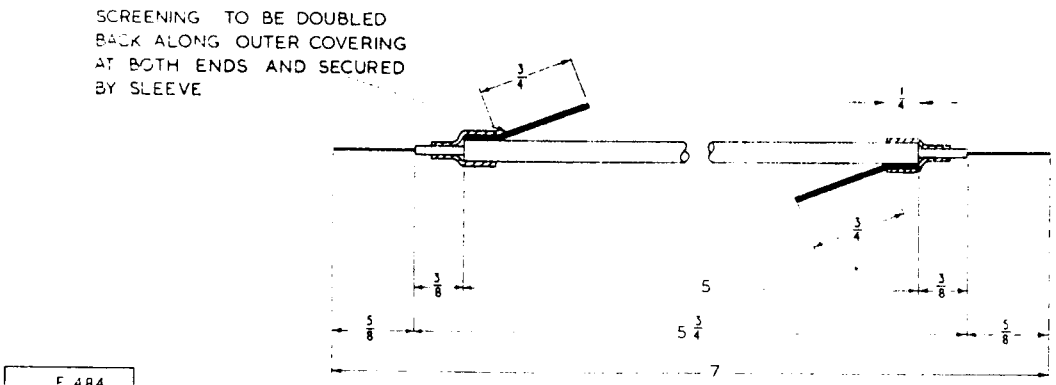
INSULATION–

EACH CORE TO BE INSULATED WITH RUBBER TO GIVE AN O/D OF 0·055in. OUTER SHEATH TO BE MOULDED IN THE SAME GRADE OF RUBBER

T F 484 / 1-4031 1039/35

PLUG REF	LEAD No.	COLOUR	LENGTH L END A	LENGTH L END B
D	1	RED	1	1¼
E	2	ORANGE	1¼	1½
F	3	BLUE	1½	1¾
H	4	WHITE	1¾	2
J	5	BLACK	2	2¼
A	6	BROWN	1¾	2
B	7	YELLOW	1½	1¾
C	8	GREEN	1¼	1½

Fig 4031 - Battery lead

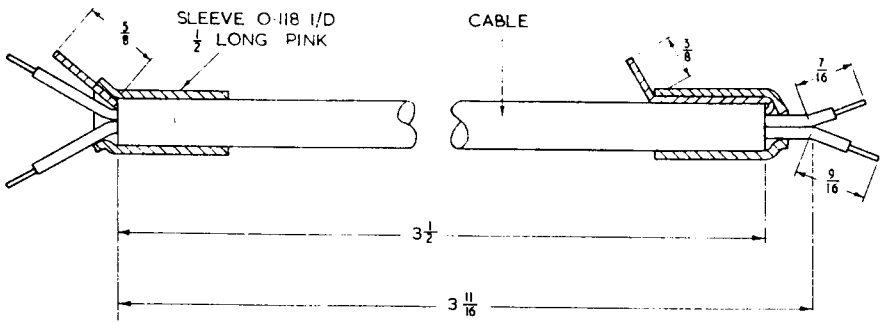


T F 484 / 1-4032 85:/90

WIRE 14/40 PVC 0·012 R/T SCREENED
PVC SHEATH BLACK O/D 2·7mm
SLEEVES 0·059 I/D X 1/2 LONG PINK

DIMENSIONS IN INCHES

Fig 4032 - Lead calibration



T F 484 / 1-4033 851/91

ALL FREE ENDS TO BE BARED 1/4
STRANDS TWISTED TOGETHER AND SOLDER DIPPED

DIMENSIONS IN INCHES

Fig 4033 - Connector, twin, special

RESTRICTED

Table 4006 - Cable assembly details
and connections
No 1 Set

Table 4006 - Cable assembly d

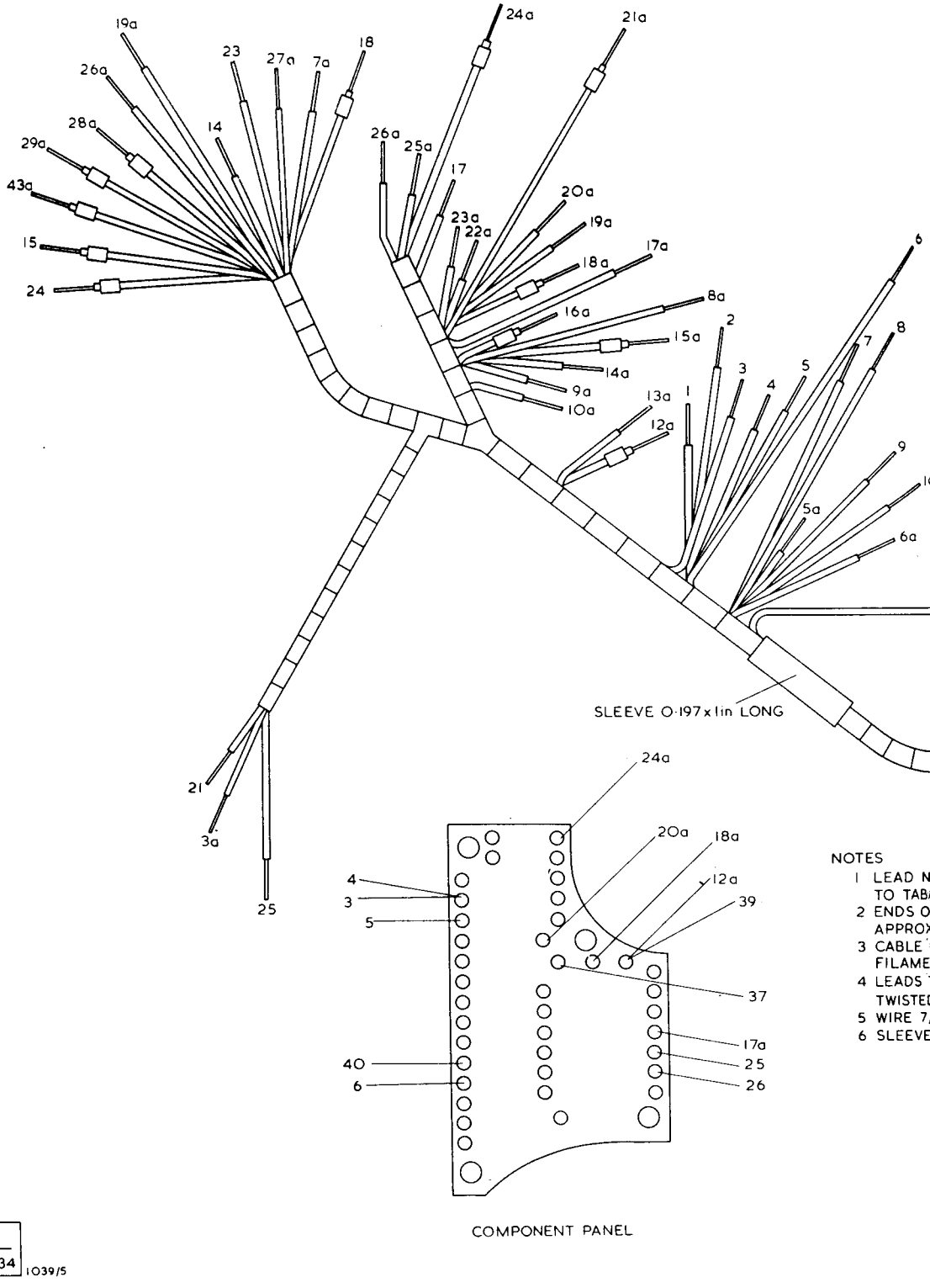
Lead No	Free length (in.)	Connect to	Lead No	Free l (in
1	1.7/8	V1 pin 5	1A	2.1
2	2.1/2	V10 pin 5	2A	1.7
3	2.1/4	C58 component panel	3A	1.1
4	2.1/8	C58 component panel	4A	1.3
5	2.1/4	R34 component panel	5A	1.1
6	4	R51 component board	6A	1.3
7	2.7/8	Junction R48-C63	7A	1.7
8	3	Pin 7 swp osc	8A	2.1
9	2.1/8	R24 (pin 4 disc)	9A	1.1
10	2.1/4	Pin 1 swp osc	10A	1
11	3	Pin 6 swp osc	11A	2.1
12	1.7/8	Rec osc pin E	12A	1.3
13	1.1/4	PL1-E	13A	1.1
14	1.3/4	SA-2	14A	1.3
15	2.1/8	SA-5	15A	2.1
16	2	Junction RA-C6	16A	1.1
17	1.1/8	Pin 6 test socket	17A	2
18	2.1/8	Pin 5 SKT5	18A	1.5
19	2.1/2	L11 component board	19A	1.7
20	1.1/2	PL1-D	20A	1.7
21	7/8	RV1 front panel	21A	3.1
22	1.3/4	RLA-A	22A	1.1
23	2	Pin 4 SKT5	23A	1.1
24	2.1/8	R49 component board	24A	3.1
25	1.3/4	RV1 front panel	25A	1
26	2.1/4	C66 component board	26A	7
27	1.3/8	PL1-J	27A	1.7
28	7/8	PL1-F	28A	2.1
29	3.1/8	2nd r.f.-E	29A	2.3
30	2.1/8	Junction R2-R3	30A	1.1
31	2.3/4	V1 pin 1	31A	2.3
32	4.5/8	X1 pin 2	32A	2.3
33	4.3/8	X1 pin 1	33A	2.1
34	2.3/4	L4	34A	1.5
35	3	V1 pin 2	35A	1
36	1.1/2	Earth tag (below C50A)	36A	1.7
37	3.1/8	RLA-3	37A	1.1
38	1.5/8	Rec osc - D	38A	1.1
39	2.5/8	Mixer-E	39A	2
40	3	RL1-1	40A	1.1
41	2.3/8	RLA-22	41A	2.1
42	2.3/8	RLA-21	42A	3.1
43	3.3/4	1st r.f. pin E	43A	2.3

mbly details and connections No 1 Set

Free length (in.)	Terminate at	Total length (in.)	Lead colour	Tipped
2.1/2	RLA 23	18.1/2	White	
1.7/8	PL1-A	13.1/8	Brown	
1.1/4	RV1 - front panel	9.1/4	Grey	
1.3/8	PL1-H	12.5/8	Grey	
1.1/8	Pin 1 disc	5.5/8	Black	
1.3/4	Pin 7 disc	6	Red	
1.7/8	15A-3	10.1/2	Grey	
2.1/8	Pin 6 test socket	8.3/8	Yellow	
1.1/8	Pin 3 test socket	6.7/8	Green	
1	Pin 1 test socket	6.1/2	Violet	
2.1/2	RL1-23	19.1/2	White	
1.3/8	Pin 7 test socket	15.1/2	Yellow	Green
1.1/4	C43 component board	12.3/8	Orange	
1.3/8	Pin 2 test socket	6.1/2	Black	
2.1/4	Pin 6 test socket	7.3/4	Yellow	Yellow
1.1/4	Pin 4 test socket	21	Violet	Brown
2	R47 component board	3.3/4	Yellow	Green
1.5/8	Component board	7.1/8	Yellow	
1.7/8	SAC 7	8	Brown	
1.7/8	R35 component board	15	Red	
3.1/2	V10 pin 4	8.3/4	Green	
1.1/8	Component board	21.1/4	Violet	
1.1/8	Component board	7	Violet	
3.1/4	SA6-B	10	Yellow	Brown
1	C64 component board	8	Blue	
7/8	SKT5-3	8	Red	
1.7/8	SA-D	18	Black	
2.1/8	SKT5-2	17.1/4	White	Red
2.3/8	SAC-8	21.1/4	Yellow	Red
1.1/8	Stand off R8-L5	16.1/4	Violet	Red
2.3/8	Junction R3-R4	7.1/4	Blue	
2.3/8	Junction R3-R4	20	Blue	
2.1/2	Junction R1-R2	20	Orange	Orange
1.5/8	R32 tagboard	17.3/8	Yellow	
1	R4 tagboard	6	Orange	
1.7/8	PL1-C	4.1/2	Black	
1.1/2	PL1-D	11	Red	
1.1/8	PL1-E	4.3/4	Orange	
2	PL1-A	5.1/2	Brown	Brown
1.1/2	PL1 pin H	9.3/8	Grey	
2.1/2	Mixer pin E	8.3/4	Brown	Brown
3.1/2	2nd r.f. pin E	9.1/2	Brown	
2.3/8	SCA-8	22	Brown	Orange

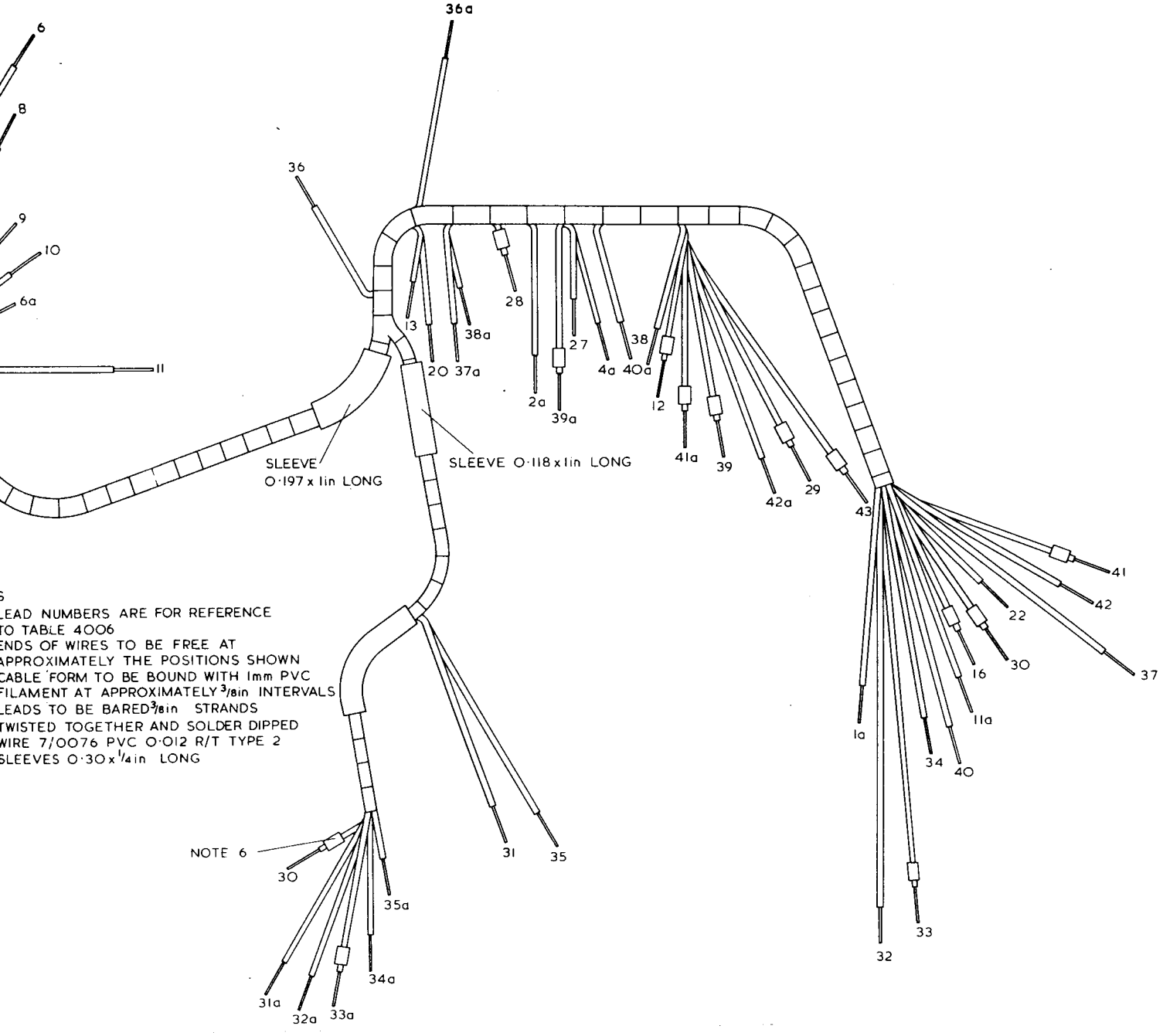
RESTRICTED

Fig 4034 - Cableform assembly
No1 Set



T F484 / 1-4034 1039/5

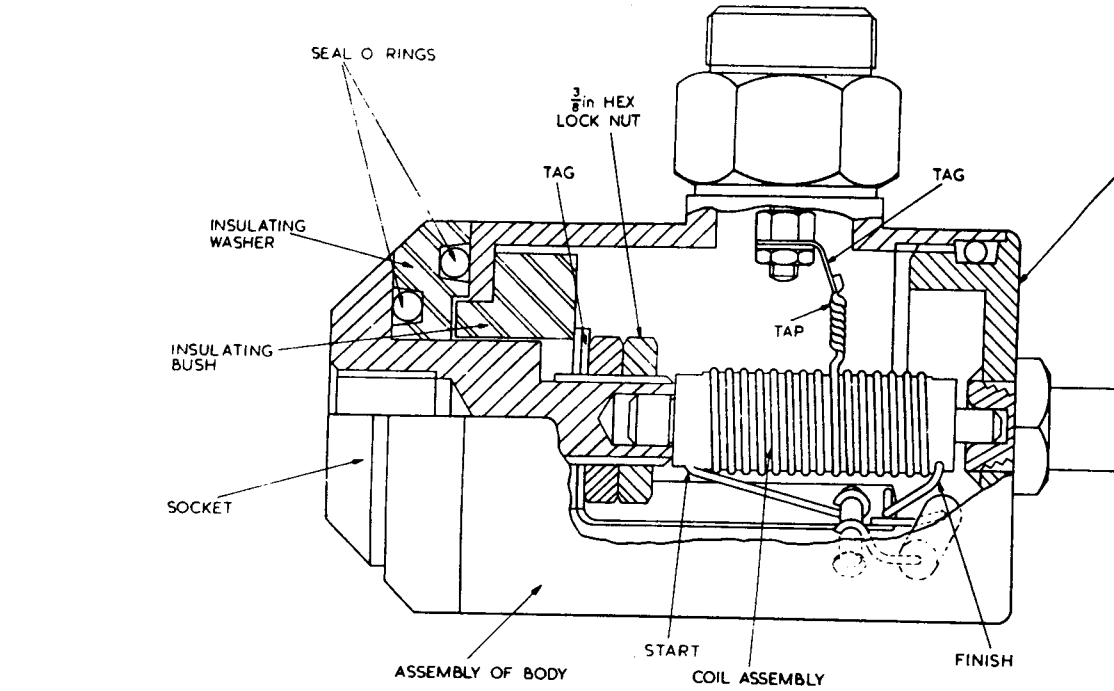
Fig 40

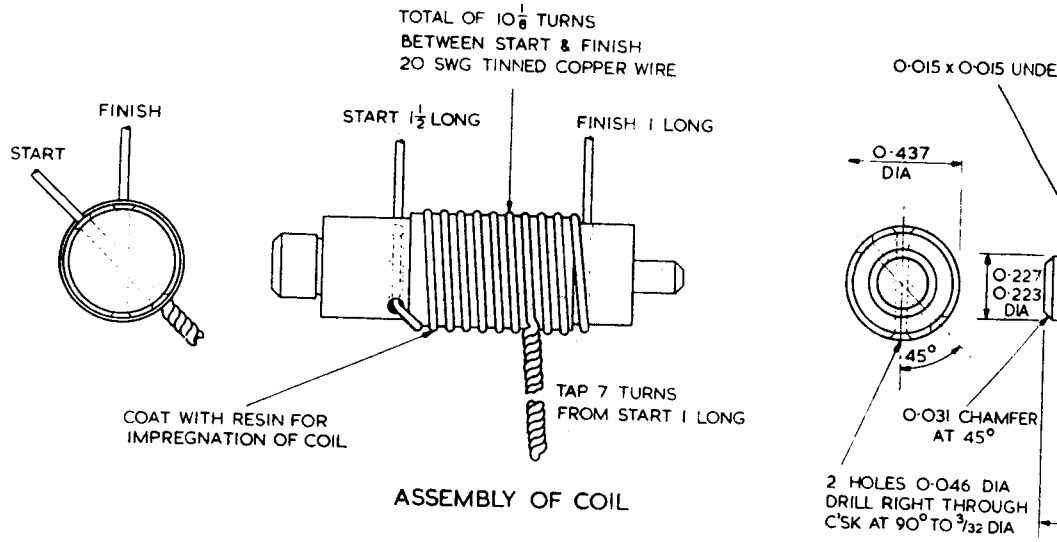


g 4034 - Cableform assembly No 1 SET

RESTRICTED

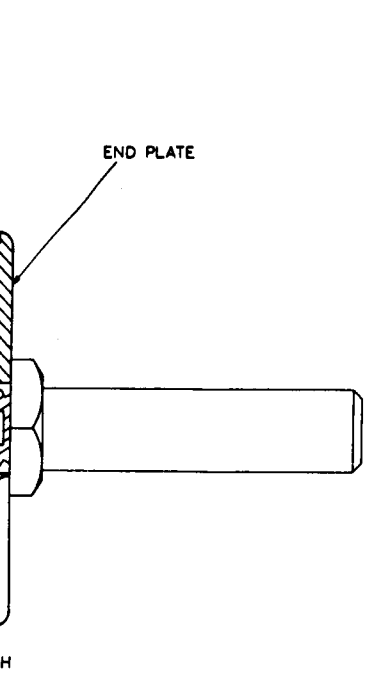
Fig 4035 - Aerial matching unit
(ZA 53400)

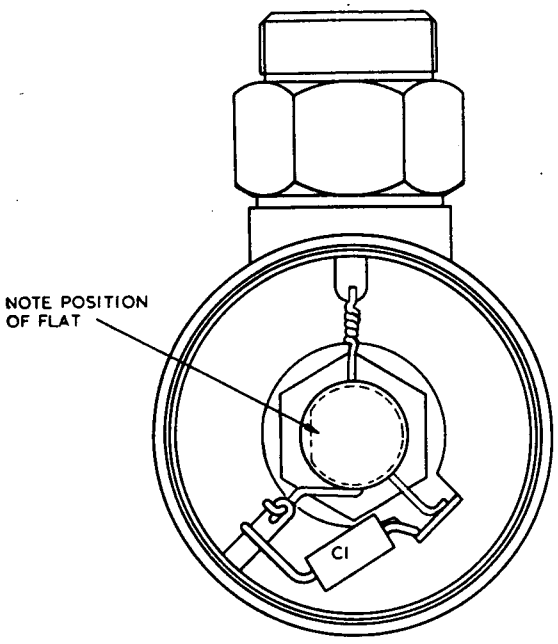


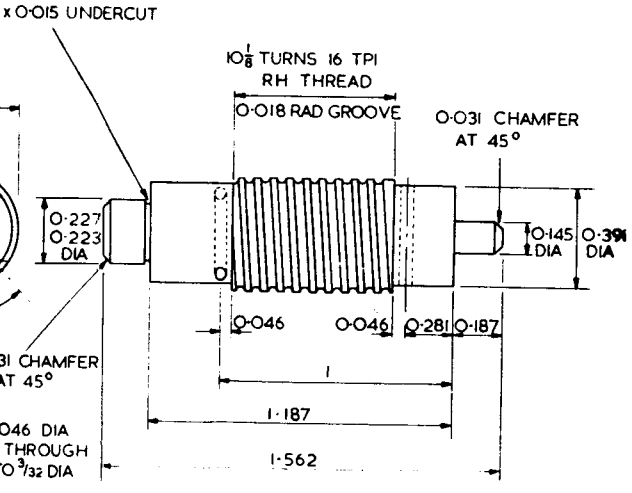


T F 484 / 1-4035 1039/36

Fig 4035 - Aeria

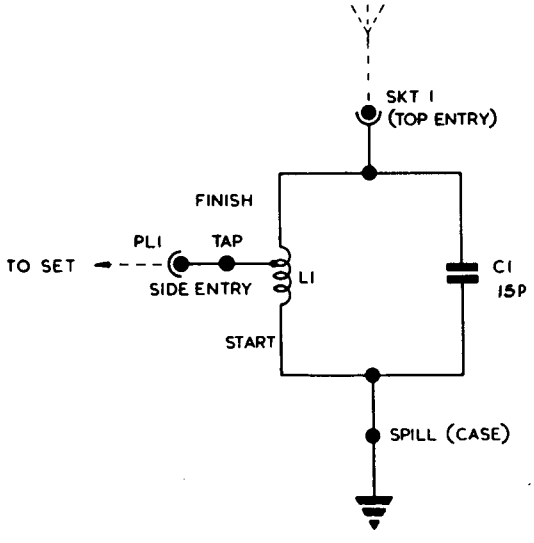






COIL FORMER

MATL: SYN RESIN BONDED FIBRE ROD



DIMENSIONS IN INCHES

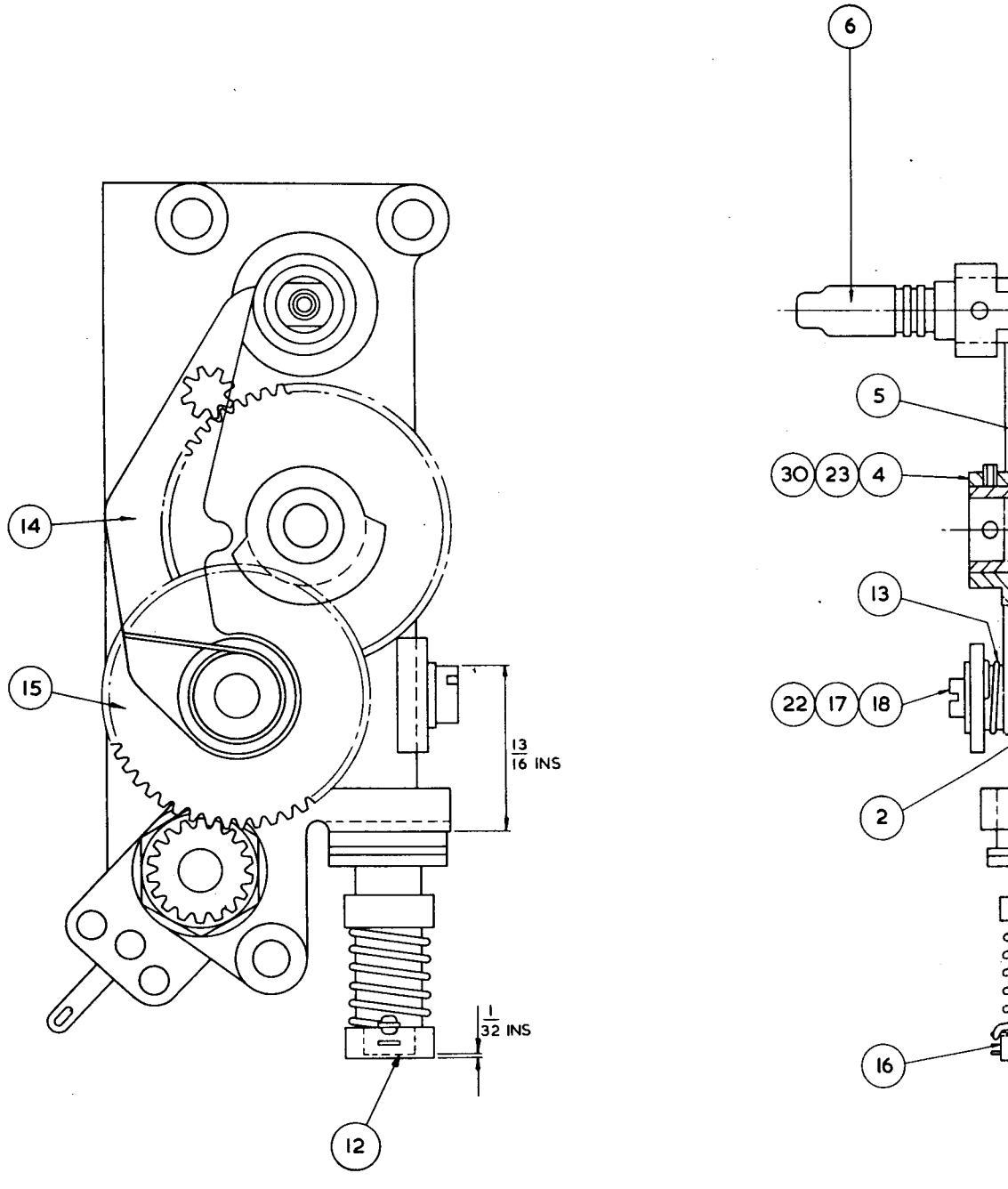
- Aerial matching unit (ZA 53400)

Table 4007 - Gear drive assembly

Item No	Name	Qty
1	Assembly of bearing frame	1
2	Plate guide	1
3	Pin	1
4	Cam	1
5	Assembly of compound gear	1
6	Assembly of shaft	1
7	Pin	1
8	Assembly of gear 58 teeth	1
9	Pinion 11 teeth double ended	1
10	Clip	1
11	Assembly of trimming capacitor	1
12	Assembly of rack and core	1
13	Spring	1
14	Plate stop	1
15	Gear spur 68 teeth idler	1
16	Assembly of inductor, aerial matching and bracket A4	1
17	Washer special	1
18	Washer special	1
19		
20		
21	Screw, No 4 BA x 1/4 in., ch. hd.	2
22	Screw, No 6 BA x 1/8 in., ch. hd.	1
23	Screw, grub, No 6 BA x 1/8 in., cup end	1
24	Screw, grub, No 6 BA x 3/16 in., cup end	1
25		
26	Washer, No 4 BA, std, large	2
27		
28	Instrument oil	as reqd
29	Compound, silicone	as reqd
30	Pin, 1/16 in. dia x 1/2 in. long	2

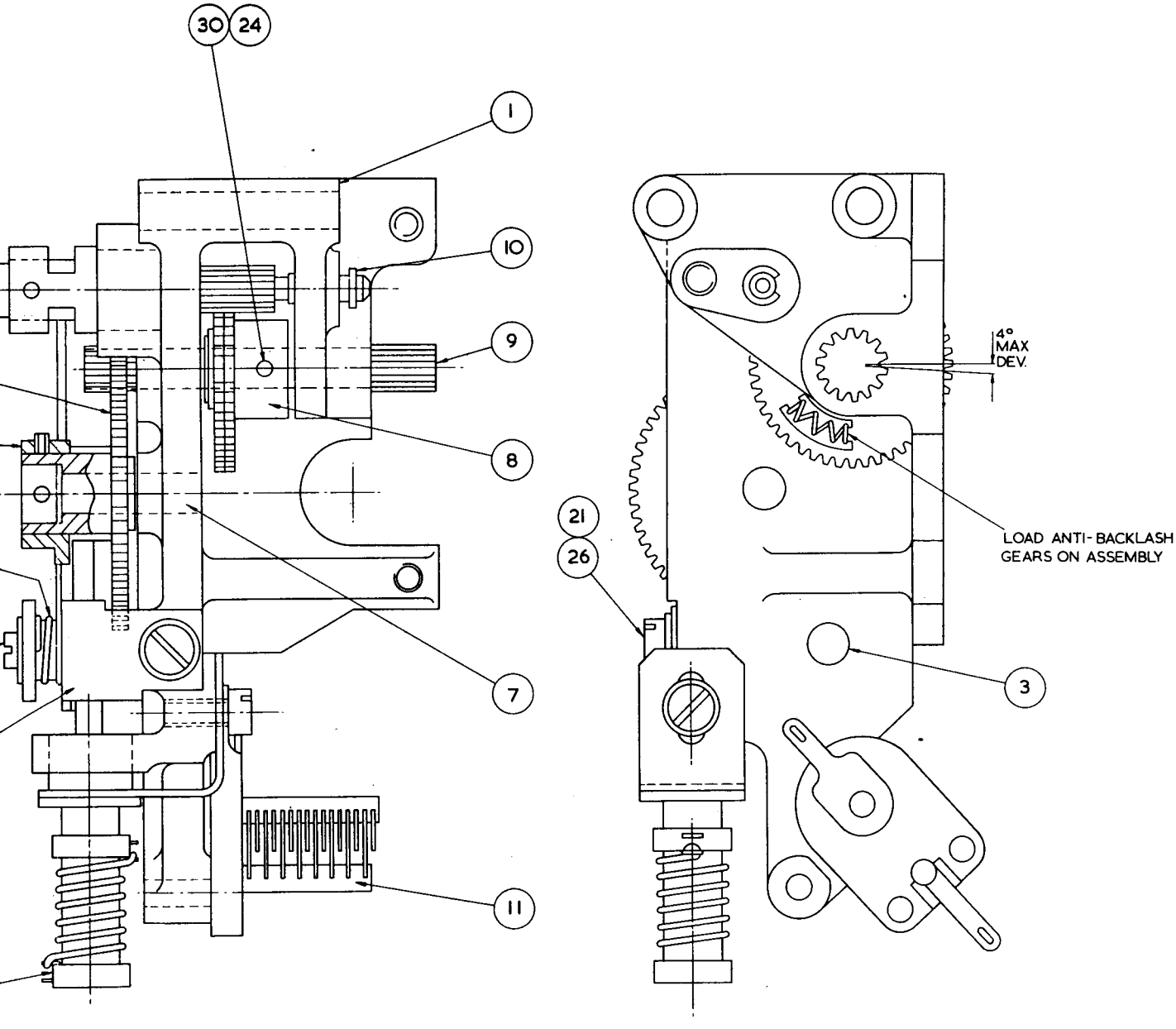
RESTRICTED

Fig 4036 - Gear drive assembly



T F484 / 1 - 4036 1039/37

Fig 4036 -



036 - Gear drive assembly

Note: These Pages 1037 and 1038, Issue 1, contain additional information.

RESTRICTED

Table 4008 - Cable assembly details and connections, No 2 set

Table 4008 - Cable assembly de

Lead No	Free length (in.)	Connect to	Lead No	Free Length (in.)	Connect to	Total length (in.)	Lead Colour	Tip
1	5.3/4	T8 pin 2	1A	2.1/2	TB4 pin 5	20.1/2	Blue	
2	5	T8 pin 1	2A	3	TB4 pin 8	20.1/2	Orange	Orange
3	3.3/8	RLA-1	3A	2	PL1H	9.3/4	Slate	
4	2.3/4	RLA-21	4A	3	2nd r.f. pin E	9.1/2	Brown	
5	2.3/4	RLA-21	5A	2.3/8	S101bF3	22.1/2	Brown	
6	2.3/4	RLA-22	6A	2.7/8	PL1A	10.1/4	Brown	Brown
7	2.3/4	RLA-22	7A	2.1/4	V10 pin 5	19.1/2	Brown	Brown
8	2.5/8	Junction C9-RLA4	8A	2.3/4	TB4 pin 7	18	Violet	Red
9	3	Junction C8-R32	9A	2.1/4	TB4 pin 4	18	Yellow	
10	3	RLA-23	10A	1.3/4	V1 pin 5	19.1/4	White	
11	2.3/8	Junction C6-R9	11A	3	SKT104D	22	Violet	Brown
12	3.1/2	RLA-a	12A	1.1/4	TB2 pin 10	19.5/8	Violet	
13	3.3/4	RLA-3	13A	1.1/2	PL1D	12.1/2	Red	
14	3.1/4	2nd r.f. pin F	14A	3.7/8	TB1 pin 4	7.1/4	Green	
15	3.1/2	TB1 pin 3	15A	1.3/4	TB3 pin 7	15	Violet	Blue
16	3.1/2	TB1 pin 2	16A	1.3/4	TB3 pin 6	15.1/4	Yellow	Blue
17	3.1/4	TB1 pin 1	17A	3	S101dB1	19.1/2	Brown	Blue
18	2	PL1H	18A	1.1/4	TB2 pin 1	16.1/8	Slate	
19	2.7/8	PL1A	19A	3	Mixer pin E	8.1/2	Brown	Brown
20	2.1/4	PL1J	20A	2.3/8	S101bF5	17.3/4	Black	Yellow
21	1.7/8	PL1B	21A	2.1/4	SKT105F	15.3/4	Brown	Black
22	1.7/8	PL1F	22A	3	SKT105B	15.1/4	Black	White
23	2.1/4	LO pin D	23A	1.1/2	PL1E	7.1/4	Orange	
24	1.1/2	PL1E	24A	1.1/2	TB2 pin 2	12.3/4	Orange	
25	3	1st r.f. pin E	25A	2.1/8	S101bB2	18.1/2	Brown	Yellow
26	2.1/4	TB2 pin 24	26A	2.1/4	TB4 pin 4	6	Yellow	
27	4.1/8	V1 pin 1	27A	2.1/4	TB4 pin 5	7.1/2	Blue	
28	4.1/4	V1 pin 2	28A	2.1/2	TB4 pin 6	7.7/8	Orange	Slate
29	2	TB4 pin 3	29A	4	SKT105A	11	Pink	
30	1.5/8	TB2 pin 4	30A	1.3/4	TB4 pin 1	16	Slate	Yellow

Note: TB1 - Fig 2
TB2 - Fig 2
TB3 - Fig 2
TB4 - Fig 2

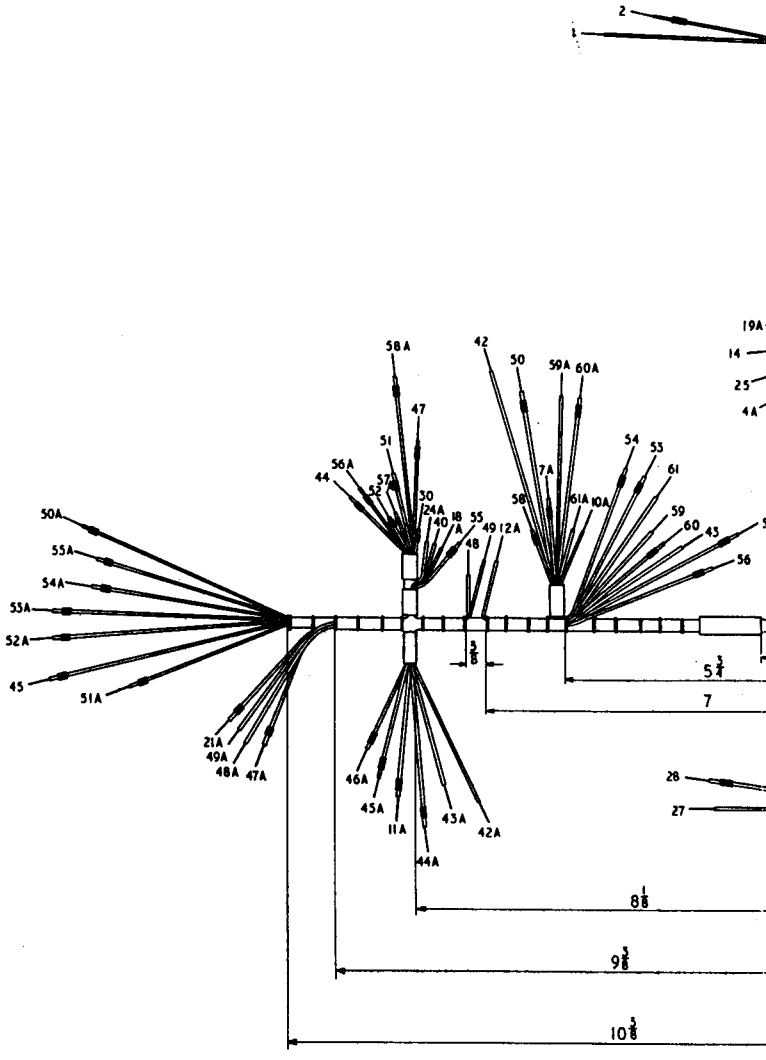
bly details and connections, No 2 set

Lead No	Free length (in.)	Connect to	Lead No	Free Length (in.)	Connect to	Total length (in.)	Lead Colour	Tip
31	1.3/4	TB4 pin 2	31A	2.1/4	TB3 pin 1	5.1/2	Black	
33	2	TB3 pin 5	33A	3.3/4	S101dB5	9.1/4	Blue	Brown
34	1.3/4	TB3 pin 9	34A	2.3/4	RV1	8	Green	Black
36	2.1/8	TB3 pin 4	36A	3.3/8	S101dF2	9	Violet	White
37	2.1/4	TB3 pin 3	37A	1.1/4	RV104	7.1/4	Yellow	Green
38	2	TB3 pin 2	38A	1.1/2	RV104	7	Yellow	Brown
39	1.3/4	TB3 pin 6	39A	2.1/2	S101aF1	8	Yellow	Blue
40	1.1/4	TB2 pin 1	40A	2.1/2	RV1	21	Slate	
41	1.3/4	TB3 pin 7	41A	3.1/2	S101dF1	8.3/4	Violet	Blue
42	4.1/4	Earth tag	42A	3.3/8	SKT104B	10	Black	
43	2.3/8	Disc pin 4	43A	2.3/8	SKT104C	7.3/4	Green	
44	2.1/4	TB2 pin 6	44A	3.1/2	SKT104A	6.1/2	Violet	Black
45	3.7/8	S101cB3	45A	2.3/4	SKT104F	9.1/8	Yellow	White
46	2.7/8	LO pin E	46A	2.3/8	SKT104H	18	Yellow	Green
47	3.1/2	TB2 pin 8	47A	2.1/4	SKT105C	7.1/4	White	Red
48	1	TB2 pin 11	48A	2.3/8	SKT105E	6	Yellow	
49	1.1/4	TB2 pin 10	49A	2.1/4	SKT105D	6	Violet	
50	3.7/8	TB2 pin 20	50A	3.1/2	S101cF3	11.3/4	Green	Brown
51	2.5/8	TB2 pin 7	51A	3.3/4	RV1	7.1/2	Green	Black
52	2	TB2 pin 5	52A	3.3/4	S101cB2	7.1/2	Yellow	White
53	3	R23 (4th i.f.)	53A	3.3/4	S101dF2	11.1/2	Violet	White
54	2.7/8	Junction R48-C63	54A	3	S101cB1	10.3/4	Slate	Black
55	1.3/4	TB2 pin 3	55A	3.1/8	S101bB6	7	Brown	White
56	2.5/8	Swp. Osc. pin 1	56A	2.1/4	TB2 pin 6	7.1/2	Violet	Black
57	3.3/8	Swp. Osc. pin 7	57A	2	TB2 pin 5	8	Yellow	White
58	1.3/4	V10 pin 4	58A	4	RV1	7.3/4	Green	Slate
59	2.1/8	Disc pin 7	59A	3.3/4	TB2 pin 21	6.1/2	Red	
60	2.1/4	4th i.f. pin 7	60A	3.3/4	TB2 pin 22	6.1/2	Yellow	Black
61	2.3/4	Swp. Osc. pin 6	61A	1.3/4	V1 pin 5	5	White	

- Fig 2520 bottom layout
- Fig 2516
- Fig 2520 top r.h. layout
- Fig 2520 top l.h. layout

R E S T R I C T E D

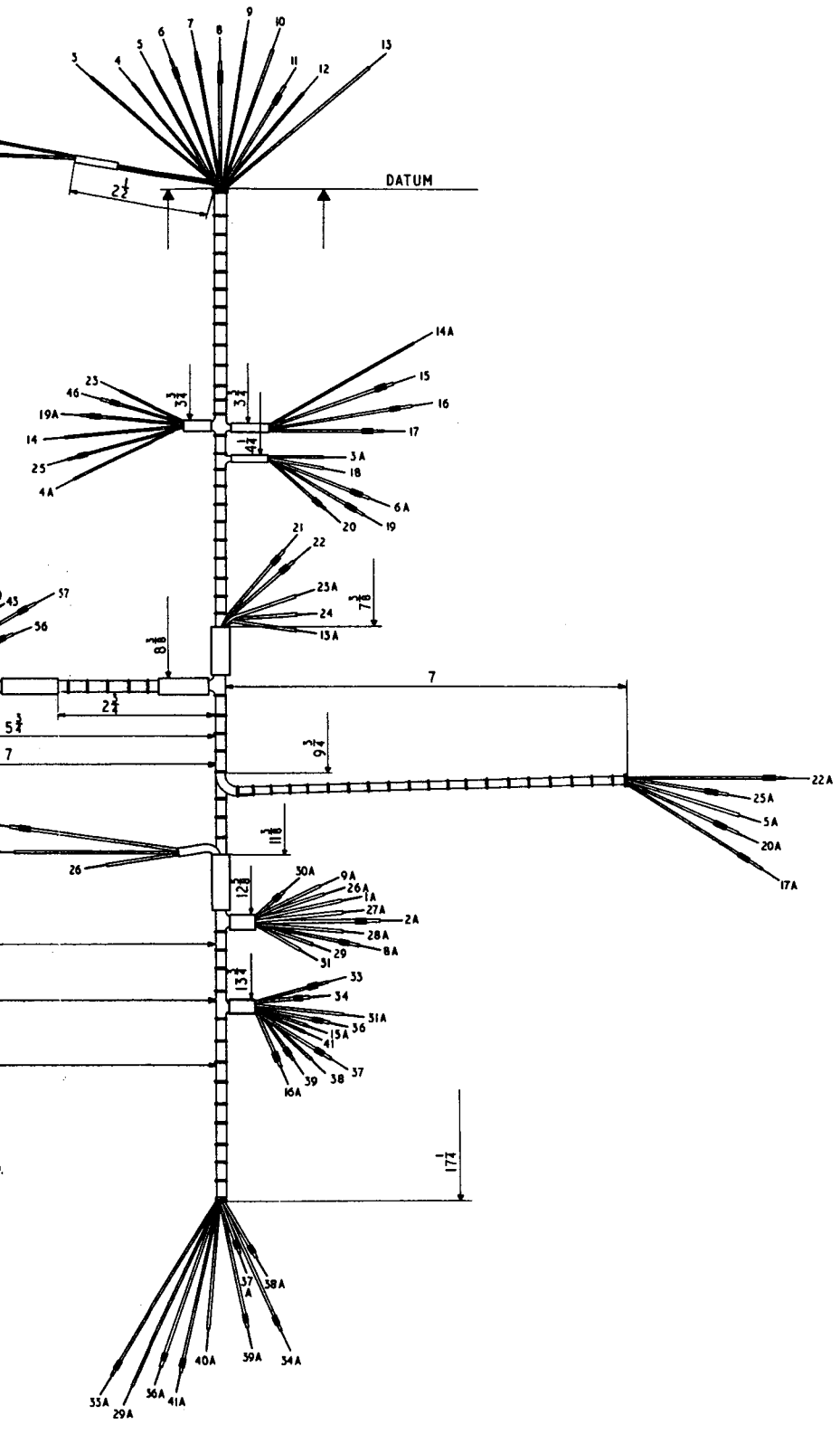
Fig 4037 - Cableform assembly, No 2 set



NOTES.

1. LEAD Nº ARE FOR REFERENCE TO TABLE 4008.
2. CABLEFORM TO BE BOUND AT APPROX. 3/8 PITCH WITH 1mm P.V.C. FILAMENT.
3. LEADS TO BE BARED 3/8, STRANDS TWISTED TOGETHER AND SOLDER DIPPED.
4. WIRE 7/0076 P.V.C. 0·012 R/T TYPE 2.
5. TIP SLEEVES 0·30 x 1/4 in LONG.
6. FULL SIZE COPIES OF THIS DRAWING ARE OBTAINABLE ON DEMAND FROM TELS BRANCH R.E.M.E. C/o S.R.D.E. CHRISTCHURCH HANTS. (QUOTE DRG. Nº 2466/17)

T F484 / H4037 2466/17



ableform assembly, No 2 set

END

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

TRANSMITTER-RECEIVER, RADIO, A41

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

Errata

Note: These Pages 0-01, Issue 3, supersede Pages 0-01, Issue 2, dated 26 Apr 63, and will be filed immediately in front of Page 1, Issue 1, dated 5 Oct 62. Para 5 is additional.

1. The following amendments will be made to the regulation.

2. Page 10, Table 2, item 4,

Delete: 'Pin 1 to chassis'
Insert: 'Pin 1 to Pin 4'

3. Page 11, para 14, line 4,

Delete: 'ZD 04022'
Insert: 'ZD 04029'

4. Page 13, para 28(b), sub-para (ix) (2), line 2

Delete: '4.3Mc/s ±500kc/s'
Insert: '4.3Mc/s ±5kc/s'

5. Page 12, para 26

Delete: 'all detail'
Insert: 'These voltages will be obtained from the Power supply set for bench testing manpack radio sets (Z4/6625-99-949-5448). The H.T. marking on the Control-monitor panel do not refer to similar markings on the A41 battery nor to references in para 14 Tels F 482 Part 1.'

EME 8/2146

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

TELECOMMUNICATIONS
F 484

STATION, RADIO, A41

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

Errata

Note: This Page 02, Issue 1, will be filed immediately in front of Page 1, Issue 1, dated 5 Oct 62.

The following amendments will be made to the regulation.

6. Page 12, para 27

Line 1 - Delete: 'Max'
Line 2 - Delete: 'Max' '44mA'
Insert: - '55mA'

Add: 'These figures are typical and may vary with individual equipments'.

Distribution - Class 332. Code No 6

STATION, RADIO, A41, NO 1 AND 2

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

Errata

Note: These Pages 03 and 04, Issue 1, are to be filed immediately in front of Page 1, Issue 1, dated 5 Oct 62.

The following amendments are to be made to the regulation.

7. Remove Pages 1-4, 7, 8, Issue 1, dated 5 Oct 62. Insert Pages 1-4, 7, 8, Issue 2, dated 10 Mar 65, attached.

8. Page 28.

Delete: 'Note: The next page is Page 1001'.

Distribution - Class 332. Code No 6.

9. Page 1005, Fig 4003, main right hand component layout,
   Delete: 'R19A'
   Insert: 'R18A'

10. Page 1032, Table 4006, caption,
    Add: ', No 1 set'

11. Page 1033, Fig 4034, caption,

    Add: ', No 1 set'

12. Page 1036.
    Delete: 'END'

13. Pages 29-31 and 1037-1038, Issue 1, are additional.

STATION, RADIO, A41, NO 1 AND 2

TECHNICAL HANDBOOK - FIELD AND BASE REPAIRS

Errata

Note: This Page 05, Issue 1, is to be filed immediately in front of Page 1, Issue 2, dated 10 Mar 65.

The following amendments are to be made to the regulation.

14. Page 19

(a) Para 39(b)(vii), lines 2 and 3

Delete: 'The sender deviation shall be not less than 7kc/s.'
Insert: 'The sender deviation must be not less than 2.5kc/s or more than 7kc/s.'

(b) Para 39(b)(viii), line 2

Delete: '5kc/s'
Insert: '3.5kc/s