

WIRELESS SET NO. 62, MK. 1

TECHNICAL HANDBOOK - MODIFICATION INSTRUCTION

(Serial Nos. 00001 - 00654)

Note: This issue, Pages 1 and 2 supersedes Pages 1 and 2 of Issue 1, dated 7 Feb. 1946. It has been revised.

SUMMARY

1. Some Wireless sets No. 62, Mk. 1 whose serial numbers fall within the block 00001 to 00654 were issued without a P.A./A.T.I. condenser lock. This instruction deals with the retrospective fitting of these locks to the equipments concerned.

Time required to perform modification: $\frac{1}{4}$ man-hour.

2. Items affected:-

AE TUNING and AE COUPLING dials

3. Action required by:-

(a) R.E.M.E. workshop units, all lines.

(i) In cases where the equipment is tropic-packed the modification will

Issue 2, 12 Nov. 1951

Page 1

Distribution - Class 870. Code No. 3

not be carried out until it is unpacked.

4. Priority: Group 'B' (A.C.I 878/49 refers).

5. Stores required:-

<u>Cat. No.</u>	<u>Designation</u>	<u>Qty. per eqpt.</u>
ZA 30068	Clamps, dial locking No. 2	1

Stores will be demanded through the normal Ordnance channels.

Authority for demand (to be quoted on all indents) - T/W/DB/4.

DETAIL

6. (a) Examine the front panel of Wireless sets No. 62, Mk. 1 whose serial numbers fall between 00001 to 00654. If no P.A./A.T.I. condenser lock has been fitted, proceed as detailed in sub-para. 6 (b).

(b) Two No. 6 B.A. shouldered screws will be found below the AE TUNING and AE COUPLING dials. Arrange the lock with the white index line uppermost so that its two jaws are on either side of the two dials with the index line registering against both. The two slotted holes in the dial lock can then be made to engage with the two No. 6 B.A. studs on the panel by means of some gentle pressure in the right direction. Secure the lock with the two No. 6 B.A. nuts and plain washers. Seal the nuts with bakelite varnish.

D.M.E. Ecnl. 5 to 57/Mtce/1809

END

Page 2

Issue 2, 12 Nov. 1951

WIRELESS SET NO. 62, MK 3TECHNICAL HANDBOOK - MODIFICATION INSTRUCTIONAuster aircraft installation

NOTE: This Issue 3 supersedes Issue 2, pages 1 to 6, dated 20 Mar 54.

SUMMARY

1. There is no longer a requirement for a special version of the Wireless set No. 62 for use in Auster aircraft, as an intercommunication facility is now provided by the RAF VHF installation. Tels F 517 Mod Inst No. 2, Issue 2, dated 20 Mar 54, is suspended and no further Wireless sets No. 62, Mk 2 will be converted to Mk 3. Sets which have already been converted to Mk 3 will be re-converted to Mk 2.

2. Items affected:-

Wireless sets No. 62, Mk 3

3. Action required by:-(a) Units holding Wireless sets No. 62, Mk 3

Submit AF G1045 to REME workshops

(b) REME workshop units authorized to carry out field or base repairs

Carry out this instruction.

4. Priority: Group 'B' (ACI 96, '54 refers).

5. Stores removed:-

Stores removed from wireless sets may be retained for workshop use. Unused modification kits, however, which were held for conversion of Wireless set No. 62 to Mk 3, will be returned to COD, Donnington.

DETAIL

6. (a) Remove those components fitted when carrying out Tels F 517 Mod Inst No. 2, Issue 2, and re-convert Wireless set No. 62 to Mk 2.
- (b) Carry out Tels F 517 Mod Inst No. 6 (this modification had to be removed before Mod Inst No. 2, Issue 2, could be carried out).
- (c) When all action has been completed, destroy Issue 2 of this instruction.

57/Maint/3017

END

RESTRICTED

WIRELESS SET NO. 62 MK. I

(Serial Nos. 00001-05000)

SUMMARY

1. As a result of experience in the field, a lightweight contact carriage is to be fitted to all Wireless sets No.62, Mk.I which still possess the old type carriage.

Time required to perform modification:- $\frac{1}{4}$ man-hour.

2. Item affected:-

/A.T.I.

3. Action required by R. Sigs. and R.E.M.E. personnel concerned at the request of the unit holding the equipment (Grade 'B').

4. Stores required:-

<u>Cat. No.</u>	<u>Description</u>	<u>No. off per equipment</u>
ZA 31033	Contact., roller, No.3A.	1

Units in the U.K. holding the equipment will demand the above stores from the Commandant, C.O.D., Donnington.

Stores will be issued to overseas theatres without demand.

Authority for demand (to be quoted on all indents) - T/1/DB/5.

5. Stores returned:-

<u>Cat. No.</u>	<u>Description</u>	<u>No. off per equipment</u>
ZA 30200	Contact, roller, No.3	1

The above stores will be returned to salvage.

DETAIL

6. Examine the contact carriage on the A.T.I. of Wireless set No.62, Mk.I. The lightweight carriage may be recognised easily by the thickness of its wheels which are only $\frac{1}{8}$ in. thick as opposed to $\frac{3}{16}$ in. on the old type carriage. If replacement is required, proceed as follows.

7. Rotate the A.T.I. until the carriage is at the rear end of the former (dial reading "00"). The rear wheel will then be within about half a turn from the end of the winding and the front wheel will be in the tenth groove from the rear wheel.

647.

Remove the old carriage by passing the lower (or front) wheel between the end of the former and the triangular end-plate.

8. Replace with the new carriage by the same method. It will be necessary to ease the wheels very gently into position on the former so that no undue strain is placed upon the spring, such as might result in a loss of tension. If this happened, the whole benefit of the reduction in weight might easily be lost.
9. Finally, make a check that the carriage is set correctly by rotating the A.T.I. to both ends of its travel and observing that it does not over-run the stop.

DME Enc.No.6 to 57/Mtce/1809. END

END

WIRELESS SET NO. 62

TECHNICAL HANDBOOK - MODIFICATION INSTRUCTION

(Applicable only to sets modified in accordance with Tels F 517 Mod Inst No. 2)

Note: This Issue 2, supersedes Issue 1, pages 9 and 10, dated 12 Mar 47.

1. Issue 1 of this EMER described a modification to the microphone circuit for installation of the WS No. 62 in Auster aircraft.
2. Issue 2, of Mod Inst No. 2 has now been published and incorporates details of Mod Inst No. 4.
3. Issue 1 of this Instruction will be destroyed.

57/Maint/3017

END

Issue 2, 17 Mar 54.

Distribution - Class 870. Code No. 3

Page 1

RESTRICTED

WIRELESS SET NO. 62, MK.1

(Applies only to sets already modified
mechanically for airborne purposes)

SUMMARY

1. Approximately 500 Wireless sets No.62, Mk.1 have already been modified mechanically (for airborne purposes) in respect of the rotary transformers and cases. To convert these to Wireless sets No.62, Mk.2, a further modification is required to reduce the extent to which the set drifts off frequency as it warms up. This modification is detailed below.

Time required to perform modification: 2 man-hours

2. Item affected:-

Oscillator circuit.

3. Action required by R.E.M.E. personnel concerned at the request of the unit holding the equipment (Group 'B').

4. Stores required:-

Cat. No.	Description	No. off per equipment
Z3/ZC 19310	Capacitor, silvered, ceramic, tubular, 10pF \pm 10%, 500V D.C. wkg, No.3	1
Z 132280	Capacitor, silvered, ceramic, tubular, 27pF \pm 10%, 500V wkg, No.3	1

647
Units in the U.K. holding the equipment will demand the above stores as LD no.17796/MOD (sets) from the Commandant, C.O.D., Donnington.

Authority for demand (to be quoted on indents) - T/W/DB/6.

5. Stores returned:-

Cat. No.	Description	No. off per equipment
ZA 2004	Condenser Y.3.K.	1

The above stores will be returned to O.i/c C.R.D., Woolwich.

Authority for return - T/W/DB/6.

DETAIL

6. Connect the 10pF condenser between the contact of switch S1A/4, which is virtually the junction of C12B and C14A, and earth. The schematic reference of this condenser will be C33A.
7. Replace C7A by the 27pF condenser. The schematic reference of this condenser will be C30A and the reference C7A will no longer exist.
8. Re-align the oscillator circuits in accordance with Tels.F 514.
9. Remove the metal designation plate from the front panel and paint on the new designation and catalogue number, i.e., "Wireless set No.62, Mk.2, ZA 30714".

END

WIRELESS SET NO. 62

TECHNICAL HANDBOOK - MODIFICATION INSTRUCTION

Improving the quality of speech transmissions

SUMMARY

1. The quality of speech transmitted by the Wireless set No. 62 is very poor particularly at low speech frequencies. This instruction details an improved method of modulating the transmitter resulting in better quality speech.

Time required to complete modification: $\frac{1}{2}$ man-hour

2. Items affected:-

All Wireless sets No. 62 (except Mk. 3)

3. Action required by:-

(a) Units affected:-

(i) Submit A.F. G1045 to R.E.M.E. workshops

(b) R.E.M.E. workshops:-

(i) Carry out modification as requested and also whenever sets come into workshops.

4. Priority: Group 'B' (A.C.I. 878/49 refers).

5. Stores required:-

<u>Cat. No.</u>	<u>Designation</u>	<u>Qty. per eqpt.</u>
Y3/5E/2001	Cable, electric, L.T. Uniflexmet 2.5	7 in.

This item, a short length of screened cable, will be found locally.

Stores removed:-

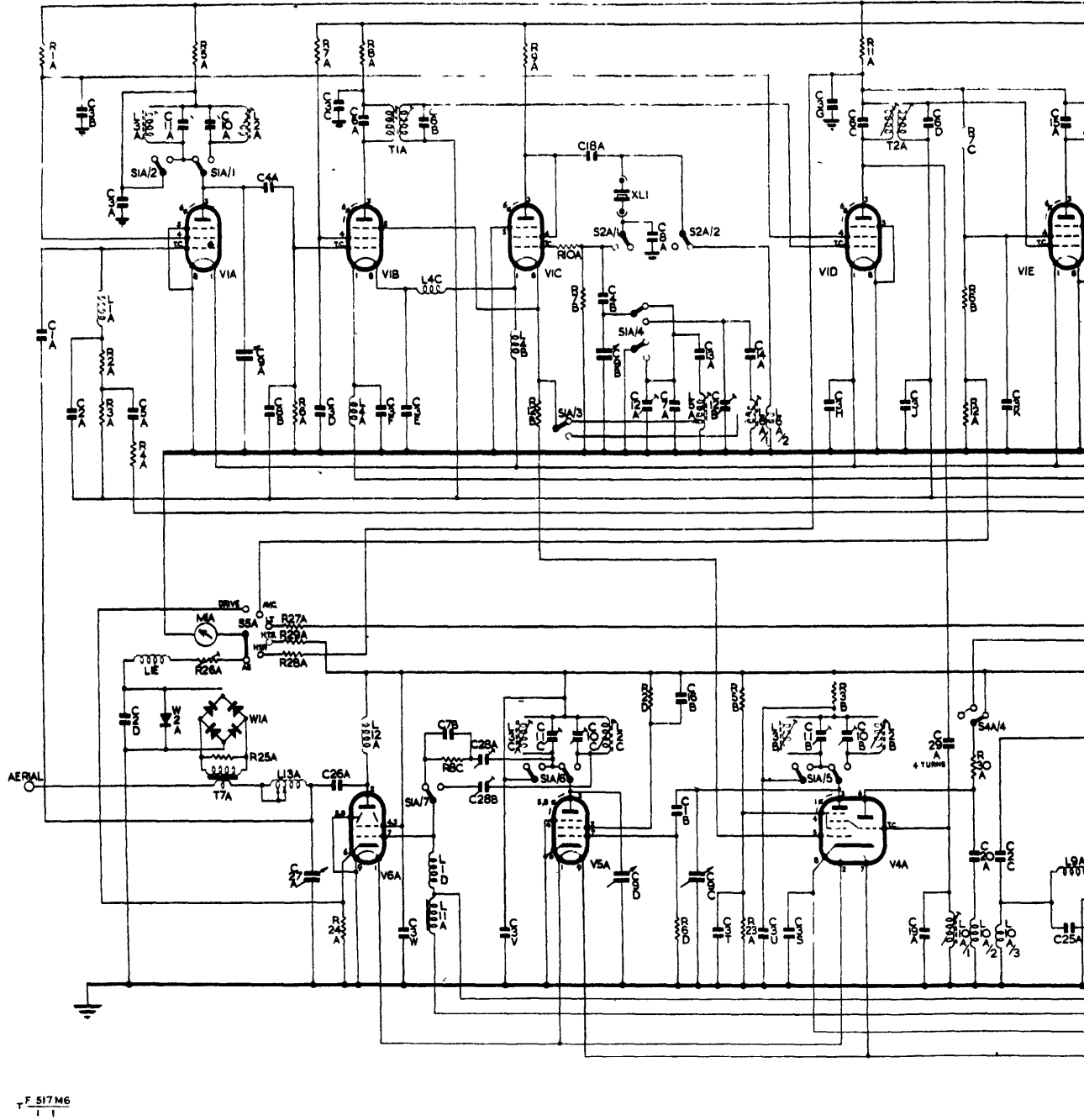
<u>Component ref.</u>	<u>Designation</u>	<u>Qty. per eqpt.</u>
R17A	Resistors, ceramic, $\frac{1}{4}$ W 15,000 Ω \pm 20%	1
R19A	Resistors, ceramic, $\frac{1}{4}$ W 220,000 Ω \pm 20%	1
C2B	Capacitors, moulded mica, 0.001 μ F \pm 25% 350V D.C. wkg.	1

These stores will be disposed of locally.

DETAIL

6. (a) Refer to Tels. F 512, Issue 3, Fig. 1002. Locate the screen lead from the grid (top cap) of V2A to the transformer T4A; disconnect from its present tag on the transformer T4A and connect to one of the earth terminals on the transformer.

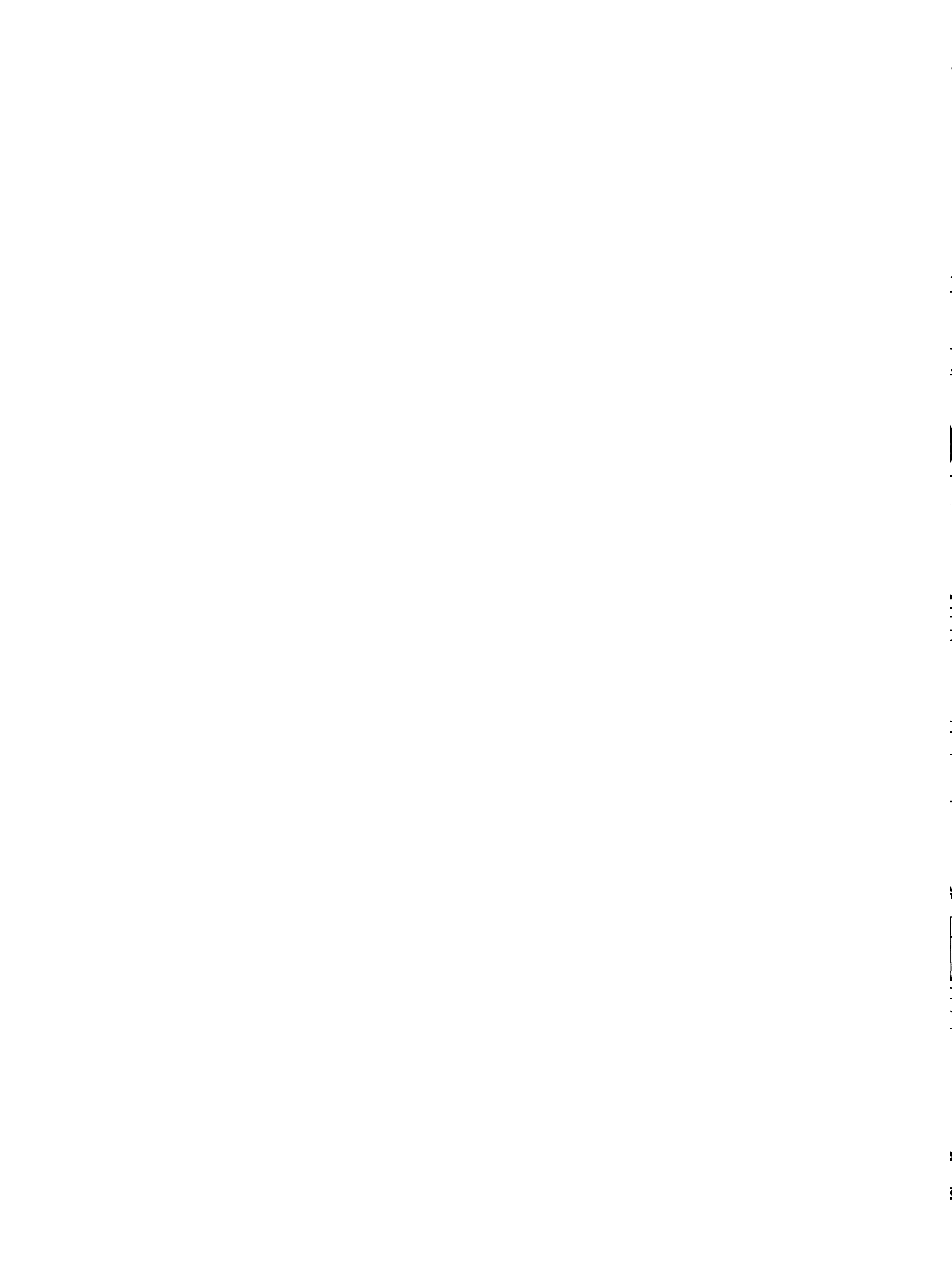
- (b) Locate, disconnect and remove R17A, R19A and C2B.
- (c) Earth the anode (pin 3) of V2A by connecting pin 3 to pin 6.
- (d) Prepare a 7 in. length of screened lead by pushing back the braiding at each end of a piece of Cable, electric, L.T. Uniflexmet 2.5 for about an inch, binding with twine and coating with bakelite varnish.
- (e) Drill a hole ($\frac{1}{8}$ in. diameter) in the chassis. The hole should be in the space between V3A, V3B and the relay cover (A2) and should be drilled from the underside of the chassis to avoid damaging the valveholders.
- (f) Connect one end of the screened lead to the grid (pin 5) of V3B, pass it through the chassis and connect the other end to the tag of T4A from which the grid lead to V2A was removed.
- (g) The screening of this lead should be earthed to the same tag as the screening for the V2A grid lead.
- (h) The circuit diagram should now correspond to Fig. 1.
- (j) Check the operation of the set on send and receive.
- (k) For accounting purposes this modification will be known as T/W/DB/17.



57/Maint./4275(M.E.8)

Issue 1, 3 Jul. 1951

Fig. 1 - Circuit diagram of Wire



RESTRICTED

Fig. 1 -
Circuit diagram of wireless set
No. 62 after modification

R E S T R I C T E D

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

TELECOMMUNICATIONS
F 647 Mod Instr No 7

WIRELESS SET NO 62

TECHNICAL HANDBOOK - MODIFICATION INSTRUCTION

Sender valve filament circuit

SUMMARY

1. To maintain the sender output power, without the necessity for valve selection, it is necessary to re-arrange the filament circuit. The filament of V6A, which is in series with V4A and V5A, will be fed independently through a series resistor.

Approximate time to complete modification - 1/2 man hour.

2. Items affected:-

Wireless set No 62, Mks 1 and 2.

3. Action by:-

(a) Units holding equipment. Submit AF G1045 to REME

(b) REME field and base workshops

- (i) Indent for stores
- (ii) Carry out this modification

4. Priority:- Group 'B' (ACI 96/54 refers).

5. Stores required:-

<u>VAOS, Section</u>	<u>Part No</u>	<u>Designation</u>	<u>Qty per eqpt</u>
Z	Z243342	Resistors, ww, vitreous, wire-end, 1.1/2W 75 ohm, +5%	1
Z 1	ZA40497	Resistors, ww, lacquered, wire-end, 6W 9.5 ohms +2% No 2	1

Authority for demand (to be quoted on all indents) T/W/DB/29.

DETAIL

6. (a) Withdraw the set from its case and remove the bottom plate. Locate the valve holders of V4A, V5A, and V6A, (see Tels F 643, Fig 1002)
- (b) Remove the connection between pin 1 of V6A and pin 1 of V5A.
- (c) Connect the 9.5 ohm resistor (R34A) between pins 1 of V6A and contact 6 of the rear wafer of switch S4A. The link between contacts 4 and 6 is to remain. (See Tels F 642, page 1008).
- (d) Connect the 75 ohm resistor (R35A) between pins 2 and 7 of V4A. The connection between pin 2 of V4A and pin 1 of V5A is to remain.

R E S T R I C T E D

TELECOMMUNICATIONS
F 647 Mod Instr No 7

ELECTRICAL AND MECHANICAL
ENGINEERING REGULATIONS

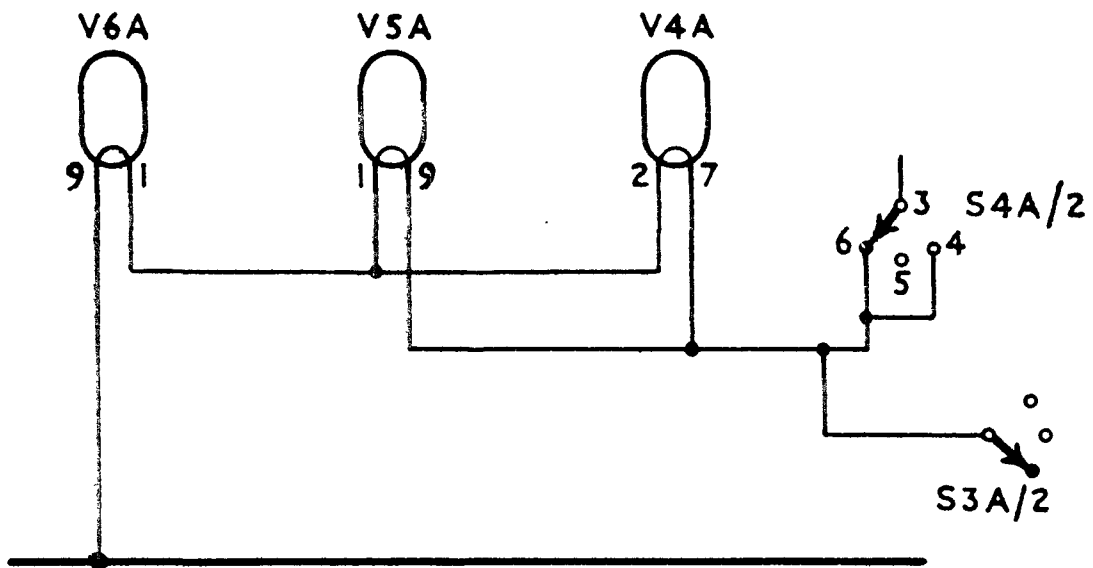
- (e) Locate the wire connecting pin 7 of V4A to pin 9 of V5A. Unsolder this wire at pin 9 of V5A and connect the wire to earth by joining it to pin 8 of V5A. The existing link between pin 9 of V5A and switch is to remain.

Note: Where this modification has been carried out in production resistor R34A is mounted on a tag board in place of capacitor C3Q (under resistor R13A) and C3Q is mounted on the central screen, on the opposite side to capacitor C3T.

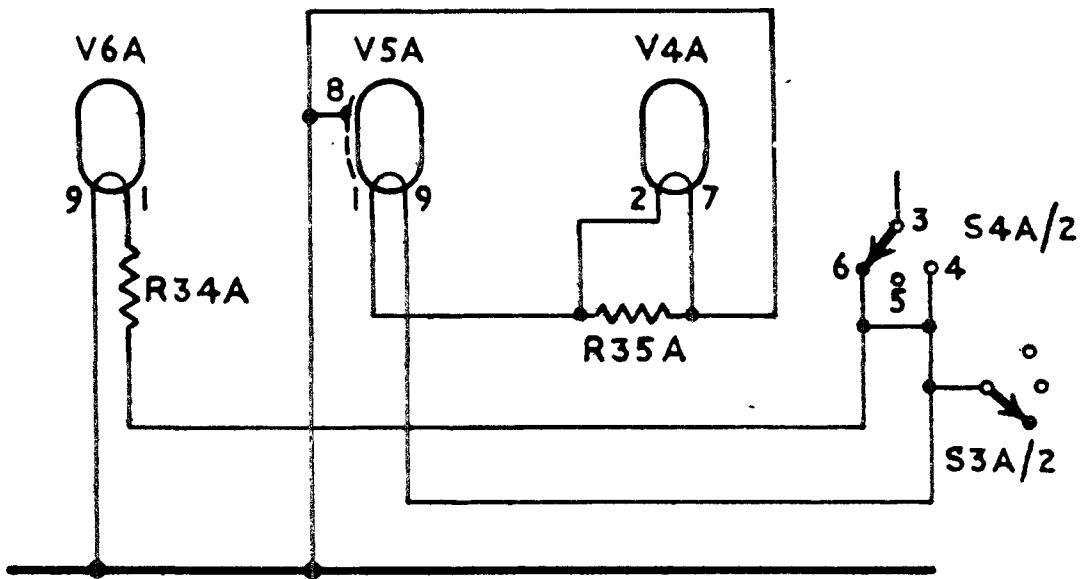
- (f) Replace the set in its case and check for correct operation.

RECORDING OF MODIFICATION

7. Strike through the figure 7 on the modification record plate.



BEFORE MODIFICATION



F-647 M7
1-1

AFTER MODIFICATION

Fig 1 - Modification of filament circuit

57/Maint/5687

END

RESTRICTED

R E S T R I C T E D

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

TELECOMMUNICATIONS
F 647 Mod Instr No 8

WIRELESS SET NO 62

TECHNICAL HANDBOOK - MODIFICATION INSTRUCTION

Removal of resistors R35A from V4A filament circuit

SUMMARY

1. Modification Instruction No 7 details wiring changes to the sender valve filament circuit. One of these changes is the connection of a 75Ω resistor (Resistors, WW, vitreous, wire-end, $1.1/2W$, $75\Omega \pm 5\%$, (Z243342)) across the filament of V4A. The fitting of this resistor results in incorrect voltages across, and currents in, the filaments of valves V4A and V5A. This instruction details the removal of R35A if fitted and amendment of Tels F 647, Mod Instr No 7, Issue 1, dated 28 Feb 56.

2. Items affected:-

All Wireless sets, No 62, Mks 1 and 2 which have been modified according to Tels F 647, Mod Instr No 7, Issue 1 in its unamended form.

3. Action required by:-

(a) Units holding equipment:-

(i) Submit AF G1045 to REME for inspection and, if necessary, modification, of equipment according to this instruction.

(b) Units authorized to carry out field or base repairs:-

(i) Carry out this modification on all equipments on which Mod Instr No 7 has been done.

4. Priority: Group 'B' (ACI 96/54 refers).

5. Stores required: Nil.

DETAIL

6. (a) Withdraw the set from its case and remove the bottom plate. Locate the valveholder of valve V4A (see Tels F 643, Fig 1002).
- (b) Remove the 75Ω resistor which is connected between pins 2 and 7 of the valveholder, either by cutting or unsoldering the leads.
- (c) Replace the set in its case and check for correct operation.
- (d) Strike through the number 8 on the modification record plate.

R E S T R I C T E D

TELECOMMUNICATIONS
F 647 Mod Instr No 8

ELECTRICAL AND MECHANICAL
ENGINEERING REGULATIONS

Amendment to Tels F 647, Mod Instr No 7, Issue 1, dated 28 Feb 56

7. The following amendments are to be made to the regulation:-

Page 1, immediately after 'Sender valve filament circuit' insert the following note:-

Note: the amendments detailed in para 7 of Tels F 647, Mod Instr No 8 are herewith made to this regulation. Mod Instr No 8, as such, is inapplicable to any equipment on which this instruction, as amended, is carried out.

Page 1, para 5:-

Delete: first stores item (75Ω resistor)

Page 1, para 6(d):-

Delete: first sentence entirely

Page 2, para 7:-

Delete: 'the figure 7'
Insert: 'figures 7 and 8'

57/Maint/5687

END

" MK 4 "

R E S T R I C T E D

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

TELECOMMUNICATIONS
F 647 Mod Instr No 9

WIRELESS SET NO 62

TECHNICAL HANDBOOK - MODIFICATION INSTRUCTION

Microphone input impedance

Note: This issue Pages 1 and 2 supersede Issue 1 dated 20 Nov 58. Para 7 has been amended.

SUMMARY

1. A requirement exists to use the RAF microphone, type 59 (Part No 10A/19043) with the Wireless set No 62 (WS 62) in Auster aircraft and Skeeter, Mk 12, helicopters. The microphone has an impedance of 300Ω at 1000c/s and an output of 10mV when working into 200Ω . This regulation gives details of the necessary circuit alteration to improve the efficiency of operation of the WS 62 when used with this microphone by altering the microphone circuit input impedance.

Estimated time required to complete this modification: 1/2 man-hour.

2. Items affected:-

Wireless set, No 62, Mk 2

3. Action required by:-

(a) Army Air Corps Units

(i) Submit AF G1045 to REME requesting this instruction to be carried out.

(b) Units authorized to carry out field or base repairs:-

(i) Demand stores from Ordnance for equipments intended for the use of AAC units.

(ii) Carry out the detail of this instruction.

NOT TO BE IMPLEMENTED WITHOUT WAR OFFICE AUTHORITY

4. Priority: Group 'A' (ACI 407/58 refers) .

5. Stores required:-

<u>Joint Services Part No</u>	<u>Designation</u>	<u>Qty per eqpt</u>
Z/5905-99-022-3155	Resistor, fixed, composition, grade 2, insulated, $820k\Omega \pm 10\%$, 1/4W	1

Stores to be demanded through the normal Ordnance channels. Authority for demand (to be quoted on all indents) - T/W/DB/43.

R E S T R I C T E D

TELECOMMUNICATIONS
F 647 Mod Instr No 9

ELECTRICAL AND MECHANICAL
ENGINEERING REGULATIONS

6. Stores to be removed:-

<u>Component reference</u>	<u>Designation</u>	<u>Qty per eqpt</u>
R2C	Resistors, ceramic, 100k Ω <u>+20%</u> 1/4W	1

This item to be disposed of locally.

DETAIL

7. (a) Locate the transformer T4A (on top deck).
- (b) Remove the 100k Ω resistor R2C from the top of T4A and solder the 820k Ω resistor, provided, in its place.
- (c) Amend the Mark number on the designation plate to 'Mk 4' and the part numbers to 'ZA 53347', using suitable figure punches.

Note: If Tels F 647 Mod Instr No 10 is being carried out at the same time as this instruction ignore the detail of para 7(c) above.

57/Maint/7619

END

"MKS"

R E S T R I C T E D

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

TELECOMMUNICATIONS
F 647 Mod Instr No 10

WIRELESS SET NO 62

TECHNICAL HANDBOOK - MODIFICATION INSTRUCTION

Provision of two sidetone levels

SUMMARY

1. A requirement exists for a number of Wireless sets, No 62 (WS 62) to be used in the Skeeter, Mk 12, helicopter. This entails the carrying out of two modifications viz:-

- (a) A modification to enable the RAF microphone, type 59 (10A/19043) to be used.
- (b) A modification to provide two levels of sidetone, viz: low and high, the latter being required for intercom purposes.

The modification at (a) is dealt with in Tels F 647 Mod Instr No 9, the equipment then being known as Wireless set, No 62, Mk 4. The modification at (b) is dealt with in the present instruction and will only be carried out on equipment modified as at (a) (ie on Mk 4 equipments). When both (a) and (b) have been carried out the equipment becomes Wireless set, No 62, Mk 5. The mark numbers mentioned apply to the equipment in original (unmodified) cases.

Estimated time required to carry out this modification: 3 man-hours.

2. Items affected:-

Wireless set, No 62, Mk 4 - Part No ZA 53347

NOT TO BE IMPLEMENTED WITHOUT WAR OFFICE AUTHORITY

3. Action required by:-

(a) Army Air Corps units:-

(i) Submit AF G1045 to REME requesting this instruction to be carried out.

(b) Units authorized to carry out field or base repairs:-

- (i) Demand stores from Ordnance.
- (ii) Carry out the detail of this instruction.

4. Priority: Group 'A' (ACI 96/54 refers).

R E S T R I C T E D

TELECOMMUNICATIONS
F 647 Mod Instr No 10

ELECTRICAL AND MECHANICAL
ENGINEERING REGULATIONS

5. Stores required:-

<u>Joint Service Part No</u>	<u>Designation</u>	<u>Qty per eqpt</u>
Z/5910-99-014-5518	Capacitor, electrolytic, aluminium electrodes, processed foil, tub metal case, ins, 500 μ F +100 - 20%, 25V d.c. wkg	1
Z/5910-99-012-3940	Capacitor, moulded silver mica, 270pF +10%, 750V d.c. wkg, No 1	1
Z/5905-99-022-3080	Resistor, fixed, composition, grade 2, ins, 220k Ω \pm 10%, 1/4W	2
Z/5905-99-022-3038	Resistor, fixed, composition, grade 2, ins, 100k Ω \pm 10%, 1/4W	1
Z/5905-99-022-2152	Resistor, fixed, composition, grade 2, ins, 15k Ω \pm 10%, 1/4W	1
	Equipment wire, 14/0076 (to be provided locally)	

Stores to be demanded through the normal Ordnance channels. Authority for demand (to be quoted on all indents) - T/W/DB/42.

6. Stores to be removed:-

<u>Component reference</u>	<u>Designation</u>	<u>Qty per eqpt</u>
C21A	Capacitor, electrolytic, 100 μ F	1
R4A	Resistor, ceramic, 1M Ω	1

These items to be disposed of locally.

DETAIL

7. (a) Ascertain if Tels F 647 Mod Instr No 11 has been carried out on the equipment (figure 9 struck through on modification record plate or the appropriate entry made on the modification record card if no plate is fitted). If it has, it will be necessary to remove the modification and restore the set to its pre-modified state, since the c.w. facility is unlikely to be required on aircraft and the spare switch utilized in Tels F 647, Mod Instr No 11 is required for use in this present instruction.
- (b) Having removed the set from its case remove the bottom plate from the chassis.
- (c) Locate the lead which connects tag 6 of the valveholder V3A to the capacitor C5A (on tagboard on top of main gang capacitor). Disconnect the lead at each end. Earth the capacitor end of the lead to the tag on the side of the crystal screen and the other end to any convenient earth point.
- (d) Disconnect and remove the 1M Ω resistor R4A from tags 5 and 6 of V3A.
- (e) Disconnect the earthed end of the 1M Ω resistor R4E and solder it to tag 6 of V3A together with one end of a 220k Ω resistor provided. Solder the other end of the 220k Ω resistor to the earth point.

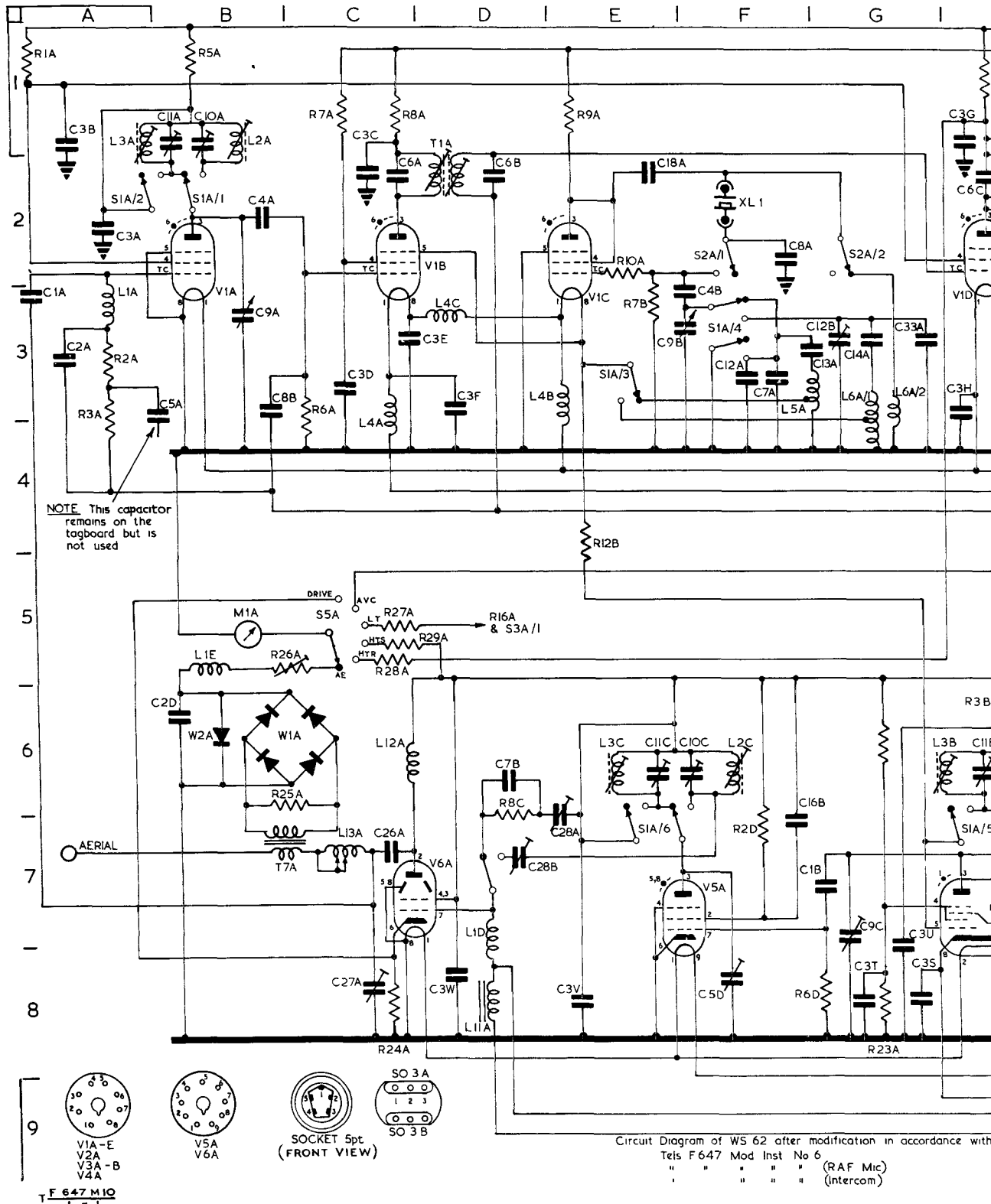
R E S T R I C T E D

ELECTRICAL AND MECHANICAL
ENGINEERING REGULATIONS

TELECOMMUNICATIONS
F 647 Mod Instr No 10

- (f) Solder one lead of the 270pF capacitor provided to tag 3 of the valve-holder V3B (This is the anode connection) and its other lead to one end of the 100k Ω resistor provided. Solder the other lead of this resistor to tag 6 of V3A.
- (g) Locate the supply switch S3A. Remove the four screws securing the toggle-operating mechanism to the switch body. Remove the knob, washer and retaining nut of the switch and carefully remove the toggle-operating part from the set as a temporary measure. This leaves the switch S3A/1 (front switch, tags 1 and 2 counted from front panel) and S3A/2 (rear switch tags 3 and 4 from panel) supported only by wiring, thus allowing easy access to the tags. These tags will be referred to as numbers 1, 2, 3 and 4 respectively in the following sub-paras.
- (h) Disconnect the leads from tags 3 and 4 of S3A. Disconnect the other end of that lead which goes to the 12V+ pin of the supply plug PL2 and remove this lead from the set.
- (j) Reconnect the remaining leads, disconnected at (h), as follows:-
- (i) The short lead coming from tag 1 of S3A to the 12V+ pin of plug PL2
 - (ii) The lead coming from the 12V+ tag (pin 1) of the RC UNIT socket SO3A to tag 1 of S3A
 - (iii) The lead coming from the filaments of the sender valves V4A, V5A and V6A (After extending it by 1.1/2 in. with 14/0076 equipment wire, white, to tag 2 of S3A (this connects the sender and receiver valves in parallel)).
- (k) Using a short length of 14/0076 equipment wire, black, connect tag 3 of S3A to the negative (earth) pin of PL2. Connect one end of the 15k Ω resistor provided to the junction of the 270pF capacitor and 100k Ω resistor fitted at (f) and connect the other end to tag 4 of S3A using an 8 in. length of equipment wire, black. Insulate the joint with a short length of suitable sleeving.
- (l) Locate the four tags of the send-receiver relay A/2 contacts, and, viewing from the back of the set, transfer the h.t. ends of resistors R20A and R21A (screen and anode feeds of V3B) from the r.h. rear tag to the l.h. rear tag: this enables the valve V3B to receive h.t. on 'receiver' as well as 'send'.
- (m) Remove the two nuts and washers securing the wafers of the CW/NET/RT switch S4A. Unsoldering connections as necessary (and identifying them for subsequent replacement) withdraw the first switch wafer until the spare 3-way switch contacts at the bottom of the centre wafer are accessible (see para 6(a)).
- (n) Locate the gain control R18A and unsolder the lead from the top r.h. tag (as viewed from the rear with the set upside-down). Solder a two-inch length of 14/0076 equipment wire, black, from this same tag to the common (long) contact on the spare 3-way switch on S4A (mentioned at (m)).

- (o) Connect the other 220k Ω resistor provided between that contact on the spare 3-way switch which 'makes' in the R.T. position of the CW/NET/RT switch and the earth tag on the side of R18A. Connect the remaining two contacts on the spare 3-way switch together and join them to that contact of S4A/1 which is connected to R15A (this contact was disconnected from R18A at (n)) using a two-inch length of 14/0076 equipment wire, black, passed around the outside of S4A. The lead which previously joined the contact to R18A will be removed as it is no longer required.
- (p) Carefully reassemble the wafers of S4A, replace and tighten the nuts and remake the connections removed at (m).
- (q) Replace the toggle-operating mechanism of S3A; locating it so as to engage, and operate correctly, the toggle arms of the switches. Secure with the screws removed at (g) and varnish the screw heads.
- (r) Mark the supply switch S3A 'SIDETONE', 'INTERCOM' and 'OFF' as indicated on the circuit diagram at Fig 1 (bottom r.h. corner) using a suitable paint.
- (s) Amend the mark number on the designation plate to 'Mk 5', and the part number to ZA 53372, using suitable figure punches.
- (t) Replace the set in its case and test for correct operation.

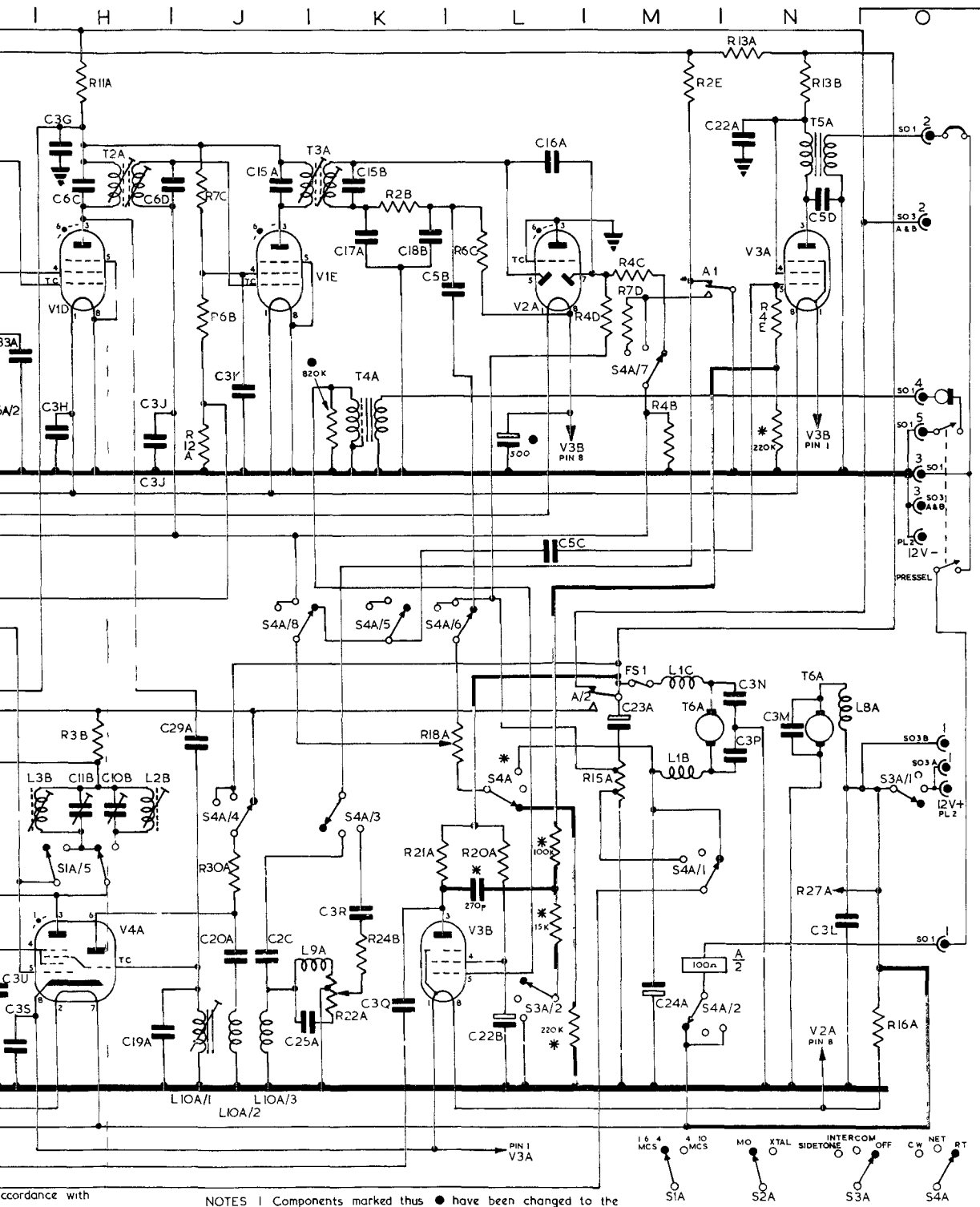


NOTE: This capacitor remains on the tagboard but is not used

Circuit Diagram of WS 62 after modification in accordance with
Tels F 647 Mod Inst No 6 (RAF Mic)
" " " " " (Intercom)

MK 5

Fig 1 - Circuit



- NOTES
- 1 Components marked thus ● have been changed to the new value shown
 - 2 Components marked thus * are additions
 - 3 Wiring shown thus — is the new wiring

Circuit diagram
END

R E S T R I C T E D

Fig 1 - Circuit diagram

R E S T R I C T E D

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

TELECOMMUNICATIONS
F 647 Mod Instr No 11

WIRELESS SET, NO 62

TECHNICAL HANDBOOK - MODIFICATION INSTRUCTION

Improvement of keying characteristics

SUMMARY

1. Keying of the Wireless set No 62 (W.S. 62) when on c.w. is effected by a relay (A/2) which switches the h.t. on and off. The modulator valve (V3B) derives its h.t. from the same line, and whenever the h.t. is applied a large square wave of voltage appears across the anode load of V3B. The anode of this valve is coupled to the junction of the chokes L1D and L11A, which are in the grid circuit of the p.a. valve (V6A), through the capacitor C3Q, and at every application of h.t. L11A tends to ring due to its comparatively large inductance. As a consequence the output waveform from the transmitter is far from being a square wave. This regulation details the action required to feed the h.t. to V3B through the C.W./R.T./NET switch (S4A) so that no h.t. is applied to it when working on c.w.

Estimated time required to complete this modification: 1 man-hour.

2. Items affected:-

Wireless set No 62 Mk 1
Wireless set No 62 Mk 2

3. Action required by:-

(a) Units affected:-

(i) Submit AF G1045 to REME requesting this instruction to be carried out.

(b) Units authorized to carry out field or base repairs:-

(i) Carry out the detail of this instruction on all equipments undergoing repair, overhaul or inspection.

4. Priority: Group 'B' (ACI 407/58 refers).

5. Stores required:-

<u>Part No</u>	<u>Designation</u>	<u>Qty per eqpt</u>
Y3/6145-99-910-0175	Wire, elect equip, type 2, p.v.c., medium wall, red	12 in.

(to be provided locally)

DETAIL

6. (a) Remove the set from its case.
(b) Disconnect and remove the wire between tag 6 of valveholder V3B and contact 3 of relay A/2.

R E S T R I C T E D

TELECOMMUNICATIONS
F 647 Mod Instr No 11

ELECTRICAL AND MECHANICAL
ENGINEERING REGULATIONS

- (c) Locate resistor R21A (Tels F 642, Fig 1002) and disconnect it from contact 3 of relay A/2. Solder this end of R21A to tag 6 of valveholder V3B.
- (d) Locate the C.W./R.T./NET switch S4A and proceed as follows:-
 - (i) Remove the nuts securing the wafers and slide off the rear wafer after temporarily removing the wire which connects this to the centre wafer. The contacts 3, 4, 5 and 6 of the spare switch on the centre wafer will now be exposed.
 - (ii) Connect contact 3 (wiper) of the spare switch at (d)(i) to tags 3 and 4 of valveholder V6A (screen of p.a. valve) using red equipment wire and routing and securing as necessary.
 - (iii) Connect contact 6 of the spare switch to tag 6 on valveholder V3B using red equipment wire and routing and securing as necessary.
 - (iv) Reassemble the switch wafers, replace and tighten the nuts and remake the connection removed at (d)(i).
- (e) Strike through the figure 9 on the modification record plate, or enter the number of this instruction (Tels F 647 Mod Instr No 11) and the reference number T/W/DB/44 on the modification record card if a record plate is not fitted.
- (f) Replace the set in its case and test it for correct operation.

57/Maint/6134

END

TRANSMITTER-RECEIVER, RADIO, NO 62TECHNICAL HANDBOOK - MODIFICATION INSTRUCTION

Note: This Page 0, Issue 2, supersedes Page 0, Issue 1, dated 16 Mar 61, and will be filed immediately in front of Page 1, Issue 1, dated 21 Oct 60. The equipment designation has been amended throughout. Item 2(d) was contained in Issue 1, Items 2(e), 3 and 4 have been amended.

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

2. Page 1

(a) title

Delete: 'WIRELESS SET NO 62'

Insert: 'TRANSMITTER-RECEIVER, RADIO, NO 62'

(b) para 1, line 2

Delete: 'Wireless set No 62'

Insert: 'Transmitter-receiver, radio, No 62'

(c) para 1, last line but one

Delete: 'Wireless set No 62, Mk 6'

Insert: 'Transmitter-receiver, radio, No 62, Mk 6'

(d) para 2, line 1

Delete: 'Group C'

Insert: 'Group B'

(e) para 3, line 1

Delete: '5.1/2 man-hours'

Insert: '6.1/2 man-hours'

(f) para 4, line 2

Delete: 'Wireless set, No 62, Mk 2' and 'Wireless set No 62'

Insert: 'Transmitter-receiver, radio, No 62, Mk 2' and
'Transmitter-receiver, radio, No 62' respectively.

3. Page 2, para 6, in 'Qty per eqpt' column, 16th item

Delete: '8 in.'

Insert: '15 in.'

4. Page 3, para 7(g); line 3

Delete: 'inductance'

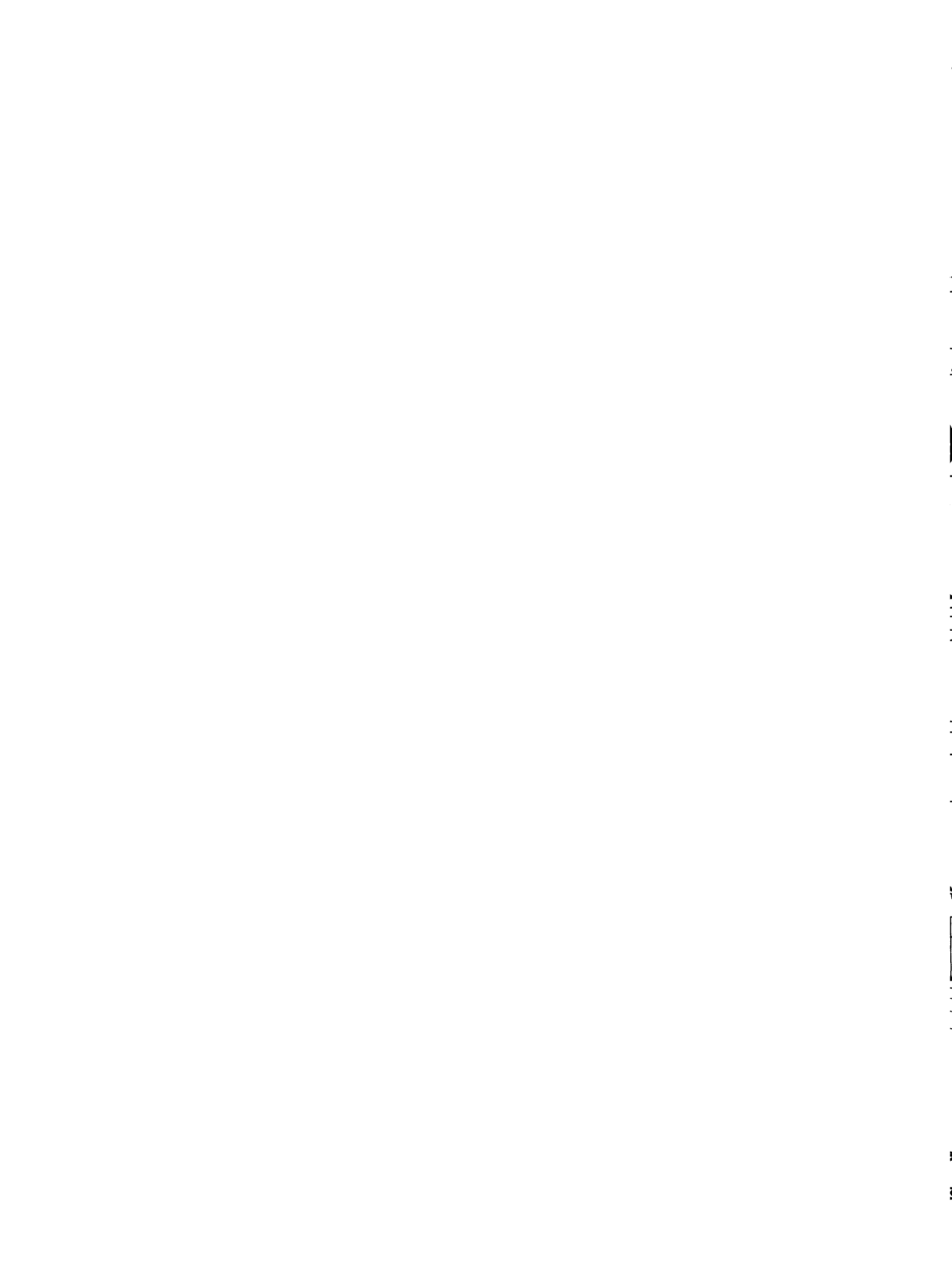
Insert: 'inductor'

T/61125/45

Issue 2, 31 Dec 62

Distribution - Class 1190. Code No 3

Page 0



WIRELESS SET NO 62TECHNICAL HANDBOOK - MODIFICATION INSTRUCTIONSUB-TITLE: Conversion to Mk 6 for dry battery operation1. Introduction

When the Wireless set No 62 is required for use in airborne operations it is desirable that it should be capable of operation from dry batteries prior to the provision of accumulators and pedal driven charging equipment. This regulation gives details of the modification required to allow the equipment to be operated from either primary or secondary batteries. After modification an amended procedure must be followed in order completely to switch the set off. This consists of setting the newly fitted toggle switch (labelled 12 VOLT - DRY BATTTS) to the 12 VOLT position in addition to switching off normally by putting the existing switch S3A to ALL OFF. The additional switching operation is necessary because certain valve heaters are otherwise left connected owing to the circuit changes introduced by this modification. It is important that this procedure should be rigidly adhered to in order to avoid unnecessary battery drain. Modified equipments are redesignated Wireless set No 62, Mk 6 and the catalogue number becomes ZA 53566.

2. Priority: Group C (ACI 407/58 refers)

Not to be carried out without prior War Office authority

3. Estimated time required: 5.1/2 man-hours. Note that the time involved is mainly embodiment and constructional time. As the small amount of stripping required is intimately connected with details in the embodiment it is not practicable to perform the operations separately, and hence separate times have not been given.

4. Items affected:-

Wireless set No 62, Mk 2 - Cat No ZA 30714. Note that Wireless set No 62, Mk 1 is not eligible for this modification as it is not suitable for dropping by parachute.

5. Action required by:-(a) Units and establishments holding equipment:-

- (i) When a requirement exists for this modification and the requisite W.O. authority has been given, submit AF G1045 to REME requesting this instruction to be carried out.
- (ii) When modified equipments are put into service ensure that the amended switching-off procedure is brought to the notice of all concerned (see para 1).

(b) Units authorized to carry out field or base repairs:-

- (i) When requested by units, demand stores for and carry out the detail of this instruction.
- (ii) Ensure that the designation and catalogue number of equipment are amended to Mk 6 and ZA 53566 respectively, after modification.

6. Stores, tools and equipment

(a) Stores to be demanded:-

<u>VAOS Sect</u>	<u>Part No</u>	<u>Designation</u>	<u>Qty per eqpt</u>
Z1	ZA 35206	Connectors, battery, 6-pt, No 1	3
Z1	ZA 15403	Connectors, flexible, 5-pt, No 5	1
Z	5930-99-051-0554	Switch, lever-operated, 2-pole, c/o, q.m.q.b., 3A, 250V, a.c./d.c.	1
Z1	ZA 2994	Sockets, 5-pt, No 5	1
Z1	ZA 12462	Panels, tag, 3-way, single row, No 3	1
Z1	ZA 37696	Plates, clamping, 2.3/32 in. x 2 in., No 1	3
Z2	ZB 11439	Screws, BA, brass, csk. hd., No 4 x 1/4 in., rustproof	12
Z2	ZB 12865	Screws, BA, brass, ch. hd., No 6 x 1/4 in., anti-corrosive	2
Z2	ZB 10408	Nuts, BA, brass, hex, No 4, anti-corrosive	12
Z2	ZB 11845	Nuts, BA, brass, hex, No 6, anti-corrosive	2
Z2	ZB 11479	Washers, BA, steel, shakeproof, internal, type 12, No 4, rustproof	12
Z2	ZB 11480	Washers, BA, steel, shakeproof, internal, type 12, No 6, rustproof	2
Y3	6145-99-910-0169	Wire, equipment, type 2, 7/0.0076, white	4 ft
Y3	5975-99-910-7065	Sleeves, cable binding, type A, 1.5 mm i.d. x 3/4 in., pink	15
Y3	4020-99-942-9657	Cord, Nylon, P.V.C. - covered, 1 mm	3 ft
H2	4020-99-942-5014	Line, whipcord, 1 lb/120 yd, natural	8 in.
Y3	6145-99-910-0164	Wire, equipment, type 2, 7/0.0076, red	4 ft 6 in.

Stores to be demanded through the normal Ordnance channels.

(b) Stores to be obtained locally:-

Brass or aluminium sheet, No 22 or 24 S.W.G., 1 piece 5 in. x 7 in.
Grease XG-274 - as required.
Bostik - as required.

(c) Stores to be manufactured:-

Battery junction box as described at para 8

(d) Stores to be discarded: Nil

(e) Special tools and test equipment: Nil

Sequence of operations

7. (a) Remove the set from its case and take off the baseplate.
- (b) Identify the headset connector nearest the left-hand side of the front panel and disconnect the leads of this connector at the tagboards. Remove the connector and retain it for subsequent use on the battery junction box whose construction is described at para 8.

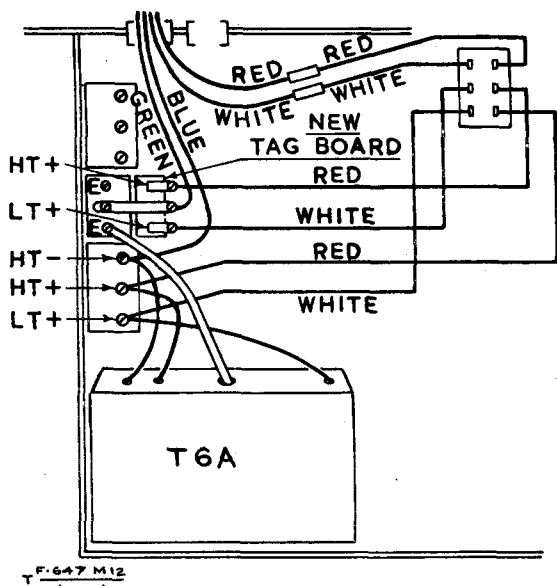


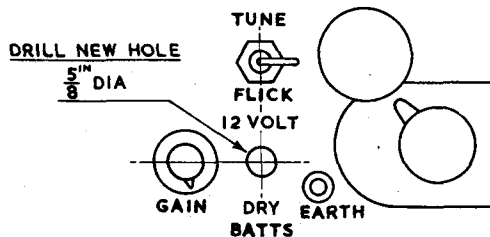
Fig 1 - Details of wiring changes to WS

- (c) Locate the three earth screws which are situated between two tagboards on the underside of the set. Straighten out the fixing bracket of the Panels, tag, 3-way (ZA 12462) supplied, and secure the panel to the set by means of the centre earth screw, as shown in Fig 1.

- (d) Unsolder the two white leads from the L.T.+ tag which is under the screw on the tagboard nearest the rotary transformer T6A (see Fig 1). Solder the ends of both of these leads to that tag of the new panel (fitted at (c)) which is nearest to T6A. The flexible lead from T6A will be left connected to its existing tag.

- (e) Unsolder the red lead from the H.T.+ tag, which is adjacent to the original L.T.+ tag and under the centre screw on the same tagboard, and resolder it to the remaining, insulated, tag on the new tag panel. If the lead is not long enough replace it by a 9 in. length of red P.V.C.-covered equipment wire. (The other end of the lead is connected to one end of the fuse F1A.)

- (f) Solder lengths of white P.V.C.-covered equipment wire to the centre and end tags on one side of the toggle switch (Z5930-99-051-0554) supplied. The wire at one end to be 8 in. long and the other two leads 18 in. long. Solder similar lengths of wire, but red in colour, to the tags on the other side of the switch. Both short leads (red and white) are to be at the same end of the switch. Slip a binding sleeve, supplied, on the end of each of the new leads.
- (g) Drill a 5/8 in. diameter hole in the front panel in the position shown in Fig 2. Care must be taken, when doing this, not to damage the tuning inductance behind the panel. Paint the legends 12 VOLT and DRY BATTs in the position shown in Fig 2, ie above and below the hole, respectively, using white paint, and letters and figures 5/32 in. high. Give the painted legends a coat of clear varnish when the paint is dry, and allow sufficient time for it to harden.



T F. 647 M12
1-2

Fig 2 - Front panel drilling detail

- (h) Smear the sealing gasket of the new toggle switch with a little grease, XG-271 and place it over the one-hole fixing bush of the switch. Insert the bush of the switch into the underside of the hole drilled at (g). Position the switch so that the 8 in. leads are nearest the bottom edge of the front panel. Place the crinkle washer over the end of the bush and firmly secure the switch by means of its fixing nut.
- (j) Note that all wiring from the new switch is finally to be laid neatly along the inside of the front panel and the side of the chassis and lashed together with Cord, Nylon. Care must be taken when the wiring is subsequently connected, that it clears the small h.f. coil attached to the HET-TONE control. The binding sleeves on the ends of the leads are to be slipped over the soldered joints which are to be made as described in following sub-paragraphs.
- (k) Solder the free end of the white lead from the centre tag of the new switch, to the L.T.+ tag on the new 3-way tag panel. Solder the red lead from the other centre switch tag to the H.T.+ tag on the new panel (see Fig 1).
- (l) Solder the 8 in. white lead from the new switch to the original L.T.+ tag and the 8 in. red lead from the new switch to the original H.T.+ tag (see Fig 1).
- (m) Grease the rubber flange of the new Connector, flexible, 5-pt, No 5 (Z1/ZA 15403) with grease XG-271. Grease also, the front of the hole vacated by the headset connector (removed at (b)). Feed the leads of the new connector through the panel hole and press the bush down firmly. Secure the connector tightly by means of its clamping ring. If there is any danger of the wires of the connector bearing upon the resistor R15A where they emerge from the rubber sheath the rubber should be cut back to avoid it.
- (n) Trim the red and white leads of the Connector, 5-pt, (fitted at (m)) to suitable lengths and solder them to the remaining red and white wires on the new toggle switch, colour to colour. Slip the binding sleeves on the switch leads over the soldered joints (see Fig 1).
- (o) Slip a binding sleeve over each of the green and blue wires of the new connector. Solder the green wire to the centre (earth) tag of the new 3-way tag panel and the blue wire to the original H.T.- tag (see Fig 1). Slip the binding sleeves over the soldered joints.

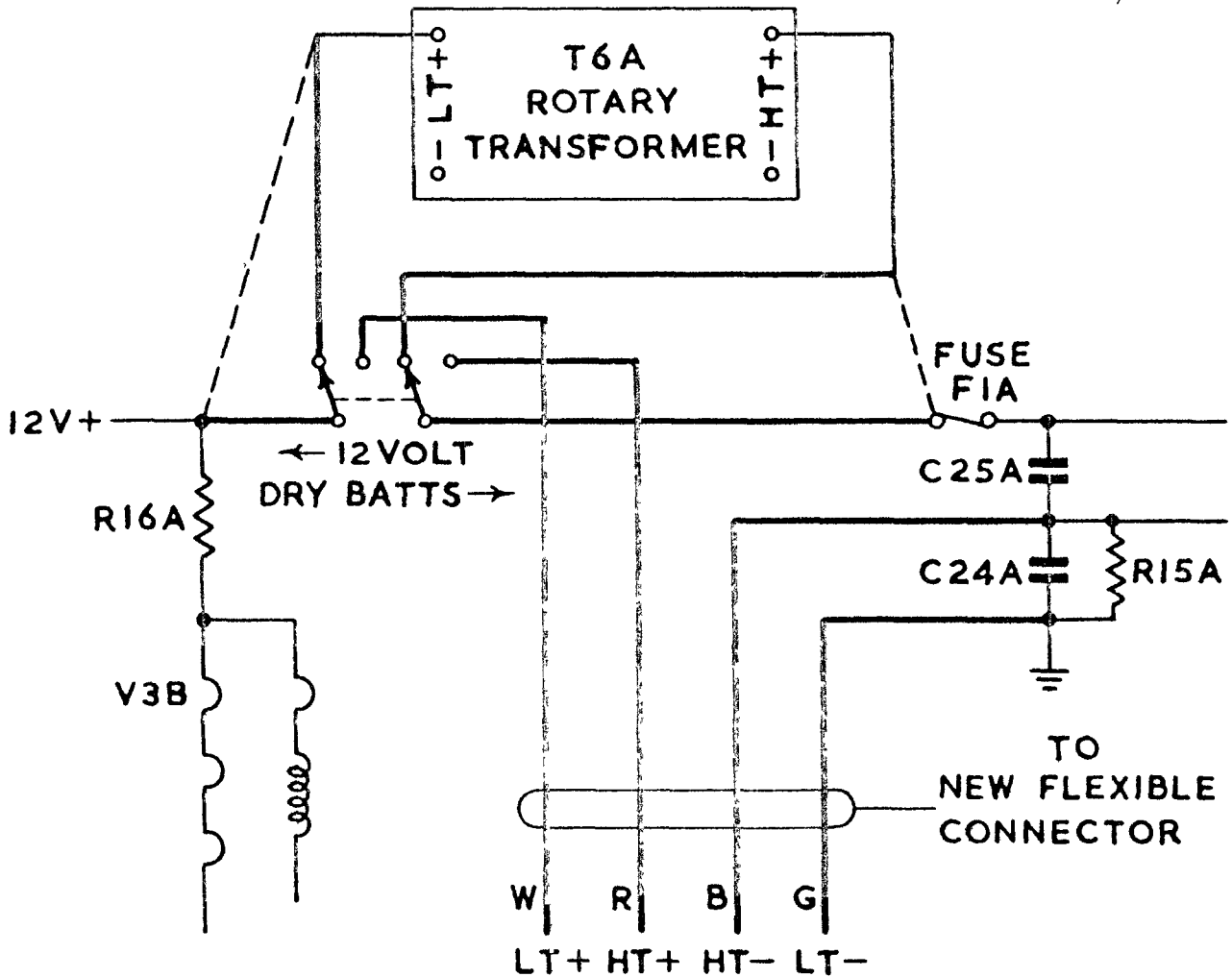
Note: These Pages 5, 6 and 6A, Issue 2, supersede Pages 5 and 6, Issue 1, dated 21 Oct 60. Para 7(r) is new and contains additional instructions necessitating further action; Para 7(r) and (s), Issue 1, are re-designated (s) and (t) respectively.

- (p) Secure one end of the length of whipcord supplied to the loose centre part of the Socket, 5-pt, No 5 (ZA 2994) and pass the other end of the cord through the rubber cover. Secure the socket assembly into the rubber sleeve with Bostik and allow 24 hours for the Bostik to harden.
- (q) Fasten the assembled Socket, 5-pt to the left-hand carrying handle of the transmitter-receiver by means of the cord fitted at (p). Note that when not in use the plug of the battery connector fitted at (m) must always be carried in this dummy socket to prevent short-circuits when the set is connected to a 12V accumulator.
- (r) Manufacture a dummy socket as detailed at Fig 7. A suitable material is synthetic resin-bonded fabric, but if this is not available the socket may be made from hardwood. Varnish the socket after manufacture and secure it to the front panel by means of the length of whipcord as detailed to be fitted at Fig 7. Note that when dry batteries are being used this socket will be fitted on to the l.t. input plug on the front panel and retained in position by the spring and plate retainer (when the latter are fitted).
- (s) Amend the mark number on the TR No 62 designation plate to read 'MK 6' and the catalogue number to 'ZA 53566' using suitable letter and figure punches.
- (t) Replace and secure the baseplate of the transmitter-receiver and return the set to its case.

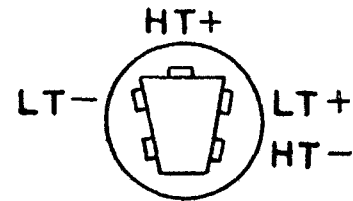
Construction of battery box

- 8. (a) Construct the battery junction box according to the dimensions and instructions given in Fig 4, using No 22 or 24 S.W.G. sheet brass or aluminium. The flanged ends of the three Connectors, battery, 6-pt, No 1 (ZA 35206) supplied, are to be bolted to the three open sides of the box, using one of the Plates, clamping (ZA 37696) over each and immediately under the screw heads to prevent the latter pulling through. A diagram illustrating the making of the plates (ZA 37696) is given at Fig 6 so that, in the event of their non-availability, they may be made locally.
- (b) Number each of the three connectors fitted at (a) either 1, 2 or 3, according to which side of the box it is fitted (see Fig 4 and 5) using white paint. When the paint is dry give the figures a coat of clear varnish for protection and allow to dry.
- (c) Fit the headset connector (removed at para 7(b) to the chassis of the battery junction box as shown at Fig 4. Secure it by means of No 6 BA x 1/4 in. screws, nuts and shakeproof steel washers.
- (d) Wire the connectors fitted at (a) and (b) as shown at Fig 5, using binding sleeves to insulate the soldered joints.
- (e) Paint the assembled junction box with Paint, olive, drab.
- (f) When the box is dry, add the catalogue number assigned to it, viz: 'ZA 54154', using suitable letter and figure punches.

9. Plug each connector on the battery box constructed at para 8 into a battery of the correct type (Battery, dry, h.t./l.t., 90 + 60/4.5, No 1 - Y3/6135-99-910-1158)



— NEW WIRING
 - - - WIRING REMOVED

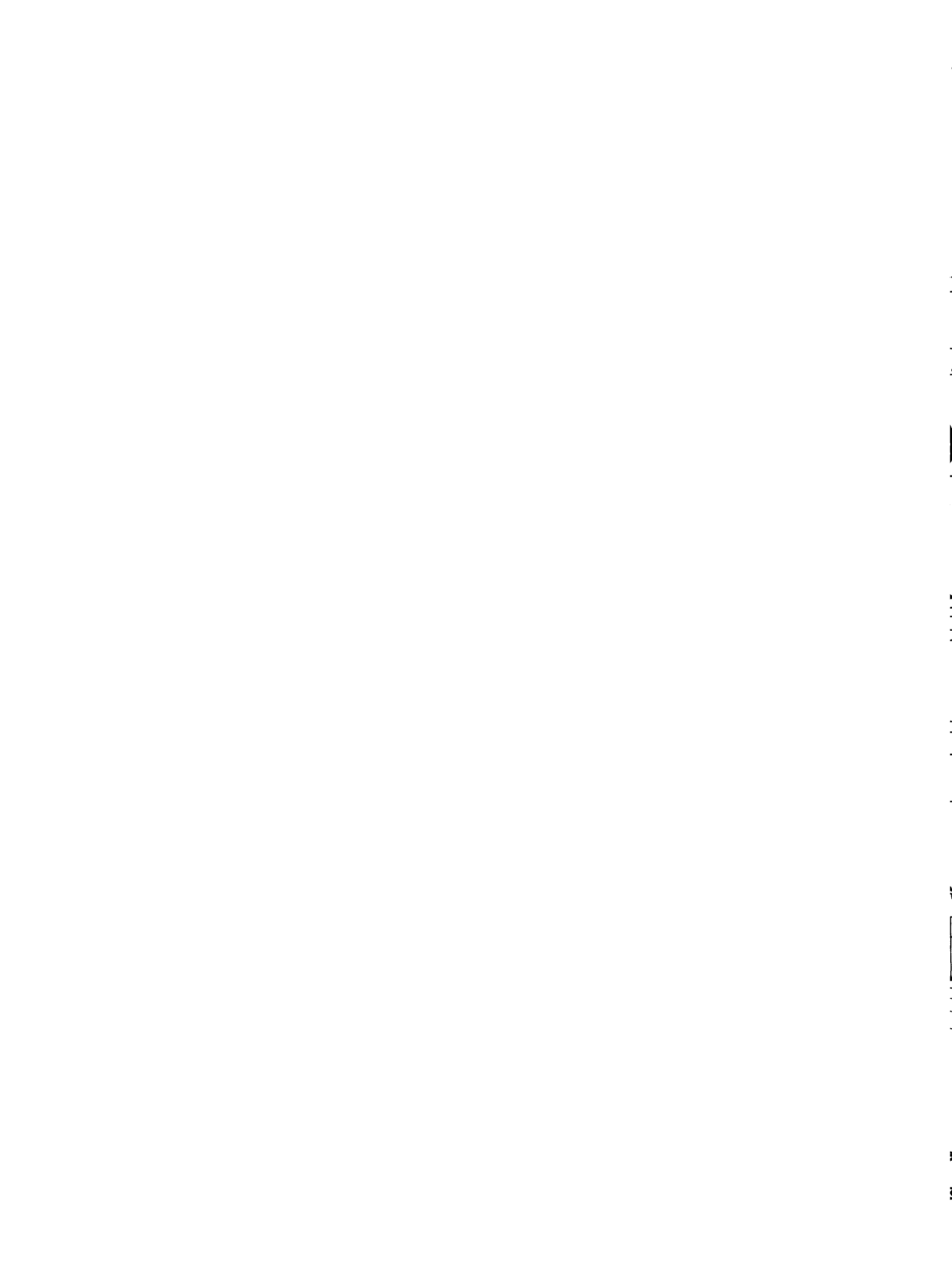


FRONT VIEW OF
 NEW PLUG

T F-647 M12
 1-3

and check that the correct voltages and polarities, as shown at Fig 5, exist at the various contacts of the output socket. Note that h.t. is only drawn from the batteries connected to plugs, No 1 and 2. If, and when, the h.t. voltage falls below an acceptable value, battery No 3 should be substituted for No 1 or 2, as the case may be. If battery No 3 has previously been discarded for h.t. purposes, a new battery must be fitted.

10. It is important to note that when the set is not in use and the dry batteries remain connected, the toggle switch on the set must be switched to 12 VOLT as, with the wiring arrangement adopted for this modification, the heaters of certain valves still remain connected when switch S3A on the TR 62 is at 'ALL OFF'.



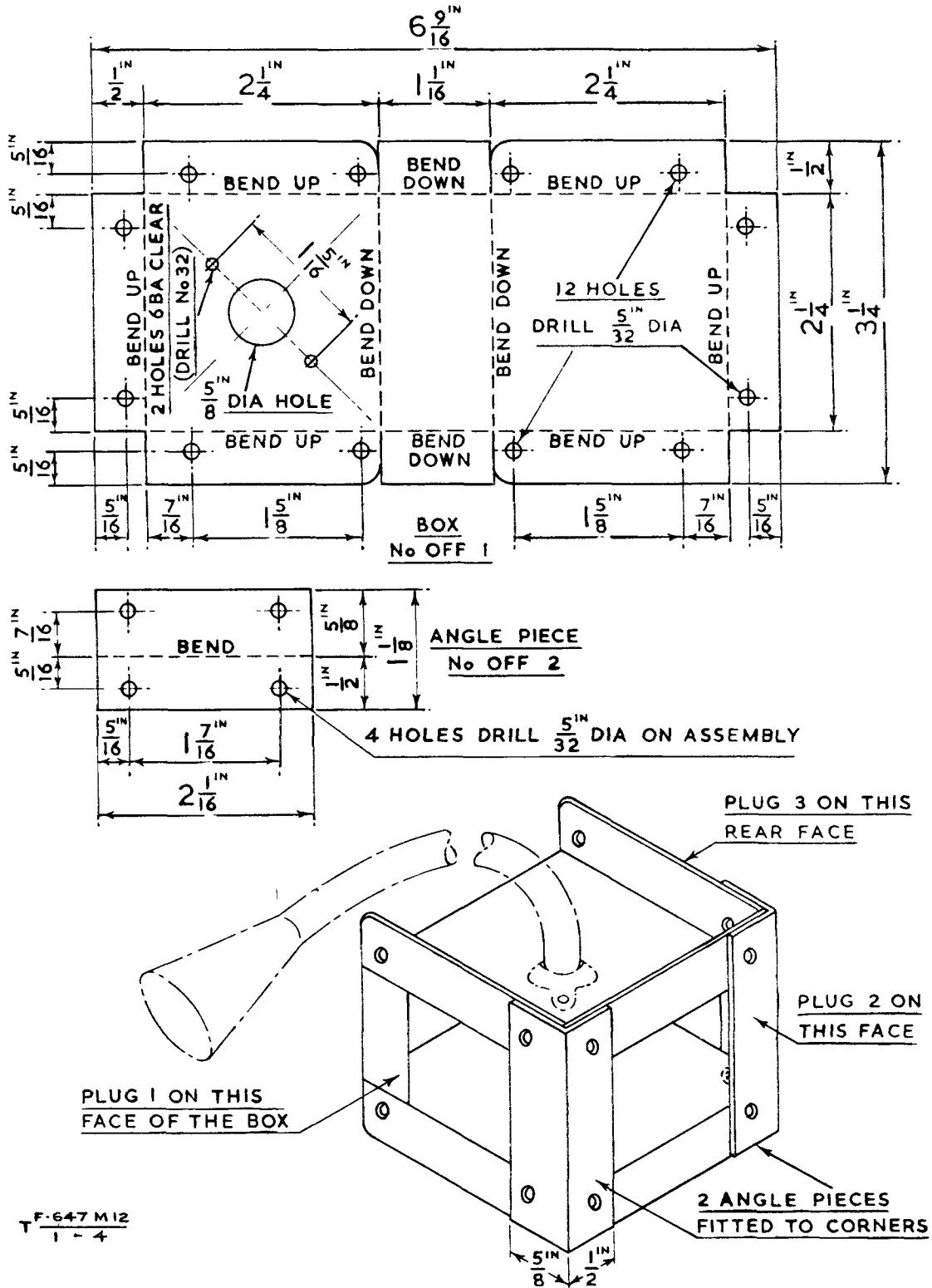
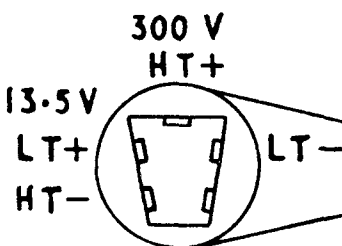
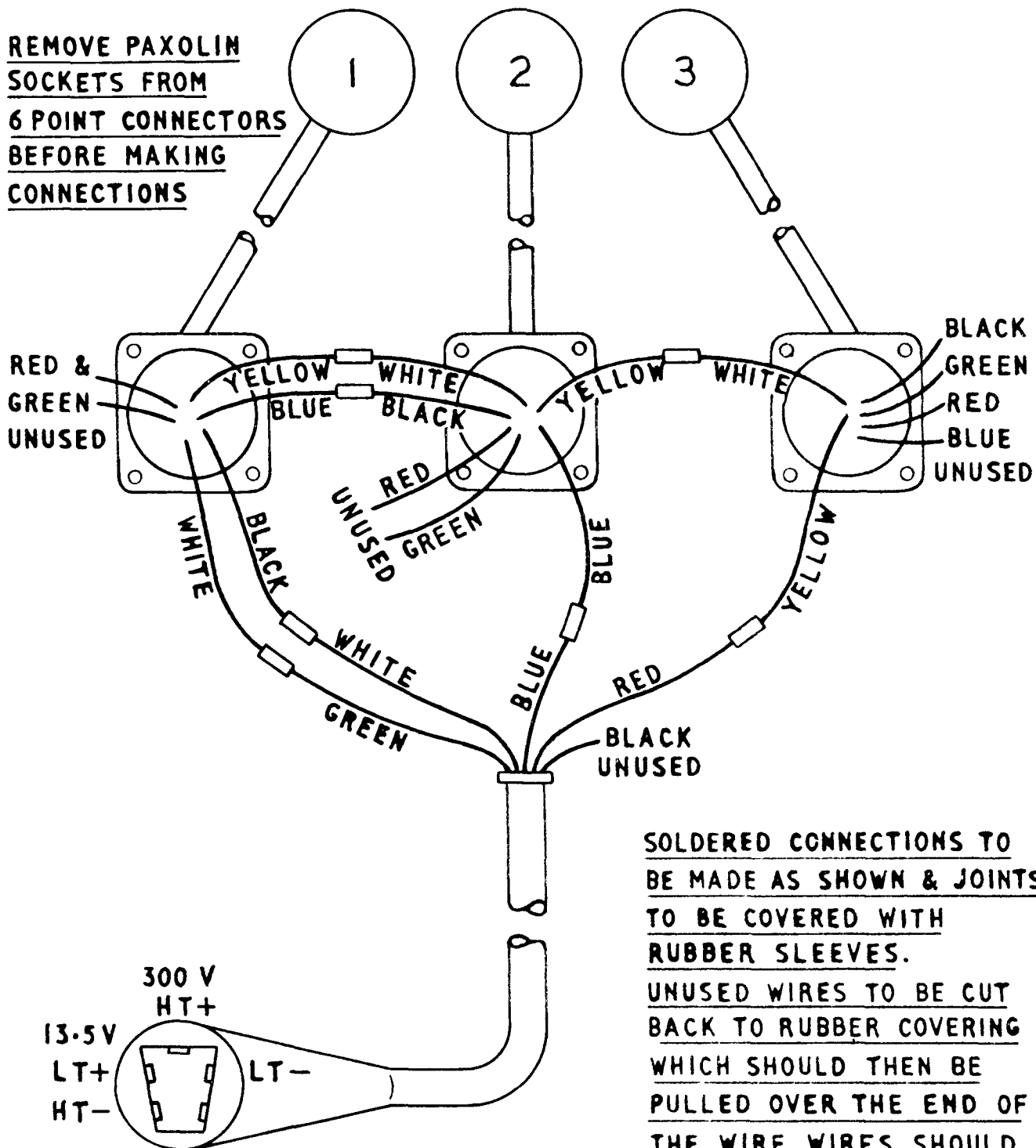


Fig 4 - Box, junction, battery connector - construction

REMOVE PAXOLIN
SOCKETS FROM
6 POINT CONNECTORS
BEFORE MAKING
CONNECTIONS



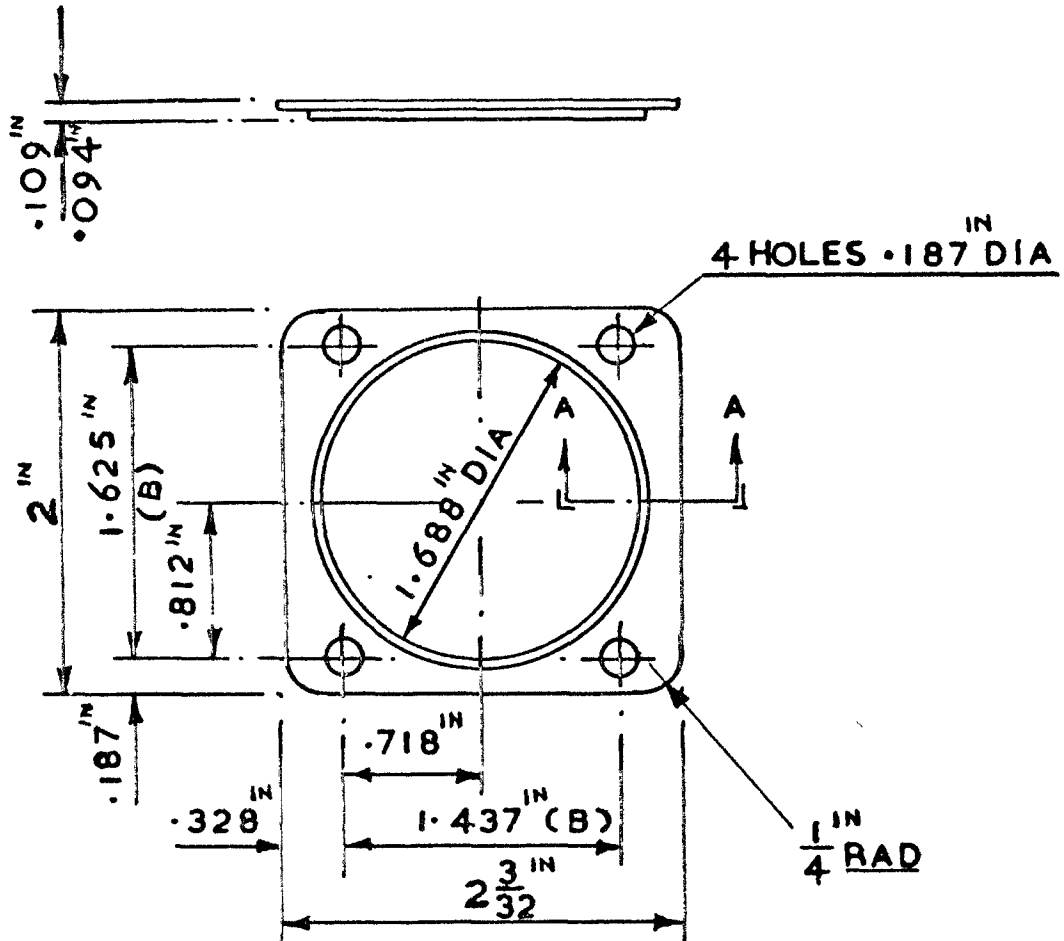
FRONT VIEW OF
SOCKET

T F 647 M12
1 - 5

SOLDERED CONNECTIONS TO
BE MADE AS SHOWN & JOINTS
TO BE COVERED WITH
RUBBER SLEEVES.
UNUSED WIRES TO BE CUT
BACK TO RUBBER COVERING
WHICH SHOULD THEN BE
PULLED OVER THE END OF
THE WIRE. WIRES SHOULD
THEN BE BUNCHED &
A RUBBER SLEEVE PUT
HALF OVER THE END.

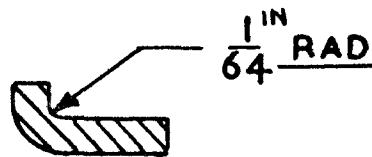
Fig 5 - Box, junction, battery connector - wiring details

Note: These Pages 9 and 10, Issue 2, supersede Page 9, Issue 1, dated 21 Oct 60. Page 10 contains additional information



NOTE:

(B) = BASIC DIMENSION
HOLE POSITIONAL TOL .018 DIA

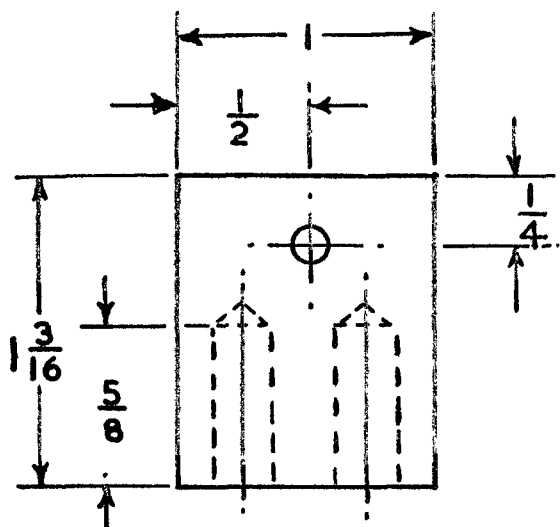


SECTION - A - A

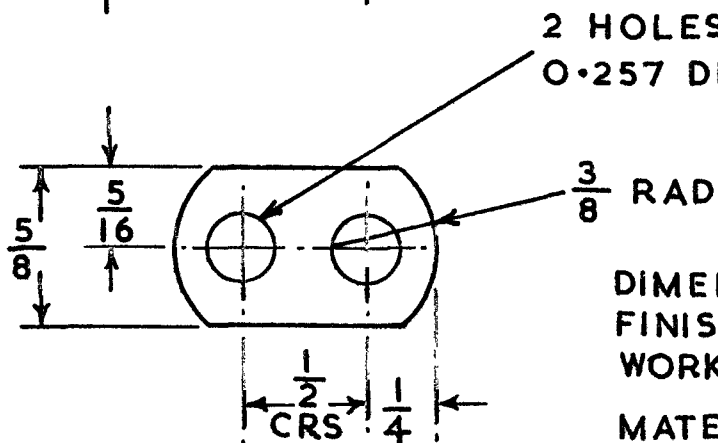
FINISH

I.C.I. ALACROM PROCESS, ETCHING PRIMER C.S. 2626
I COAT STOVING PRIMER D.E.F. 1059/3
I COAT STOVING FINISH TO D.E.F. 1059/1
COLOUR OLIVE DRAB No 298 TO B.S.381C

T F 647 M 12
1 - 6



1 HOLE DRILL $\frac{1}{8}$ DIA
6 INCH LENGTH OF WHIPCORD
TO BE THREADED THROUGH
AND KNOTTED



DIMENSIONS IN INCHES
FINISH REFER TO EMER
WORKSHOPS N221 AND N251
MATERIAL: SYNTHETIC
RESIN BONDED FABRIC

T F.647 M12
1 - 7

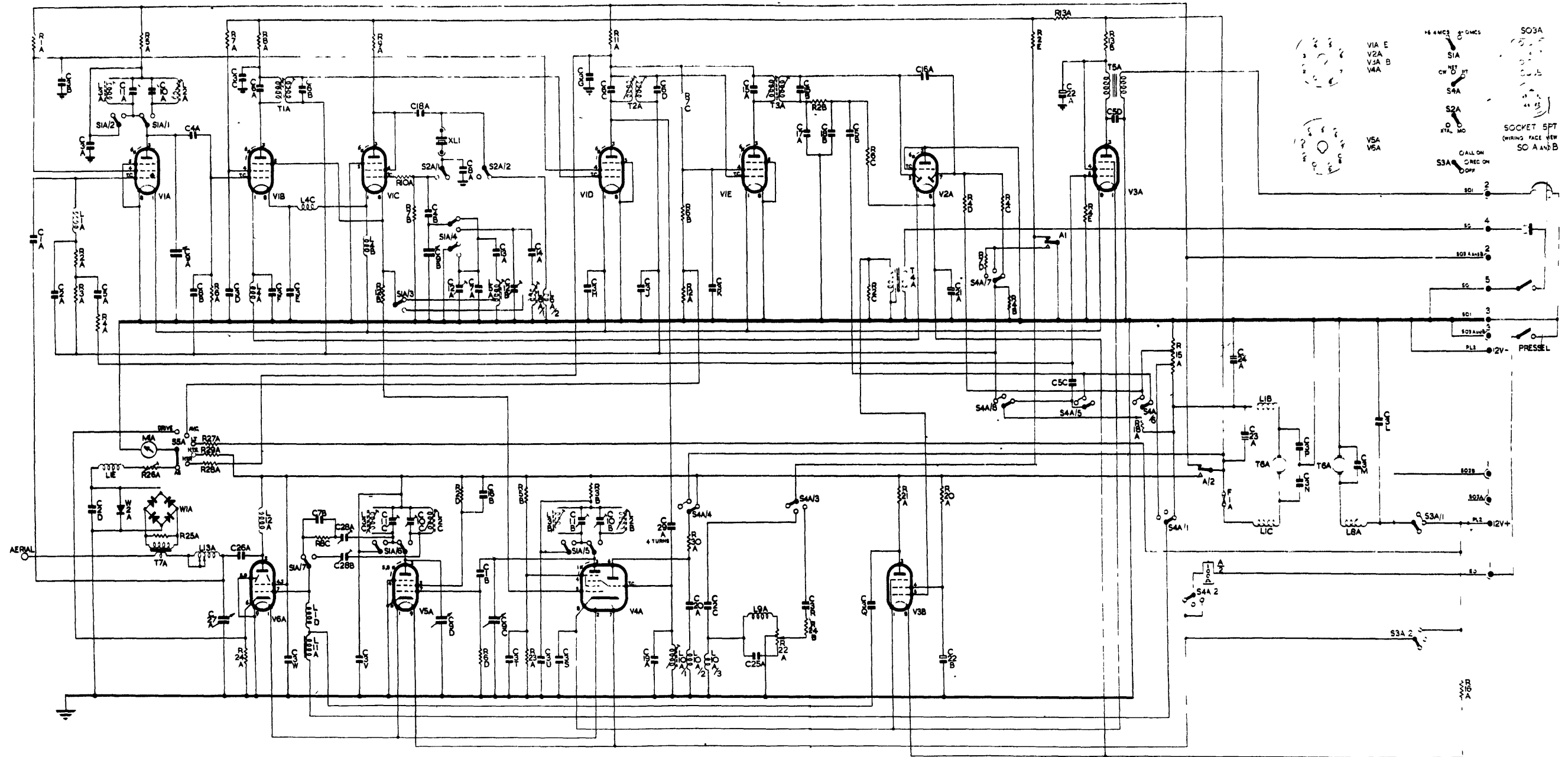
61125/1

Fig 7 - Manufacturing details of dummy battery socket

Note: This dummy socket will be fitted to the battery input plug when the latter is not in use, so as to prevent the plug pins, and hence the batteries, being short-circuited by the spring and plate retainer for the plug, which is sometimes fitted.

T/61125/45

END



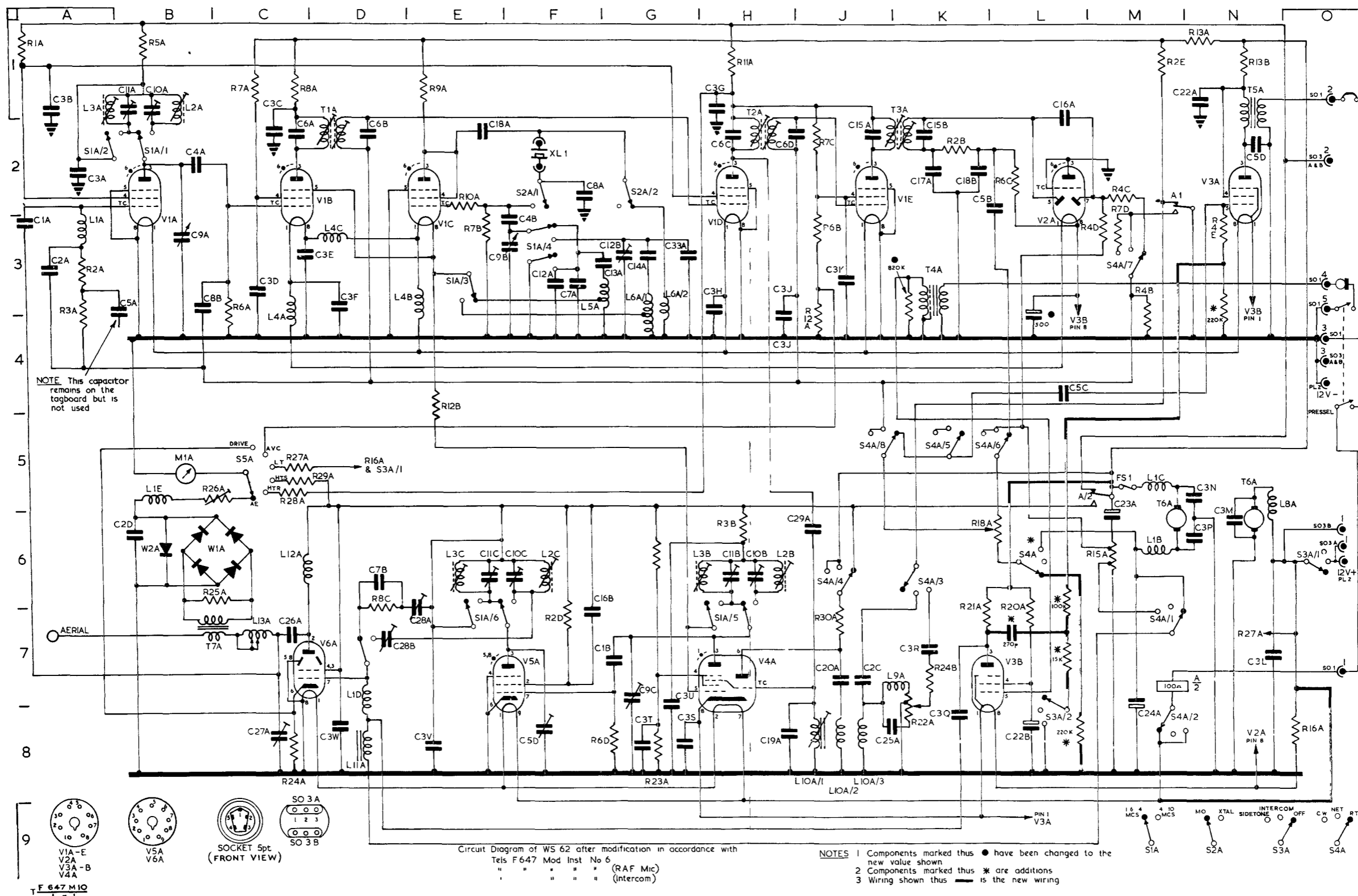
T.F. 517M6
1

Fig. 1 - Circuit diagram of Wireless set No. 62 after modification

57/Maint./4275(M.E.8)

Issue 1, 3 Jul. 1951

END



MK 5

Fig 1 - Circuit diagram

END