

WIRELESS SET NO.62 MKS. 1 AND 2

GENERAL DESCRIPTION

Note: This issue supersedes Issues 1 and 2. It has been amended throughout.

GENERAL

1. The Wireless Set No.62 is a tropicalised transceiver intended primarily for use as a mobile station and is arranged as a convertible vehicle/animal/man-pack station. When used as an animal-pack it is transported on two mules, while as a man-pack it is arranged for transport in three loads. It is not hermetically sealed but will stand immersion in five feet of water for five minutes and is completely splash and rain-proof. The set will float and will support an additional weight of 20 lbs, which makes it dangerous for a man to swim with it on his back as he would be forced into a face-down position. The Mk.2 set may be dropped by parachute.

2. The set covers the frequency band of 1.6 to 10 Mc/s in two ranges, 1.6 - 4 Mc/s and 4 - 10 Mc/s., providing R.T. (A.M.) and C.W. facilities over a range similar to that of the WS.19 Mk.3, (about 10 miles R.T.). It should be noted that the 8 - 10 Mc/s range should only be used in emergency as performance deteriorates above 8 Mc/s. The set is normally used with an 8 - 32 ft. rod aerial, but can also be used for sky wave working with an end fed sectional wire aerial (Aerial 100 ft. No.5).

3. Remote control facilities are available with either Remote control units, L, Nos. 1 and 2, or Junctions, remote control, Nos. 1 and 2. Remote control units, L permit the set to be operated up to a quarter mile distant with assault cable, or half a mile using D.3. Aerial coupling units, J (not provided as part of station) can be used with the set to permit it to be operated, under cover, up to 50 ft. from the aerial.

BRIEF ELECTRICAL DESCRIPTION (see Fig.1)

4. The receiver is a superheterodyne with an I.F. of 460 Kc/s. The sender operates on the sender-mixer principle in which the local oscillator output is mixed with that from the beat oscillator. The signal frequency is selected from the mixer output, amplified and used to drive the P.A. The local oscillator may be crystal controlled.

5. Power is obtained from a 12V accumulator driving a rotary transformer to provide H.T. at 300V. The filament circuits are connected in a series-parallel network across the 12V supply, directly and indirectly heated filaments being kept in separate circuits. As in WS.22, removing one valve may burn out others due to excess voltage being applied across their filaments. The total consumption of the set is 3.4 A on receive, 4.4 A on send R.T., 4.7 A on send C.W., key down, and 2.8 A on listening watch.

MECHANICAL DESCRIPTION

6. The set is housed in a case $8\frac{1}{2}$ in. high, $17\frac{1}{2}$ in. long and $13\frac{1}{2}$ in. wide and weighs approximately 29 lbs., complete with carrying case and front cover. The power unit is mounted inside the case underneath the chassis. The case is constructed of aluminium to the same design as the WS.22 case and the front panel is sealed to the

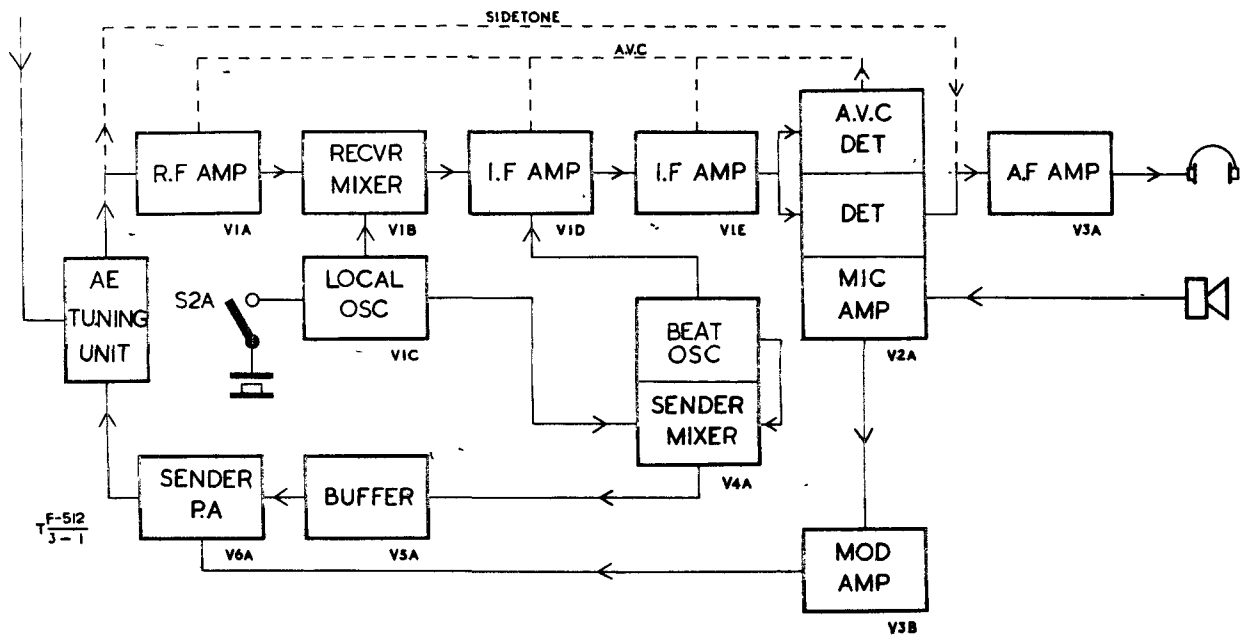


Fig. 1 - Block diagram

case by pressing the turned edge of the panel into a narrow groove filled with Neoprene. All the control knobs are of the rotary type and sealed with Neoprene washers. Aluminium has been used where possible to lighten the set.

CONTROLS

7. The controls on the front panel, from right to left, are:-
 - (a) XTAL/MO switch (S2A).
 - (b) FREQUENCY control (C9A-D), four gang tuning condenser.
 - (c) Frequency range switch (S1A) selects coils for 1.6 - 4 Mc/s and 4 - 10 Mc/s ranges.
 - (d) GAIN control (R18A): A.F. gain control on R.T., R.F. gain control on C.W. and NET.
 - (e) Meter switch (S5A).
 - (f) R.T./NET/C.W. system switch (S4A).
 - (g) HET TONE control (R22A) alters beat note on C.W. reception by varying damping on beat oscillator circuit.
 - (h) ALL OFF/REC ON/ALL ON switch (S3A): On/off and listening watch switch. It should be noted that beat oscillator is not operative in REC ON position and hence C.W. cannot be received during listening watch.

- (i) AE COUPLING (C27A), variable condenser.
- (j) AE TUNING (L13A), variable inductor, With C27A tunes aerial circuit to resonance and matches P.M. to aerial.

Also on the front panel are the XTAL socket which takes three different types of crystal holder, CR1, 10X and FT.243, two three-point sockets for supplying 300V and 12V to crystal calibrator, remote control unit and operator's lamp, EARTH terminal, flick control, flag window, meter, AERIAL terminal, aerial tuning and aerial coupling dial lock, aerial tuning window, 12V input plug and two five-point drop loads. For C.W. working a key and plug assembly is connected to a drop load.

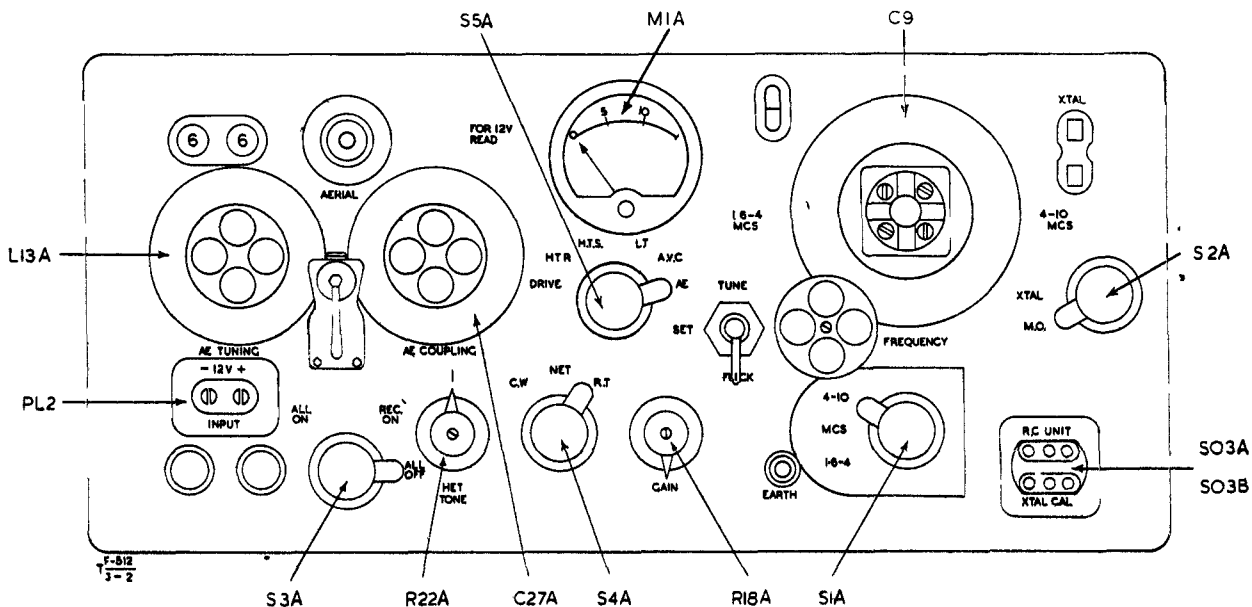


Fig. 2 - Front Panel Layout

TECHNICAL DESCRIPTION

AERIAL CIRCUIT

8. The aerial tuning unit is common to both receiver and sender and consists of the aerial tuning inductor L13A and the variable condenser C27A in series. The inductor has two contact wheels to short out part of the coil to prevent absorption at certain frequencies.

RECEIVER

9. The receiver is a superheterodyne with separate mixer and local oscillator. The R.F. stage (V1A) is a tuned anode amplifier. On receive, C2A decouples the earthy end of L1A so that the received signals are developed across the input of V1A and not across R2A and R3A in addition. On send, C2A charges up and biases V1A to prevent over-loading. The anode of V1A feeds to the grid of mixer V1B. The local oscillator

(V1C) is used in a cathode-coupled Hartley oscillator circuit with additional feed-back on the H.F. range (L6_A/2) which is switched out by S2_A/2 on XTAL control. It can be switched to a Pierce oscillator circuit by the XTAL/MC switch (S2_A) on crystal control, the tuned circuit still being used. The crystal frequency must be that of the L.O., i.e., greater than the signal frequency by the I.F. (460 Kc/s). The output is tapped off the filament and fed to the suppressor grid of the mixer. The L.O. and R.F. coils are permeability tuned.

10. The I.F. stages (V1D and E) are of the normal type with adjustable dust cores in the I.F. transformers, a special tool being required for trimming. One diode of the double-diode-triode (V1A) is used as a detector and the other for delayed AVC, which is applied to R.F. and I.F. stages on R.T. only. The detector output is fed to the grid of the output valve (V3A) through the GAIN control R18_A. This valve feeds an output transformer with windings for two pairs of Microphone and receivers, headgear, No.10. A condenser C5D is connected from the anode of V3A to earth for tone correction. The GAIN control R18_A acts as an A.F. gain control on R.T. On C.W. it is switched across the bias resistor R15_A, and the A.V.C. line is disconnected from the A.V.C. diode and connected to the slider, so that varying the gain control varies the bias on the A.V.C. line and R18_A acts as an R.F. gain control. The beat oscillator is a tuned grid shunt-fed reaction-oscillator and uses the triode section of the triode-hexode V4_A. Its frequency may be varied over approximately $\pm 2\frac{1}{2}$ Kc/s by R22_A which varies the damping on a winding coupled to the beat oscillator tuned circuit.

SLINDER

11. On send, the local oscillator output is fed to the signal grid of the triode-hexode (V4_A), the triode section of which is oscillating at a fixed frequency of 460 Kc/s. The tuned anode circuit acts as mixer load and selects the signal frequency from the frequencies present and feeds the buffer stage (V5_A). Some of the unwanted frequencies however break through to the P.A. and may cause trouble, especially at the higher frequencies, by being radiated from the aerial. In the 4 - 10 Mc/s range these spurious radiations are fairly strong (L.O. freq. is only 13 db down on signal and 10 Mc/s) and care should be taken when choosing a frequency in this range that the L.O. frequency does not interfere with another set.

12. The buffer stage is designed to level up the drive over the frequency band without the use of automatic drive control. This is done, on the HF range, by the use of a frequency-sensitive screen circuit. There is no screen decoupler but a 20 pF condenser (C16B) is shunted across the screen dropper. This gives degeneration at lower frequencies and raises the gain of the stage at the high frequency end of the range. Feed to the P.A. is normal. A similar effect is obtained on the IF range by means of C7B and R8C in the feed to the grid of the P.A. on this range. Here the drive circuit is made frequency sensitive with a gain characteristic rising towards the high end. These measures tend to level the drive over the frequency range of the set to give a more constant power output than would be otherwise obtained, and to ensure that modulation is reasonably undistorted.

13. The Power Amplifier (V6A) operates in class C, grid modulated on R.T. It is tuned and matched to the aerial by L13A and C27A, the aerial tuning inductor and condenser. The bias for the P.A. is obtained by the voltage drop across R15A. The microphone amplifier is a normal two-stage resistance coupled amplifier using the triode section of V2A and the pentode of V3B. Its output is developed across an A.F. choke (L11A) in the grid circuit of the P.A., which gives pre-emphasis of the higher audio frequencies making the signal more intelligible during interference. There is no provision for automatic modulation control.

Sidetone

14. This is obtained by using the grid and filament of V1A as a diode. A fraction of the A.F. developed across R3A is fed direct to the grid of the output valve.

SWITCHING

15. Send-receive switching on R.T. and keying on C.W. are done by one relay, A (type 600). On R.T. the set is switched to send by pressing the pressel switch on the hand-set, operating the relay. Contact A1 removes compensating load R2J (on early sets R14A) and contact A2 takes H.T. off V1A, D and E and applies it to sender circuit. On the later sets, contact A1 also connects the receiver H.T. line to earth on send and connects the sender H.T. line to earth via R3C on receive.

Keying

16. On C.W. the set is keyed by the send-receive relay, so that the set is at send on mark and at receive on space. As a result, the key may be plugged into one of the two snatch sockets provided for headsets, the key being connected in place of the pressel switch. The key assembly has both a snatch plug and a snatch socket fitted, to connect it to the set and to allow the second headset to be used.

FILTERING

17. Aerial current is measured by a rectifier circuit, transformer coupled to the aerial leads. W2A is included to decrease the sensitivity at higher currents and R25A is shunted across T7A to compensate for variations in rectifiers and motors; its value therefore depends upon the performance of the components in the circuit. In the A.V.C. position of the meter switch S5A, a portion of the screen voltage of V1E is measured. The A.V.C. bias, which depends on the strength of the received signal, reduces the current through V1E and causes the screen voltage to rise. This rise is an indication of signal strength and can be used to tune the receiver. In the drive position the meter reads the cathode current of V6A by measuring the voltage across R24A.

REMOTE CONTROL

18. Either Junctions, remote control, Nos.1 and 2 or Remote control units L, Nos.1 and 2 may be used with this set. Junctions, remote control, Nos. 1 and 2 provide local and remote R.T. and send-receive switching and calling from remote to local operator. Intercommunication without radiation is not possible, as the remote operator hears only receiver output and sender sidetone. The Remote control units, L, Nos. 1 and 2, which are splash and rain proof, provide remote and local R.T. facilities and send-receive switching and remote C.W. up to 30 w.p.m. Intercommunication without radiation is possible. Calling facilities are provided by buzzer from local to remote and by lamp from remote to local. When plugged into the remote control socket on the front of the set, the units may be used for intercom. and calling when the set is switched off.

19. The Remote control units, L use carbon microphones (Microphone No.4A with capsule No.8) at both ends, set headphones (Receivers, headgear No.10) at the local end (plugged into local unit) and Receivers headgear, D.L.R., double, No.5L at the remote end. Junctions, remote control, Nos. 1 and 2 use microphone and receivers, headgear No.10.

- (b) XTAL/MO switch S2A rewired (Figs. 5 and 6). The crystal holder is now entirely disconnected when S2A is switched to M.O.; previously it was left in circuit and touching it altered the local oscillator frequency.
- (c) R14A (4.7KΩ) replaced by R2E (100KΩ) and the Sender H.T. line is now earthed via R3C (4.7KΩ) on receive (Fig.7 and 8). This prevents a howl which occurred on C.W. immediately the set was switched from send to receive. Relay contact A1 was rewired and R7D removed; the receiver H.T. line is now earthed on send.

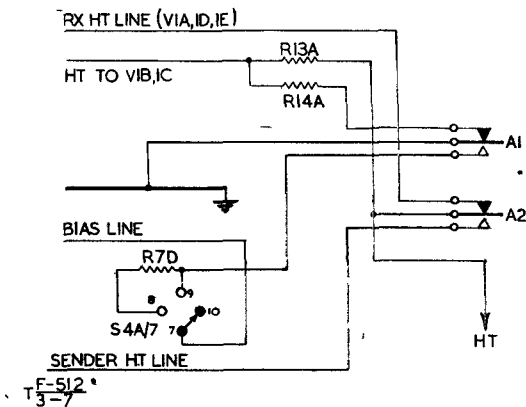


Fig.7 - Send-receive switching
Mk.1 Serial Nos.1-1000

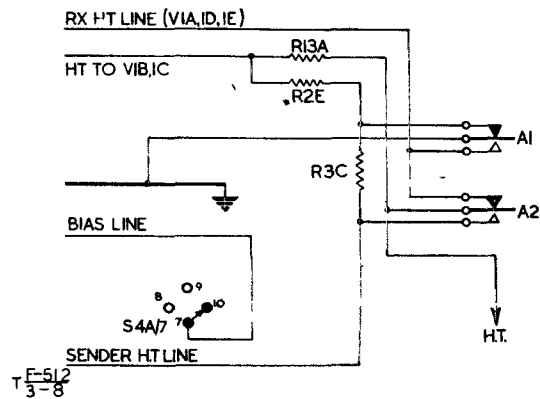


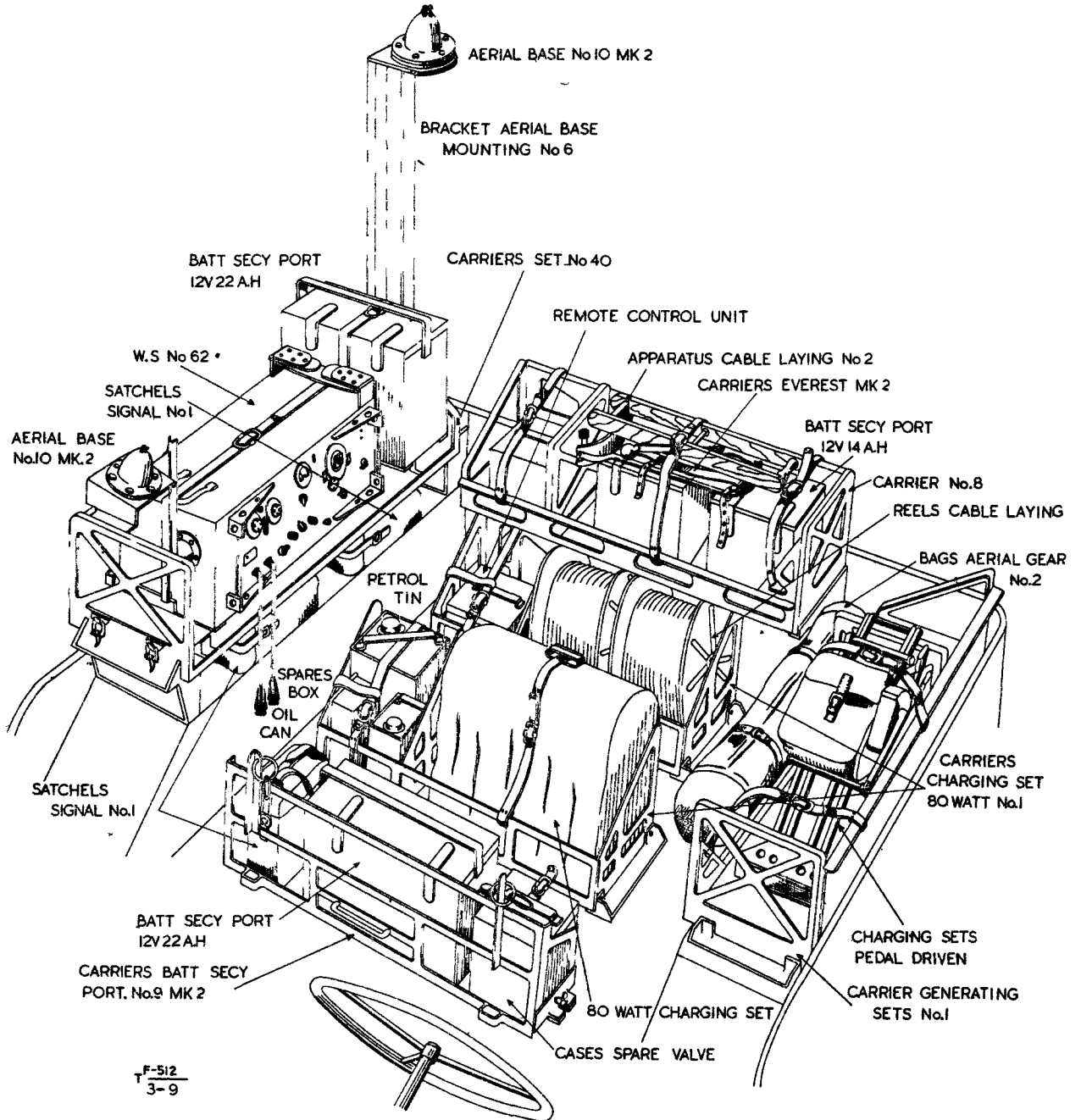
Fig.8 - Send-receive switching
Mk.1 Serial Nos.1001 on
and Mk.2

- (d) Earth connection to mid point of R22A removed and R24B added to stabilise the beat oscillator on send and net.

22. Changes incorporated after Mk.1 serial No.1800 and in all Mk.2 sets.

- (a) C32A (15pF) connected across the crystal and C8A replaced by C31A (10pF) (Fig.6). This improves operation of set on H.F. range.
- (b) Local oscillator circuit modified; C7A changed to C30A and C33A added.

23. Owing to the components not being available in time, certain of these modifications may not be incorporated until a later serial number than that indicated. This applies particularly to paras. 21(d) and 22.



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Fig.9 - Layout of Jeep station

~~Note: The next page is Page 1004~~

Note: This Page 9, Issue 3, contains additional information. Delete the note at the bottom of Page 8.

TRANSISTOR POWER SUPPLY UNIT NO 36
(Table 1006, Fig 1006)

24. The transistor power supply unit is a direct replacement for the rotary transformer supply unit. When fitted it must be bolted directly to the chassis of the TR No 62 with the two securing bolts and adaptor washers provided with the unit. These replace the rubber grommets on which the rotary power unit is normally mounted.
25. The unit operates from a 12V d.c. battery supply and utilizes two transistors VT1 and VT2 in a push-pull d.c. converter circuit with saturable transformer core switching.
26. Operation is as follows: At the beginning of the cycle both transistors are equally biased by resistors R1 and R2 but one begins to conduct before the other. If VT1 commences to conduct first, current flows through the emitter to the collector until VT1 is in the bottomed condition, ie the voltage appearing across terminals 2 and 3 of the transformer T1 is equal to the d.c. input voltage. At the same time the bias applied to the base of VT1 by the feedback winding (terminals 7 and 8) is increasing tending to increase current flow still further until T1 is saturated. During this half cycle the other part of the feedback winding is positive with respect to terminal 7 biasing VT2 well into the cut-off region. The frequency of operation is mainly determined by the primary inductance of T1 and the time taken to reach saturation is almost equal to half the period of the cycle.
27. When saturation is reached the transformer action of T1 ceases with the result that the feedback voltage applied to VT1 is no longer capable of supplying the increasing bias to maintain the emitter current. This causes a cumulative switch off of VT1. As the feedback voltage applied to the base of VT1 decreases that applied to the base of VT2 increases so that when VT1 is finally cut off, VT2 starts to conduct and commences the succeeding half cycle. The frequency of the converter is approximately 1.5kc/s.
28. MR1 provides reverse voltage protection and L1 ensures that converter currents are not fed back into the radio set.
29. The secondary winding of T1 (terminals 10 and 11) is connected to a conventional full wave bridge rectifier circuit using four silicon diodes. The rectified h.t. output from these is fed to the set via a filter network consisting of C3, L2, C4, L3 and L4, of which L2 and L3 are r.f. chokes and L4 an a.f. choke.
30. T1 is a pot core type transformer completely shielded to prevent undesirable coupling and radiation effects with the radio set.

Note: The next page is Page 1001.

EME8c/2795

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Distribution - Class 335. Code No 3

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Circuit reference	Value	Tolerance	Rating	Type	Remarks	Location reference (figs. 1001 & 1002)
RESISTORS						
R1A	220KΩ	+ 20%	1/2W	Ceramic	-	B1
R2A	100KΩ	+ 20%	1/4W	Ceramic	-	D2
R2B	100KΩ	+ 20%	1/4W	Ceramic	-	C10
R2C	100KΩ	+ 20%	1/4W	Ceramic	-	D10
R2D	100KΩ	+ 20%	1/4W	Ceramic	-	F6
R2E	100KΩ	+ 20%	1/4W	Ceramic	Mk.1 over 1000 & Mk.2	B12
R3A	4.7KΩ	+ 20%	1/4W	Ceramic	-	D2
R3B	4.7KΩ	+ 20%	1/4W	Ceramic	-	F7
R3C	4.7KΩ	+ 20%	1/4W	Ceramic	Mk.1 over 1000 & Mk.2	F12
R4A	1MΩ	+ 20%	1/4W	Ceramic	-	E2
R4B	1MΩ	+ 20%	1/4W	Ceramic	-	D12
R4C	1MΩ	+ 20%	1/4W	Ceramic	-	C12
R4D	1MΩ	+ 20%	1/4W	Ceramic	-	C11
R4E	1MΩ	+ 20%	1/4W	Ceramic	-	D13
R5A	100KΩ	+ 20%	1/4W	Ceramic	-	B2
R5B	100KΩ	+ 20%	1/4W	Ceramic	-	F6
R6A	470KΩ	+ 20%	1/4W	Ceramic	-	D3
R6B	470KΩ	+ 20%	1/4W	Ceramic	-	C8
R6C	470KΩ	+ 20%	1/4W	Ceramic	-	C10
R6D	470KΩ	+ 20%	1/4W	Ceramic	-	H6
R7A	47KΩ	+ 20%	1/4W	Ceramic	-	B3
R7B	47KΩ	+ 20%	1/4W	Ceramic	-	D5
R7C	47KΩ	+ 20%	1/4W	Ceramic	-	B8
R8A	22KΩ	+ 20%	1/4W	Ceramic	-	B3
R8B	22KΩ	+ 20%	1/4W	Ceramic	-	C11
R8C	22KΩ	+ 20%	1/4W	Ceramic	-	G4
R9A	10KΩ	+ 20%	1/4W	Ceramic	-	B5
R10A	22Ω	+ 20%	1/4W	Ceramic	-	C5
R11A	33KΩ	+ 10%	1W	Ceramic	-	B7
R12A	3.3KΩ	+ 20%	1/4W	Ceramic	-	D8
R12B	3.3KΩ	+ 20%	1/4W	Ceramic	-	G6
R13A	20KΩ	+ 10%	12W	Wirewound	-	B12
R13B	20KΩ	+ 10%	12W	Wirewound	-	B13
R14A	47KΩ	+ 20%	1/2W	Ceramic	Mk.1 up to 1000	B12
R15A	860Ω	-	10W	Wirewound tapped	-	E14
R16A	30Ω	+ 2%	6W	Wirewound	-	H16
R17A	15KΩ	+ 20%	1/4W	Ceramic	-	G12
R18A	1MΩ	+ 20%	1/4W	Variable	-	F13
R19A	220KΩ	+ 20%	1/4W	Ceramic	-	H11
R20A	270KΩ	+ 10%	1/4W	Ceramic	-	F12
R21A	68KΩ	+ 20%	1W	Ceramic	-	F11
R22A	20Ω	-	-	Variable wirewound centre-tapped	-	H9
R23A	29KΩ	+ 20%	1W	Ceramic	-	H6
R24A	4.2Ω	+ 3%	1/10W	Wirewound	-	H3
R24B	4.2Ω	+ 3%	1/10W	Wirewound	Mk.1 over 1000 & Mk.2	G9

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Circuit reference	Value	Tolerance	Rating	Type	Remarks	Location reference (figs.1001 and 1002)
R25A	33Ω	± 10%	¼W	Ceramic	-	G2
R26A	550Ω			Variable wirewound	-	F2
R27A	29.5KΩ	+ 2%	½W	Meter resistor (high stability)	-	F3
R28A	1.21Ω	± 5%	½W	Meter resistor	-	E3
R29A	1.21Ω	± 5%	1W	Meter resistor	-	F3
R30A	150KΩ	± 10%	¼W	Ceramic	-	G8
CONDENSERS						
G1A	90pF	± 10%	350V	Waxed Lemco	-	D1
C1B	90pF	± 10%	350V	Waxed Lemco	-	G6
C2A	0.001μF	± 25%	350V	Moulded mica	-	D1
C2B	0.001μF	± 25%	350V	Moulded mica	-	G12
C2C	0.001μF	± 25%	350V	Moulded mica	-	H9
C2D	0.001μF	± 25%	350V	Moulded mica	-	F2
C3A	0.1 μF	± 20%	350V	Metal cased tubular paper	-	C2
C3B	0.1 μF	± 20%	350V	Metal cased tubular paper	-	B1
C3C	0.1 μF	± 20%	350V	Metal cased tubular paper	-	B3
C3D	0.1 μF	± 20%	350V	Metal cased tubular paper	-	D3
C3E	0.1 μF	± 20%	350V	Metal cased tubular paper	-	D3 Fig.1001, D4 Fig.1002
C3F	0.1 μF	± 20%	350V	Metal cased tubular paper	-	D4
C3G	0.1 μF	± 20%	350V	Metal cased tubular paper	-	B7
C3H	0.1 μF	± 20%	350V	Metal cased tubular paper	-	D7
C3J	0.1 μF	± 20%	350V	Metal cased tubular paper	-	D8
C3K	0.1 μF	± 20%	350V	Metal cased tubular paper	-	D5
C3L	0.1 μF	± 20%	350V	Metal cased tubular paper	-	E16
C3M	0.1 μF	± 20%	350V	Metal cased tubular paper	-	F16
C3N	0.1 μF	± 20%	350V	Metal cased tubular paper	-	F15
C3P	0.1 μF	± 20%	350V	Metal cased tubular paper	-	F15
C3Q	0.1 μF	± 20%	350V	Metal cased tubular paper	-	H11

Circuit reference	Value	Tolerance	Rating	Type	Remarks	Location reference (figs. 100 and 1002)
C3R	0.1 μ F	\pm 20%	350V	Metal cased tubular paper	-	G9
C3S	0.1 μ F	\pm 20%	350V	Metal cased tubular paper	-	H7
C3T	0.1 μ F	\pm 20%	350V	Metal cased tubular paper	-	H6
C3U	0.1 μ F	\pm 20%	350V	Metal cased tubular paper	-	H7
C3V	0.1 μ F	\pm 20%	350V	Metal cased tubular paper	-	H4
C3W	0.1 μ F	\pm 20%	350V	Metal cased tubular paper	-	H4
C4A	140pF	\pm 5%	350V	Waxed Lemco	-	C3
C4B	140pF	\pm 5%	350V	Waxed Lemco	-	D5
C5A	0.005 μ F	\pm 20%	1kV	Metal cased tubular paper	-	D2
C5B	0.005 μ F	\pm 20%	1kV	Metal cased tubular paper	-	C10
C5C	0.005 μ F	\pm 20%	1kV	Metal cased tubular paper	-	E12
C5D	0.005 μ F	\pm 20%	1kV	Metal cased tubular paper	-	C13
C6A	250pF	\pm 2%	350V	Waxed Lemco	-	B3
C6B	250pF	\pm 2%	350V	Waxed Lemco	-	B4
C6C	250pF	\pm 2%	350V	Waxed Lemco	-	B7
C6D	250pF	\pm 2%	350V	Waxed Lemco	-	B8
C7A	30pF	\pm 10%	350V	Waxed Lemco	Mk.1 up to 1800	D6
C7B	30pF	\pm 10%	350V	Waxed Lemco	-	G4
C8A	5pF	\pm 20%	350V	Waxed Lemco	Mk.1 up to 1800	C6
C8B	5pF	\pm 20%	350V	Waxed Lemco	-	D3
C9	550pF Max			Variable, 4 gang	-	C9A D3 C9B D5 C9C H6 C9D H5
C10A	1.5-15pF			Trimmer, flat type	-	B2
C10B	1.5-15pF			Trimmer, flat type	-	G7
C10C	1.5-15pF			Trimmer, flat type	-	G5
C11A	3-50pF			Trimmer, flat type	-	B2
C11B	3-50pF			Trimmer, flat type	-	G7
C11C	3-50pF			Trimmer, flat type	-	G5
C12A	3-30pF			Trimmer, concentric type	-	D5
C12B	3-30pF			Trimmer, concentric type	-	D6
C13A	1700pF	\pm 20%	350V	Waxed Lemco	-	D6
C14A	3500pF	\pm 2%	350V	Waxed Lemco	-	D6
C15A	410pF	\pm 2%	350V	Waxed Lemco	-	B9

Circuit reference	Value	Tolerance	Rating	Type	Remarks	Location reference (figs. 1001 and 1002)
C15B	410pF	± 2%	350V	Waxed Lemco	-	B10
C16A	20pF	± 20%	350V	Waxed Lemco	-	B11
C16B	20pF	± 20%	350V	Waxed Lemco	-	F6
C17A	100pF	± 20%	350V	Moulded mica	-	C10
C18A	500pF	± 20%	350V	Moulded mica	-	B5
C18B	500pF	± 20%	350V	Moulded mica	-	C10
C19A	820pF	± 2%	350V	Waxed Lemco	-	H8
C20A	90pF	± 5%	350V	Waxed Lemco	-	H8
C21A	100µF	± 50%	6V	Electrolytic	-	D3
C22A	2µF	± 20%	350V	Electrolytic	-	B12
C22B	2µF	± 20%	350V	Electrolytic	-	H12
C23A	8µF	± 50%	500V	Electrolytic	-	F15
C24A	8µF	± 50%	75V	Electrolytic	-	F14
C25A	0.03µF	± 10%	500V	Metal cased tubular paper	-	H9
C26A	0.004µF	± 15%	750V	Moulded mica	-	G3
C27A	487pF Max			Variable, air-spaced	-	H3
C28A	4.75pF			Trimmer, flat type	-	G4
C28B	4.75pF			Trimmer, flat type	-	G4
C29A	4 turns twisted wire				-	G8
C30A	27pF	± 10%	350V	Ceramic: Special Temp. Coeff.	Mk.1 over 1800, Mk.2	D6
C31A	10pF	± 20%	350V	Waxed Lemco	Mk.1 over 1800, Mk.2	C5
C32A	15pF	± 20%	350V	Waxed Lemco	Mk.1 over 1800, Mk.2	C6
C33A	10pF	± 10%	350V	Ceramic: Special Temp. Coeff.	Mk.1 over 1800, Mk.2	D7

Circuit reference	Description	Location reference (figs. 1001 and 1002)
INDUCTORS		
L1A	R.F. choke	D2
L1B	R.F. choke	F15
L1C	R.F. choke	C15
L1D	R.F. choke	H4
L1E	R.F. choke	F2
L2A	H.F. range anode coil	B3
L2B	H.F. range anode coil	F7
L2C	H.F. range anode coil	G5
L3A	L.F. range anode coil	B2
L3B	L.F. range anode coil	F7

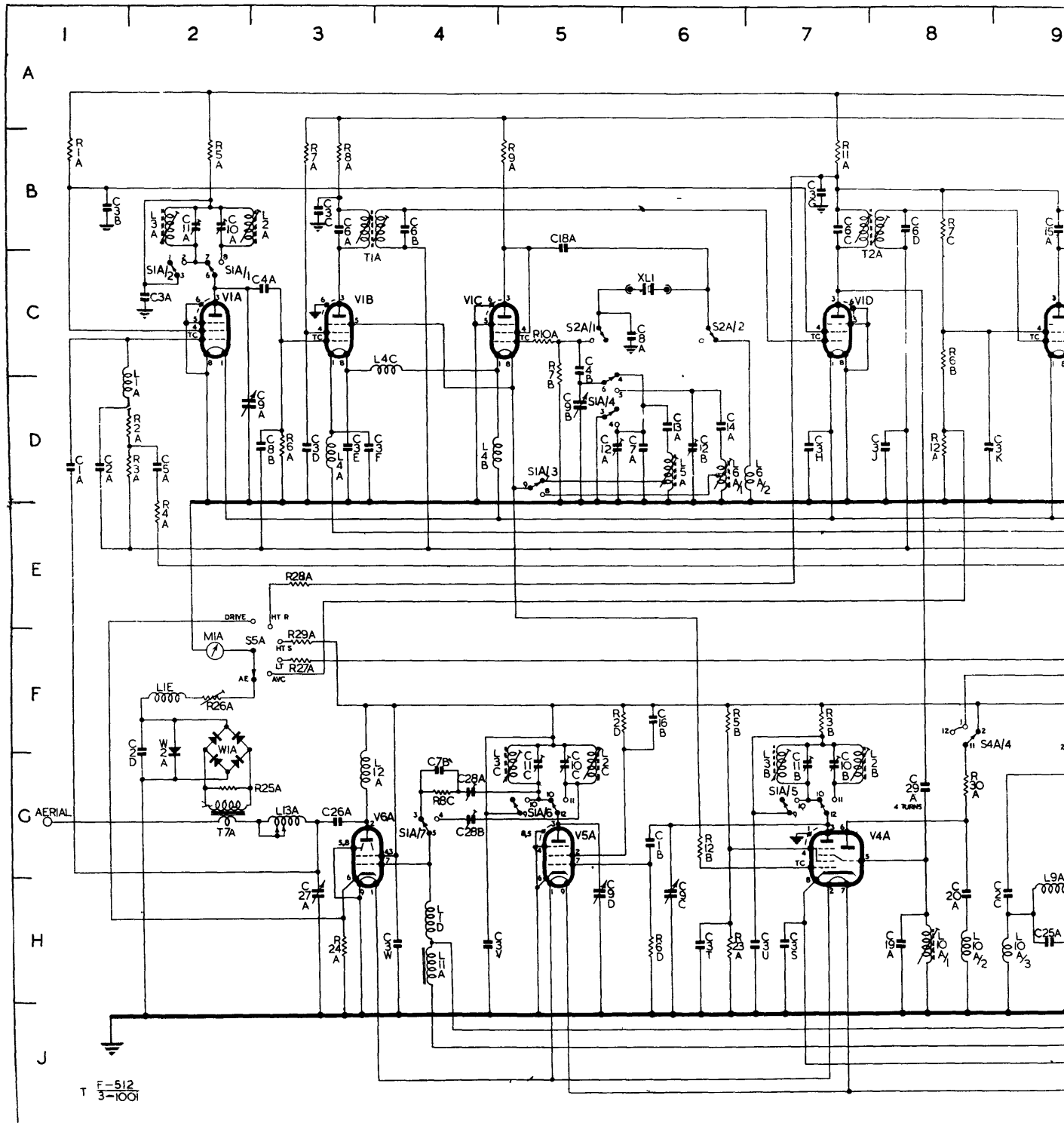
Circuit reference	Description	Location reference (figs. 1001 and 1002)
L3C	L.F. range anode coil	G4
L4A	Filament choke	D3
L4B	Filament choke	D4
L4C	Filament choke	C4 fig. 1001
L5A	L.F. range LO coil	D3 fig. 1002
L6A/1	H.F. range LO coil (tuned winding)	D6
L6A/2	H.F. range LO coil (coupling winding)	D6
L8A	LT RF choke	D7
L9A	HET. TONE control coil	G16
L10A/1	Beat oscillator coil (tuned winding)	H9
L10A/2	Beat oscillator coil (coupling winding)	H8
L10A/3	Beat oscillator coil (control winding)	H8
L11A	Modulation choke	H9
L12A	PA anode choke	H4
L13A	Aerial tuning inductor	G3
TRANSFORMERS		
T1A	1st I.F. transformer	B3
T2A	2nd I.F. transformer	B8
T3A	3rd I.F. transformer	B9
T4A	Microphone transformer	D11
T4A	Output transformer	B13
T6A	Rotary transformer, 11W	F15 & F16
T7A	Aerial current transformer	G2

Circuit reference	Type	Description	Location reference (figs. 1001 and 1002)
VALVES			
V1A	CV1331 (ARP12)	Receiver RF Amplifier	C2
V1B	CV1331 (ARP12)	Receiver Mixer	C3
V1C	CV1331 (ARP12)	Local oscillator	C5
V1D	CV1331 (ARP12)	1st I.F. Amplifier	C7
V1E	CV1331 (ARP12)	2nd I.F. Amplifier	C9
V2A	CV1306 (AR8)	Detector, AVC and Modulation Amplifier	C11
V3A	CV65	Receiver output and sidetone Amplifier	C13

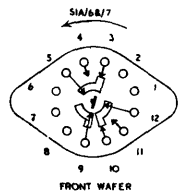
Circuit reference	Type	Description	Location reference (figs. 1001 and 1002)
V3B V4A	CV65 CV1347 (ARTH2)	Modulator Beat oscillator and sender mixer	G11 G7
V5A V6A	CV1091 (ARF35) CV1510 (VT510)	Buffer amplifier Power amplifier	G5 G3
RECTIFIERS			
W1A W2A		Selenium	F2 F2
SWITCHES			
S1A	Rotary multi-wafer	RANGE switch	C2, C2, D5 C5, G7, G5 and G4.
S2A	Rotary wafer, 1 bank 2 pole, 2 position	XTAL/MO switch	C5 and C6
S3A	Double toggle (rotary operated)	ON/OFF switch	C16 and H15
S4A	Rotary wafer, 3 bank, 3 x 3 pole, 3 position.	W./NET/RT switch	F14, C14, F9, F8, E13, E13, D12 and E12
S5A	Rotary wafer, 1 bank, 2 pole, 6 position.	Meter switch	F3
RELAY			
A/2	600 type 100Ω coil 2C	SEND/RECEIVE relay	Operating coil G14 Contacts A1 D12 A2 F14
FUSE			
F1A	250mA. Cartridge	Main HT	F14

Table 1001 - List of components : WS 62

**ELECTRICAL AND MECHANICAL
ENGINEERING REGULATIONS**

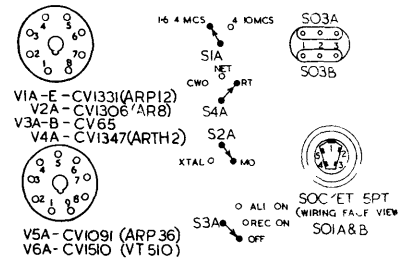
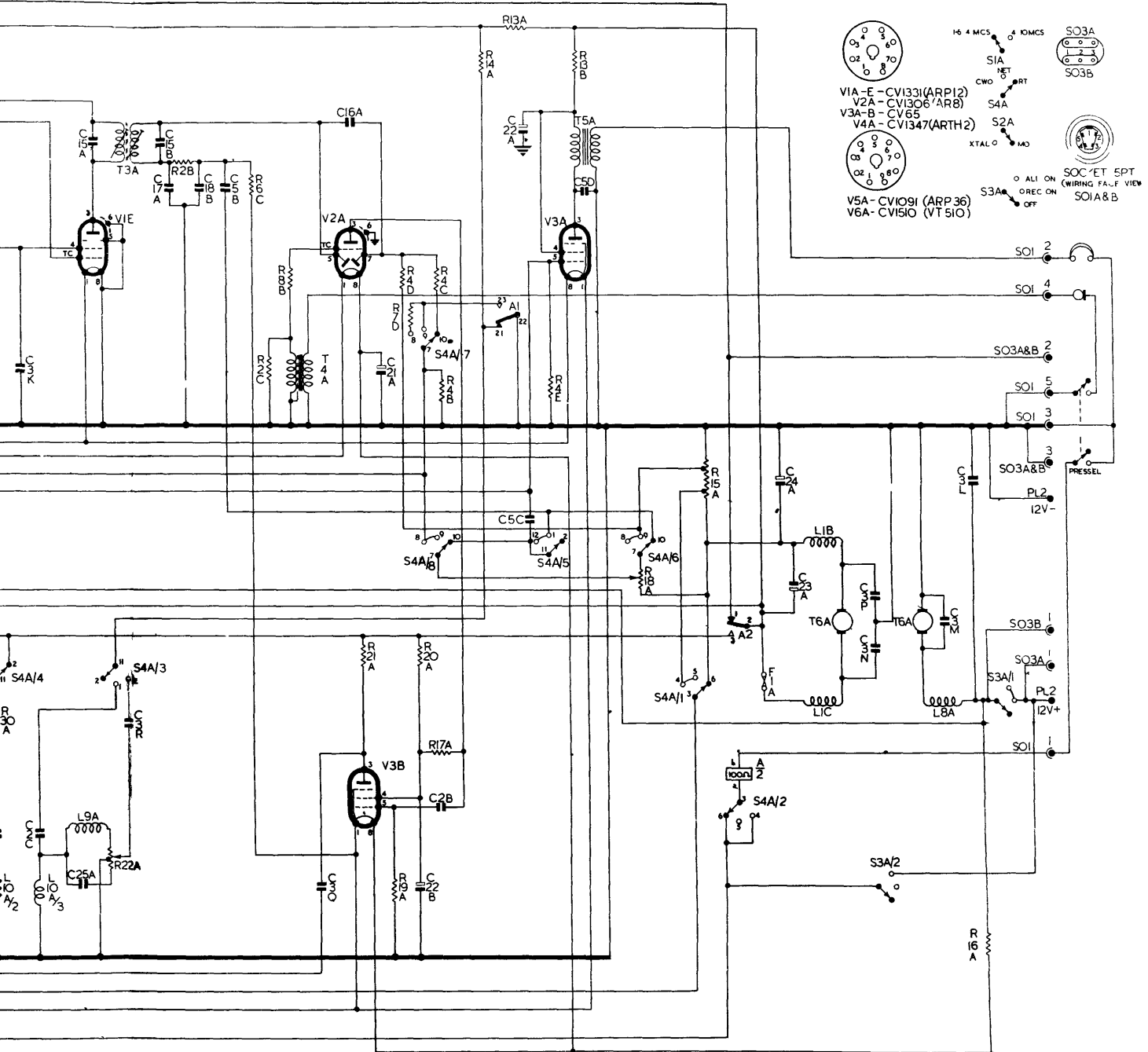


**Fig.1001 - Circuit Diagram - Mk.1 up to
1000**



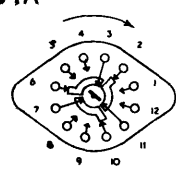
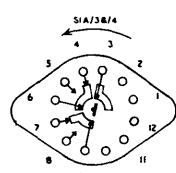
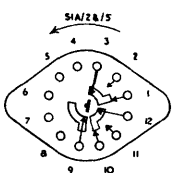
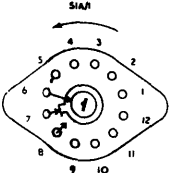
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9 10 11 12 13 14 15 16 17



S1A

S4A



MIDDLE WAFER FRONT

MIDDLE WAFER REAR

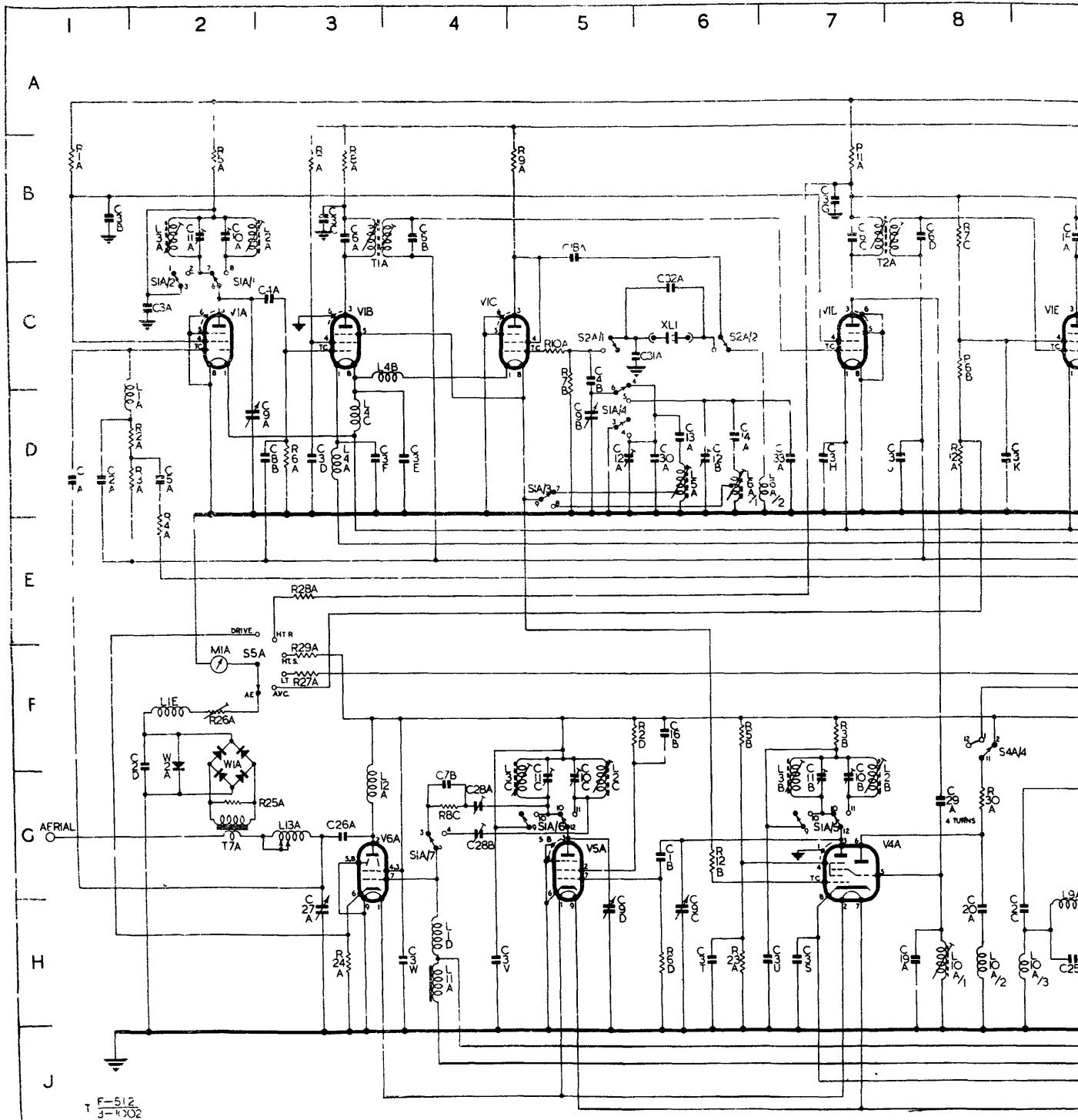
REAR WAFER

S4A/1/3&6 ON FRONT WAFER
S4A/5/8 ON MIDDLE WAFER
S4A/2/4/7 ON REAR WAFER

ALL WAFERS VIEWED FROM REAR
KNOB IN POSITION SHOWN ON
CIRCUIT

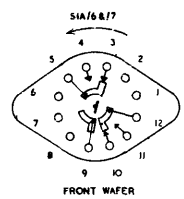
Fig. 1001
Circuit Diagram - Mk.1 up to 1000

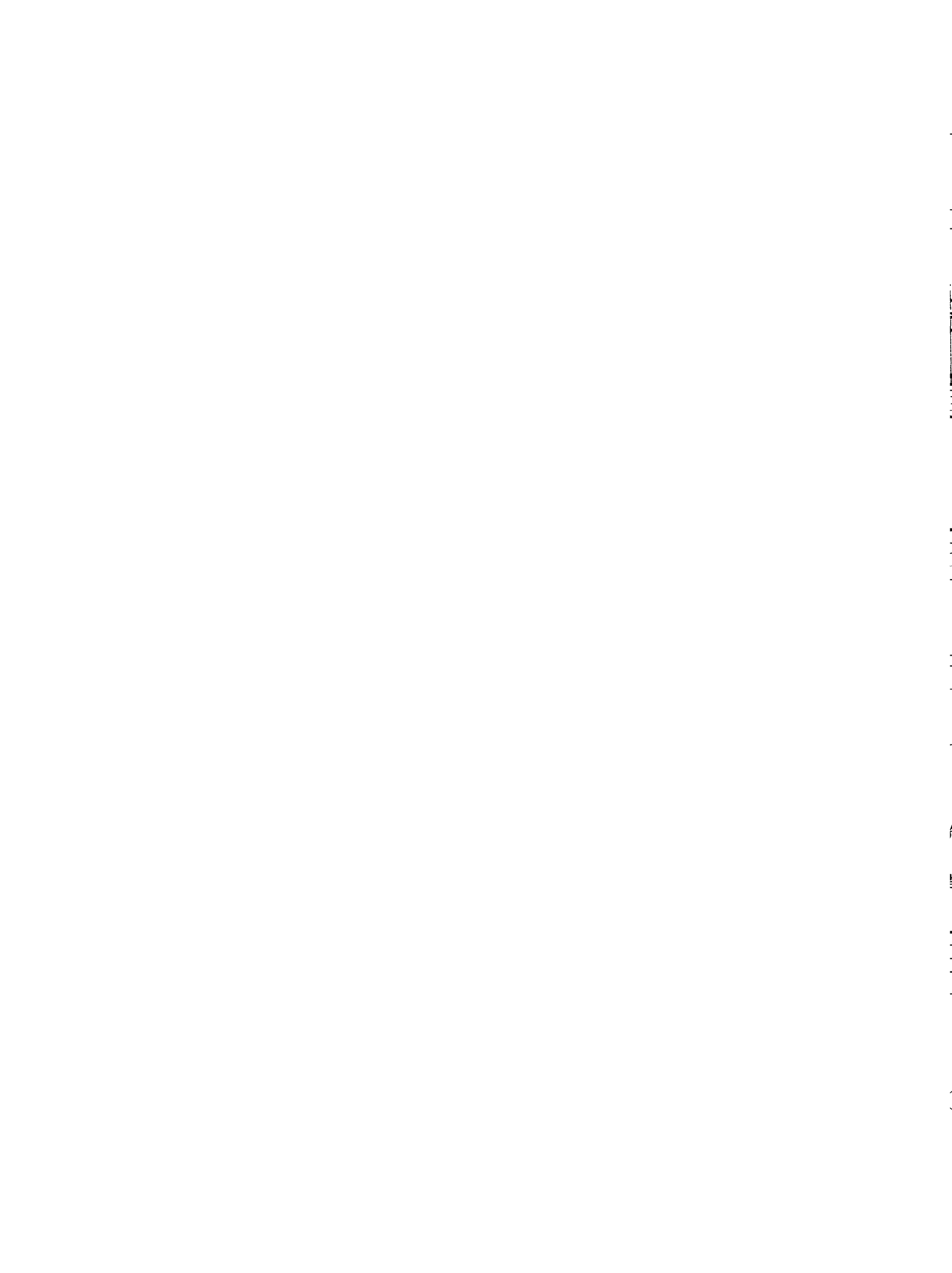
**ELECTRICAL AND MECHANICAL
ENGINEERING REGULATIONS**



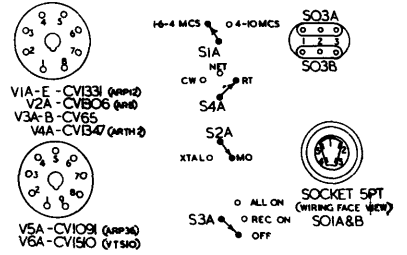
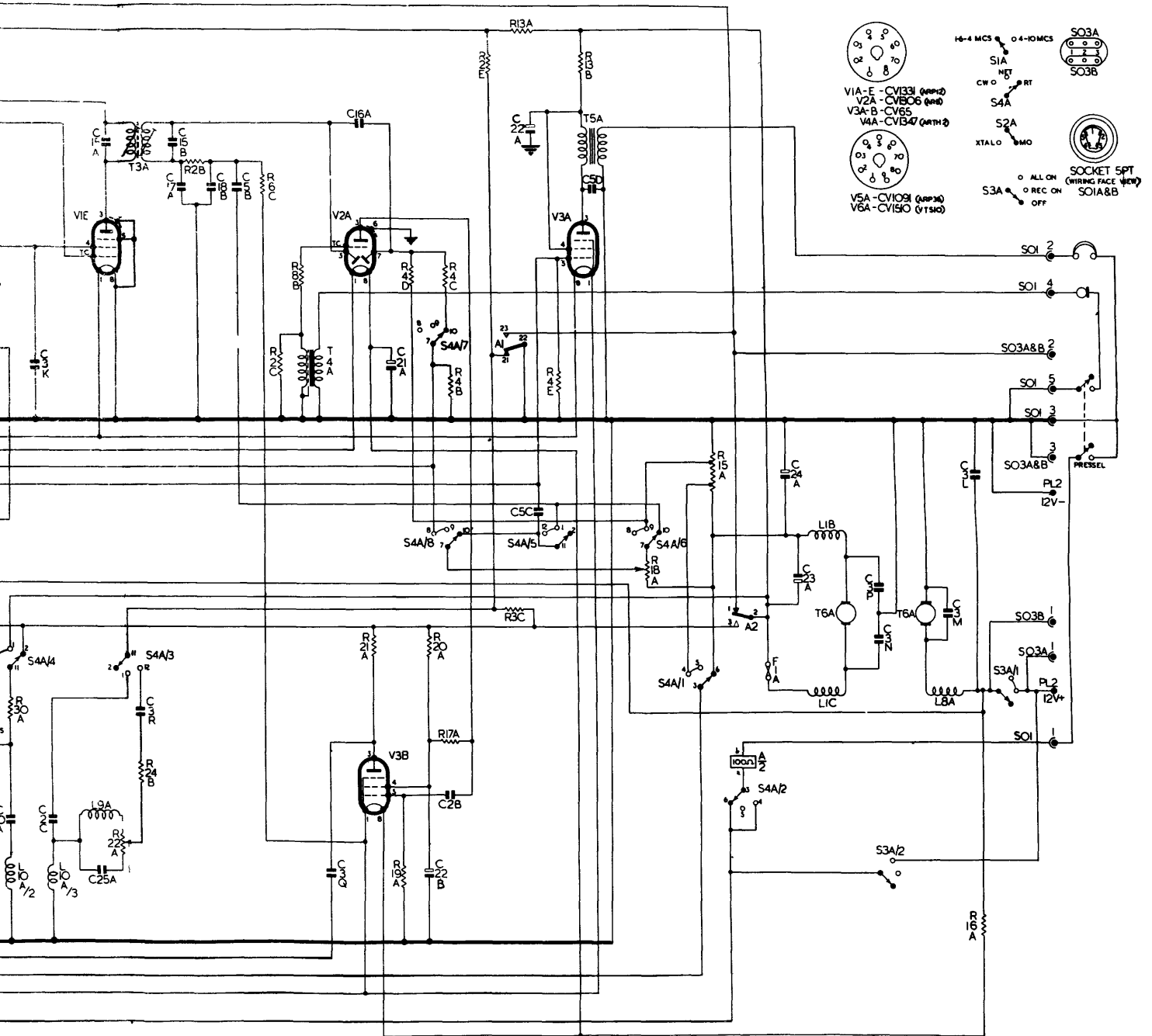
**Fig.1002 - Circuit Diagram - Mk.1, 1801 on,
and Mk.2 (also Mk.1, 1001 to 1800,
with exceptions detailed in para.22).**

Issue 3, 15 Jun. 1946



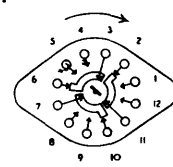
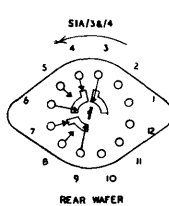
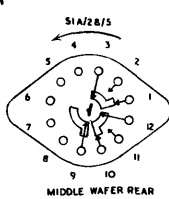
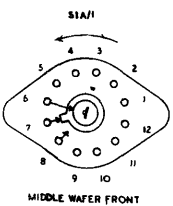


9 10 11 12 13 14 15 16 17



S1A

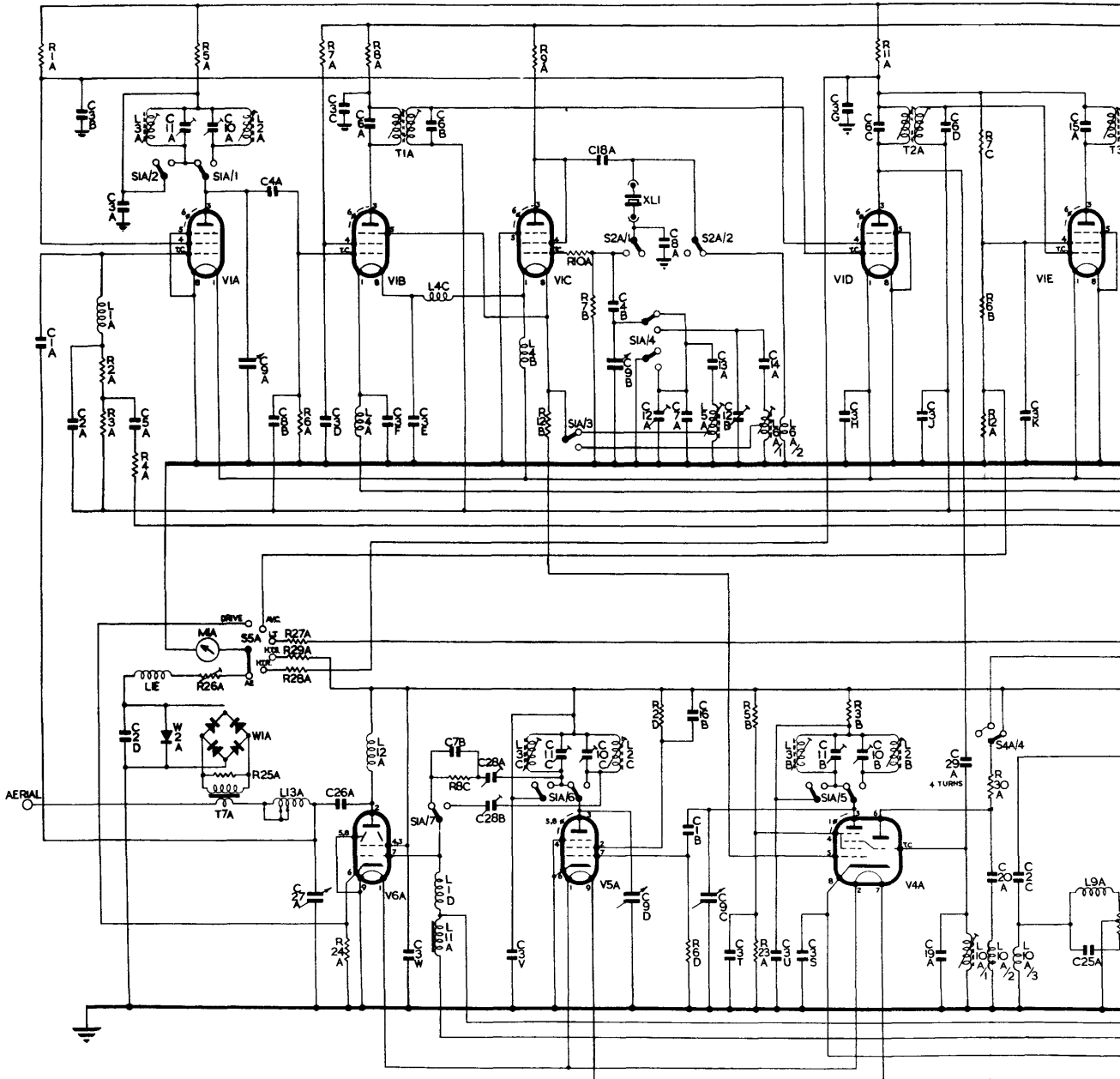
S4A



S4A/1/3&6 ON FRONT WAFER
 S4A/5&8 ON MIDDLE WAFER
 S4A/2/4&7 ON REAR WAFER

ALL WAFERS VIEWED FROM REAR
 IN POS. IN POSITION SHOWN ON CIRCUIT

Fig. 1002 -
Circuit Diagram - Mk.1, 1801 on,
and Mk.2 (also Mk.1, 1001 to 1800,
with exceptions detailed in para.22).



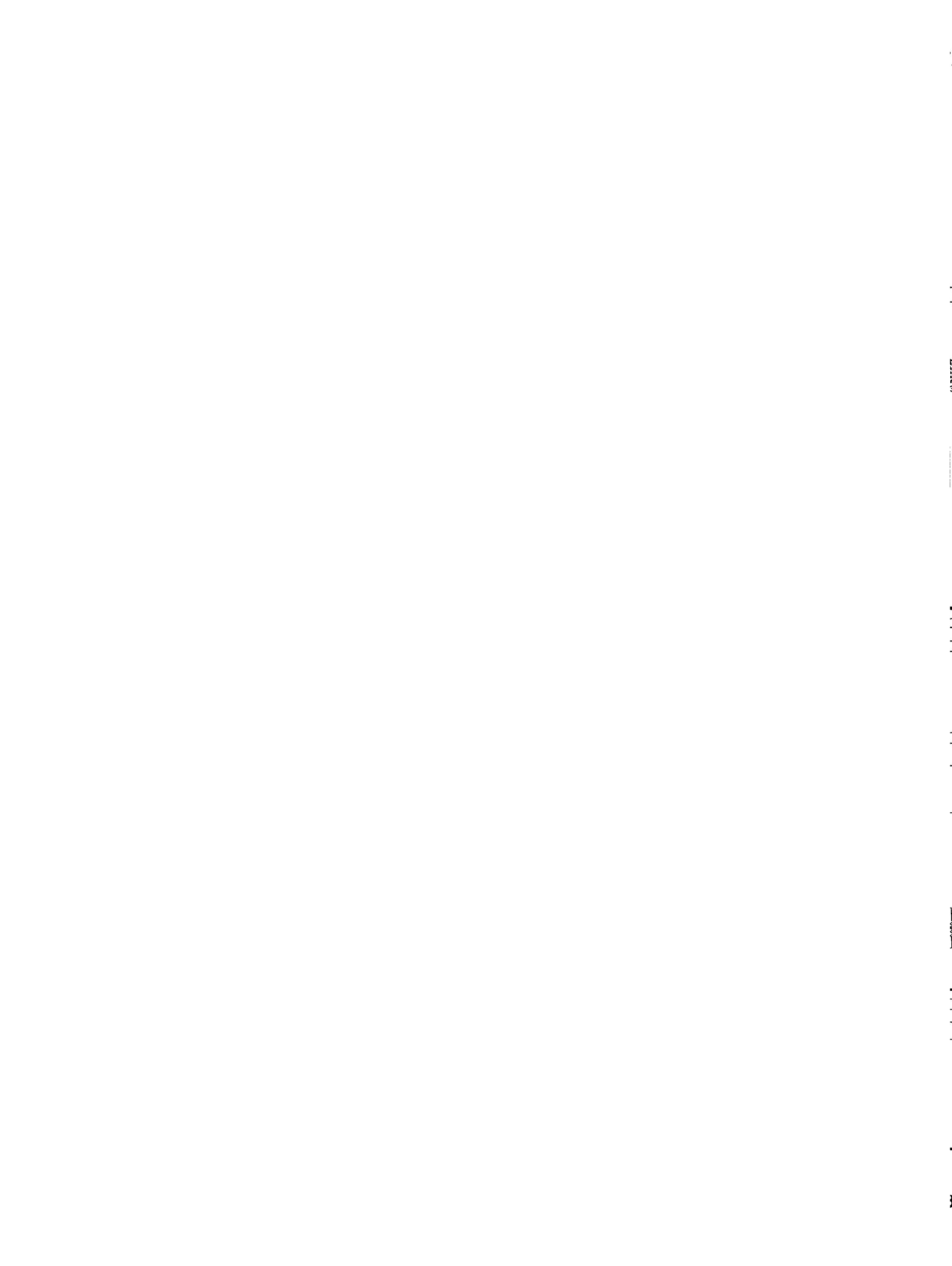
WIRELESS SETS, No. 62

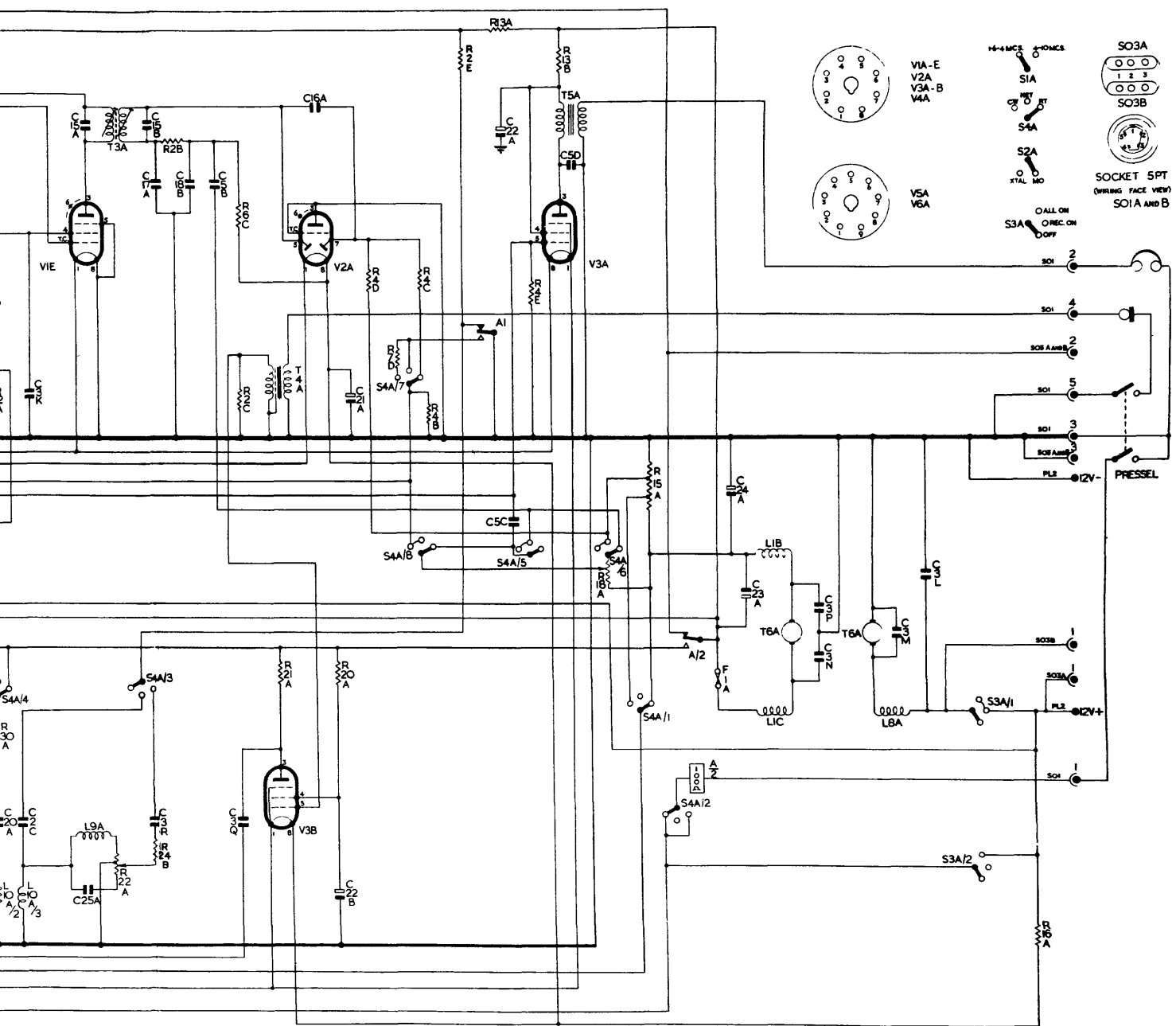
F 512
 1 1002A

Fig. 1002A - Circuit diagram of Wireless set No. 62 after modification

57/Maint./4275
 Issue 1, 3 Jul. 1951

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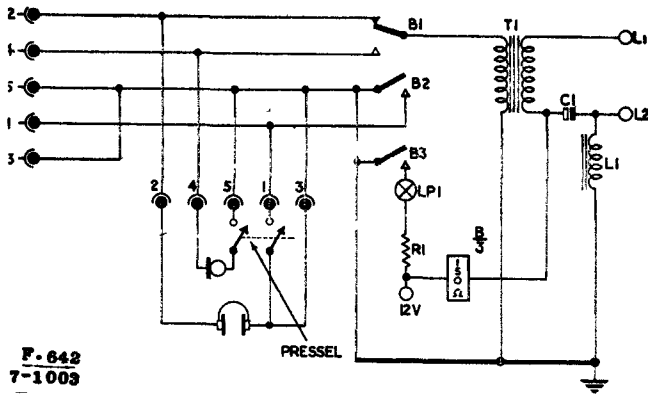


Modification in accordance with Tels. F 517 Mod. Inst. No. 6

RESTRICTED

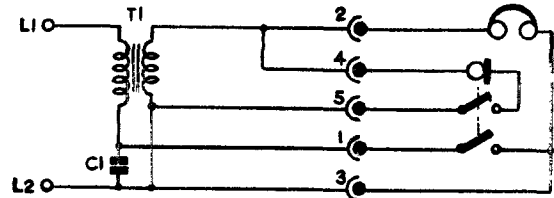
Fig. 1002A -
Circuit diagram of Wireless set No. 62
after modification in accordance with
Tels. F 517 Mod. Inst. No. 6

- Notes:** 1. This Issue 7 supersedes Issue 6, pages 1009, 1009 (B.C.), 1010 and 1010 (B.C.), dated 18 Feb 1950, Table 1004 and Fig 1005 have been amended.
2. Bench copies (B.C.) of pages 1009 and 1010, Issue 7, have not been issued, further copies can be had on 'supplementary' demand through the usual channels.



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7-1003

Fig 1003 - Junction, remote control, No 1



F-642
7-1004

Fig 1004 - Junction, remote control, No 2

Circuit reference	Value	Tolerance	Rating	Type
Resistor R1	20Ω		1/2W	
Capacitor C1	200μF	±20%	12V	Electrolytic
Transformer T1	Primary resistance, 10Ω ±10% Secondary resistance, 18.5Ω ±10%			
Inductor L1	0.5H; d.c. resistance 6Ω ±10%			
Relay B/3	Type 3000; coil resistance 150Ω			

Table 1002 - List of components for Junction, remote control, No 1

Circuit reference	Value	Tolerance	Rating	Type
Capacitor C1	75μF	+50% - 20%	12V	Reversible electrolytic
Transformer T1	Primary resistance, 10Ω ±10% Secondary resistance, 18.5Ω ±10%			

Table 1003 - Junction, remote control, No 2 - components

Note: See note on page 1009

Circuit reference	Value or type	Circuit reference	Value or type	Circuit reference	Value
RESISTORS		SWITCH		RESISTOR	
R1	22Ω	S1	3-pole, 3-way, rotary WORK/IC/CALL	R1	2.2kΩ
R2	47Ω	RELAY <u>RL1</u> 2	Type 3000	CAPACITOR	
R3	1kΩ			C1	1μF
R4	330Ω				
R5	330Ω				
R6	470Ω				
R7	22Ω				
CAPACITORS				RELAY <u>RL2</u> 2	
C1	1μF		Type 3000		
C2	0.1μF				

Table 1004 - Remote control unit, L, No 1 - components

Table 1005 - Remote control unit, L, No 2 - components

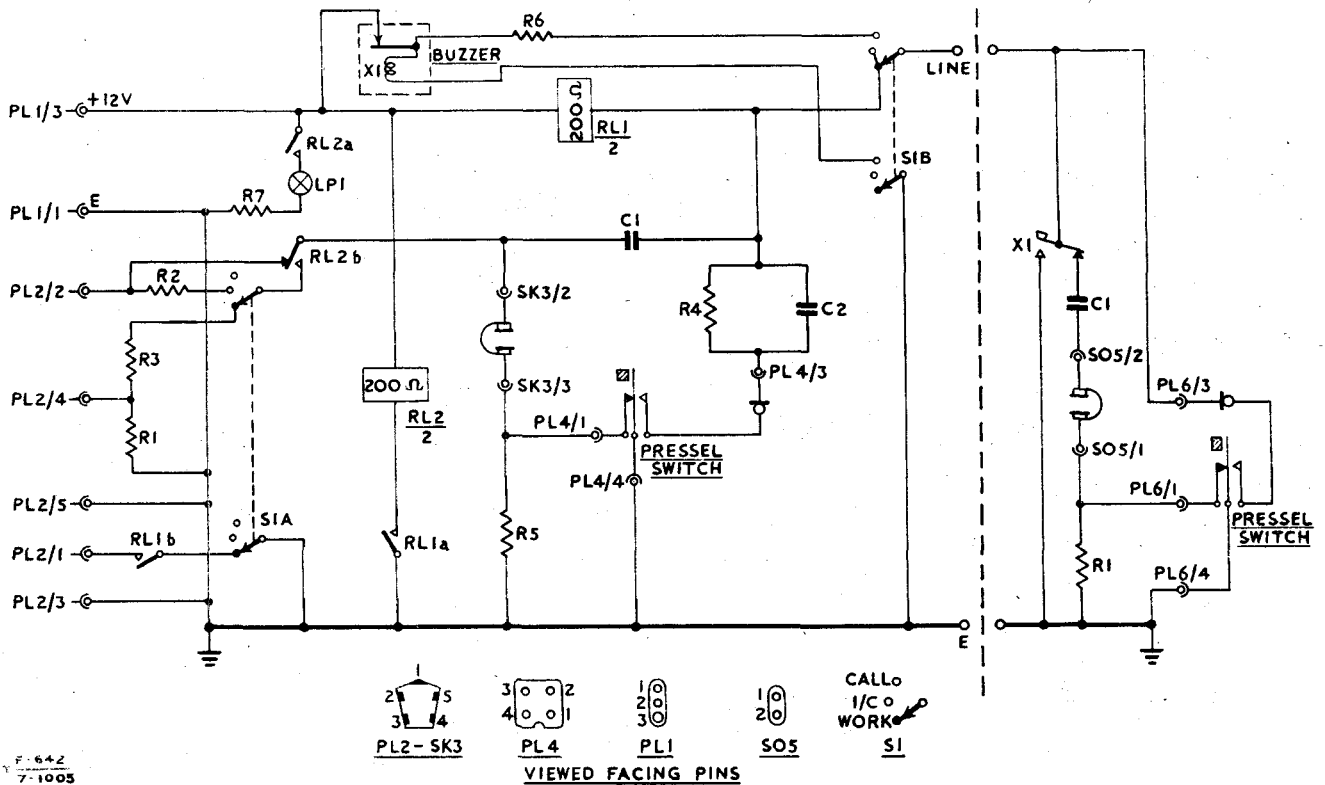
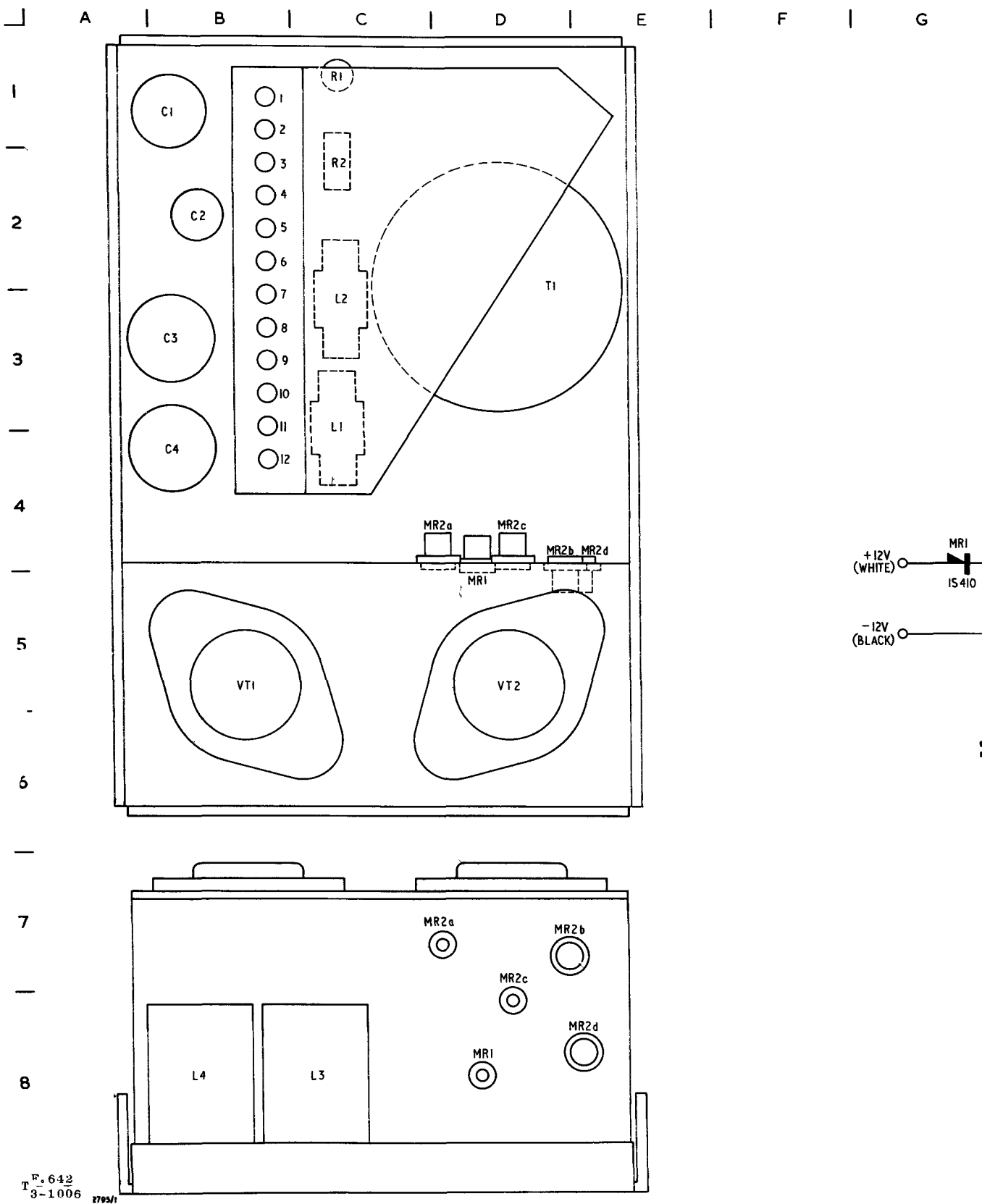


Fig 1005 - Remote control units, L, Nos 1 and 2 - circuit diagram

57/Maint/6483 (ME8)

Note: These Pages 1011 and 1012, Issue 3, contain additional information

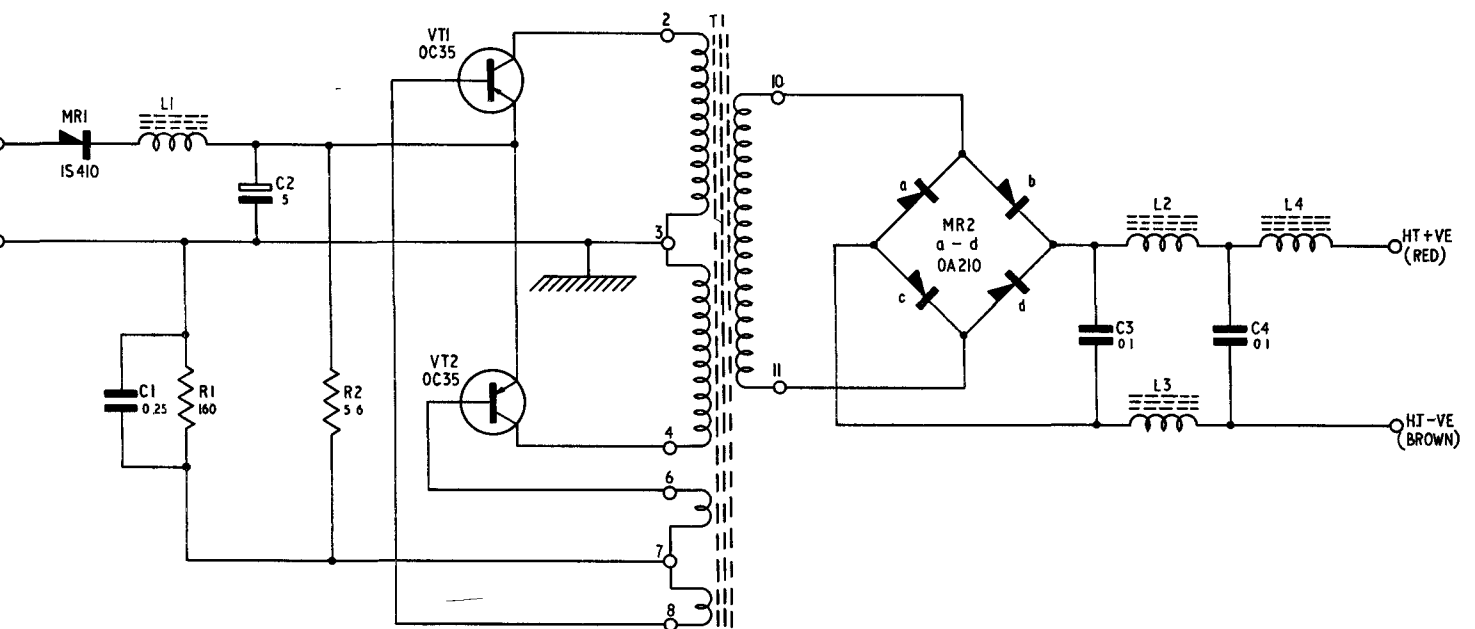


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3-1006 2795/1

Fig 1006 - P.S.T. No 36 - circuit diagram

Additional information.

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



- circuit diagram and component layout

Fig 1006
Page 1011

R E S T R I C T E D

TELECOMMUNICATIONS
F 642

ELECTRICAL AND MECHANICAL
ENGINEERING REGULATIONS

Circuit ref	Component location	Value (μ F)	Rating (V)	Type
CAPACITORS				
C1	B1	0.25	150	Paper tubular
C2	B2	5	50	Electrolytic tantalum
C3	B3	0.1	600	Paper tubular
C4	B3-4	0.1	600	Paper tubular
Circuit ref	Component location	Value (Ω)	Rating (W)	Type
RESISTORS				
R1	C1	160	6	Wirewound
R2	C2	5.6	3	Wirewound
Circuit ref	Component location	Inductance		Type
INDUCTORS				
L1	C2-3	1mH		Pot core choke
L2	C3-4	500 μ H		R.F. choke
L3	B8	500 μ H		R.F. choke
L4	BC8	155mH		Pot core choke
Circuit ref	Component location			Type
TRANSFORMERS				
T1	CD2-3			Pot core transformer
SEMI-CONDUCTORS				
VT1	BC5-6			Transistor CV7084 (OC35)
VT2	D5-6			Transistor CV7084 (OC35)
MR1	D8			Diode (IS401)
MR2a	C7			Diode CV7113 (OA210)
MR2b	D7			Diode CV7113 (OA210)
MR2c	D7			Diode CV7113 (OA210)
MR2d	D8			Diode CV7113 (OA210)

Table 1006 - P.S.T. No 36 - component schedule

EME8c/2795

END

TRANSMITTER-RECEIVER, RADIO, NO 62

FORWARD CODING

Note: The following list of Assembly Codes must be used in conjunction with EMER Mgmt J 021 Part 4.

Assembly code	Designation
0001	Transmitter/receiver, less p.s.t.
0002	Power supply, transistorized, No 36
0003	Junction, remote control, No 1
0004	Junction, remote control, No 2
0005	Remote control unit, L, No 1
0006	Remote control unit, L, No 2
0007	Headsets
0008	Handsets
0009	Ancillary assemblies, morse key, connectors etc
0010	Antenna

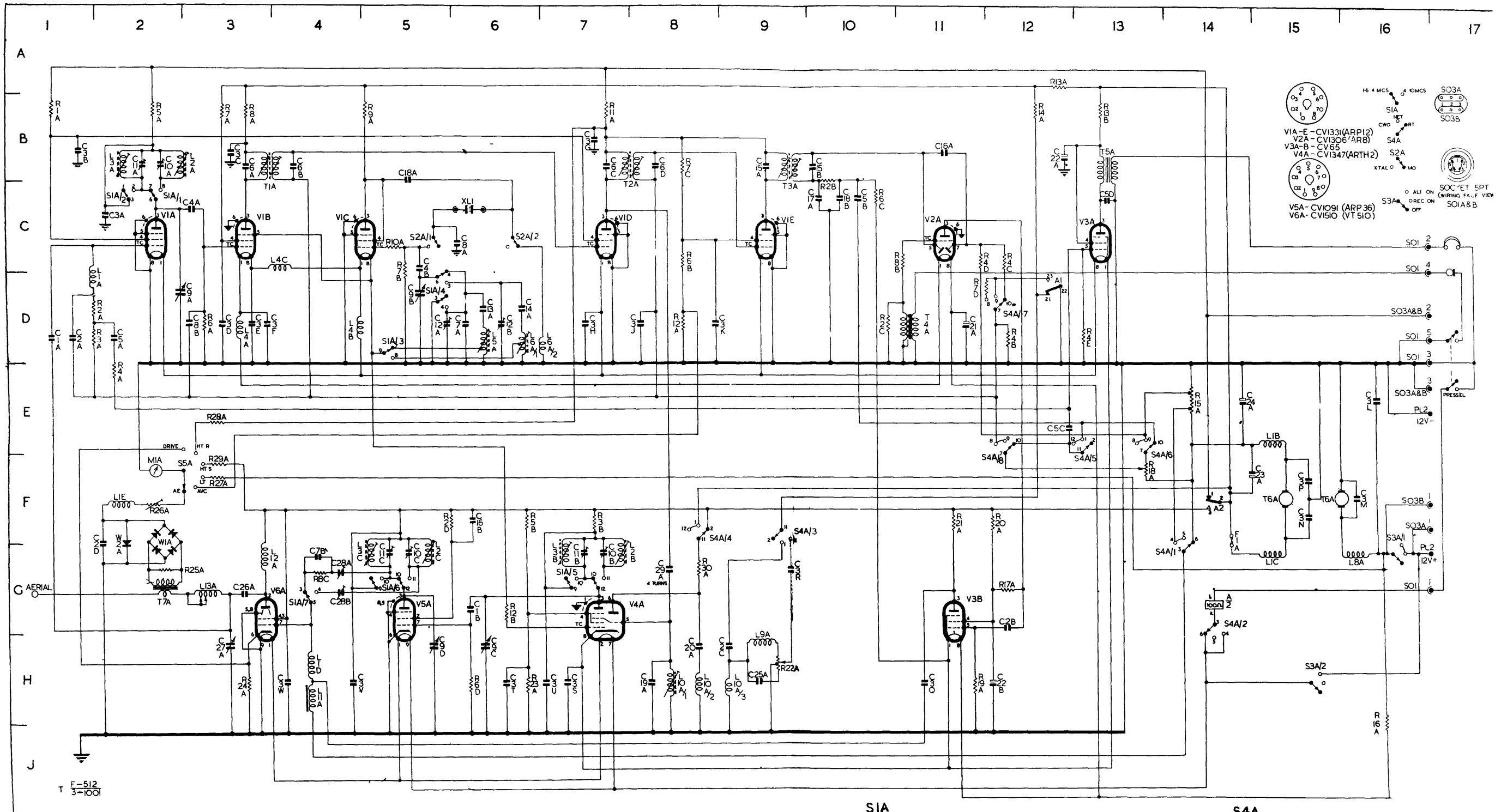
6-502 (Data Centre)
Issue 1, 28 Mar 67

END

Distribution - Class 335. Code No 3

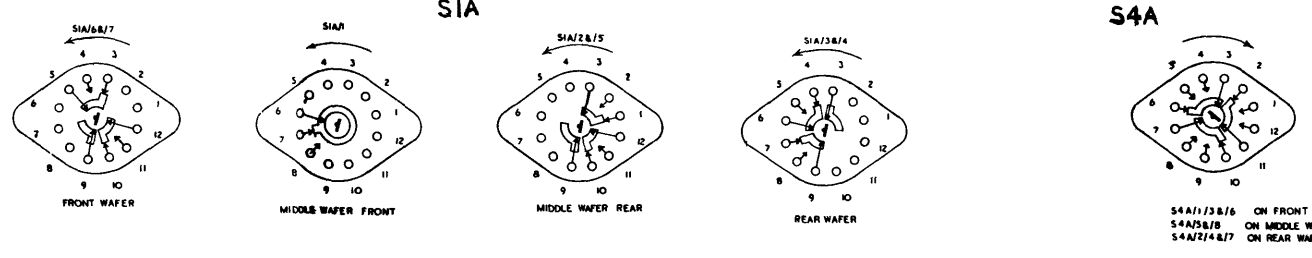
Page 2001

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- V1A - E-CV1331 (ARP12)
- V2A - CV1306 (AR8)
- V3A - B-CV65
- V4A - CV1347 (ARTH2)
- V5A - CV1091 (ARP36)
- V6A - CV1510 (VT 510)
- S4A
- S2A
- S3A
- SO3A
- SO3B
- SO3A&B
- SO1
- SO2
- SO3
- SO4
- SO5
- SO6
- SO7
- SO8
- SO9
- SO10
- SO11
- SO12
- SO13
- SO14
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- SO34
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- SO37
- SO38
- SO39
- SO40
- SO41
- SO42
- SO43
- SO44
- SO45
- SO46
- SO47
- SO48
- SO49
- SO50

Fig. 1001 - Circuit Diagram - Mk.1 up to 1000



ALL WAFERS VIEWED FROM REAR
INDEX IN POSITION SHOWN ON
CIRCUIT

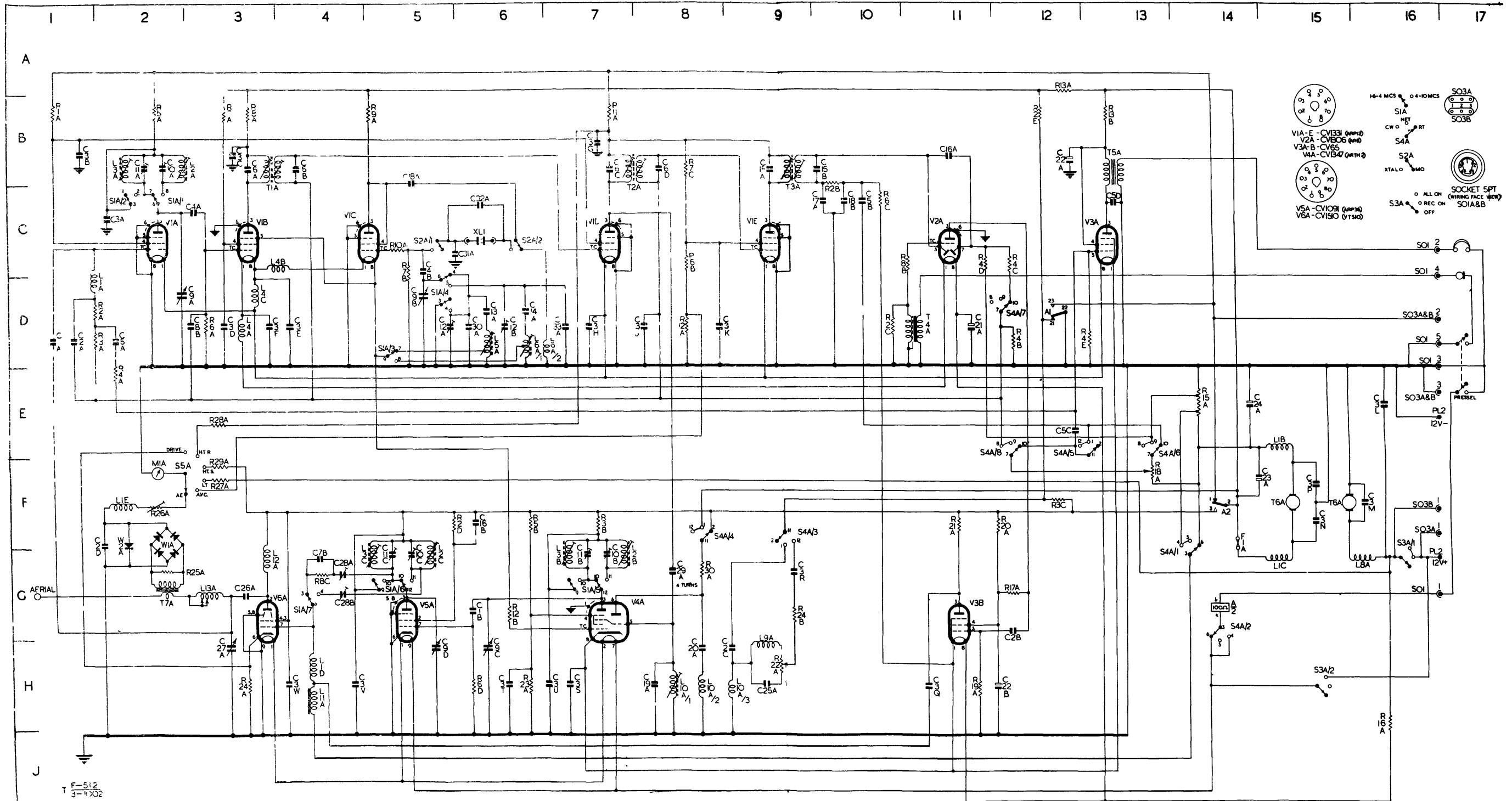
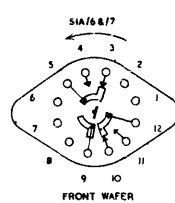
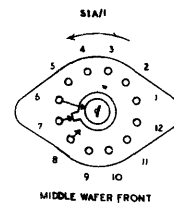


Fig.1002 - Circuit Diagram - Mk.1, 1801 on,
and Mk.2 (also Mk.1, 1001 to 1800,
with exceptions detailed in para.22).

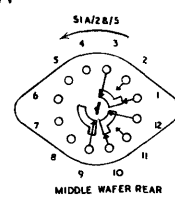
Issue 3, 15 Jun. 1946



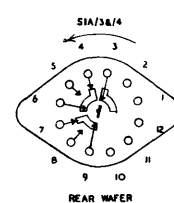
FRONT WAFER



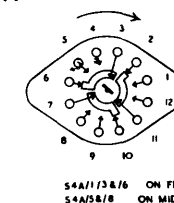
MIDDLE WAFER FRONT



MIDDLE WAFER REAR

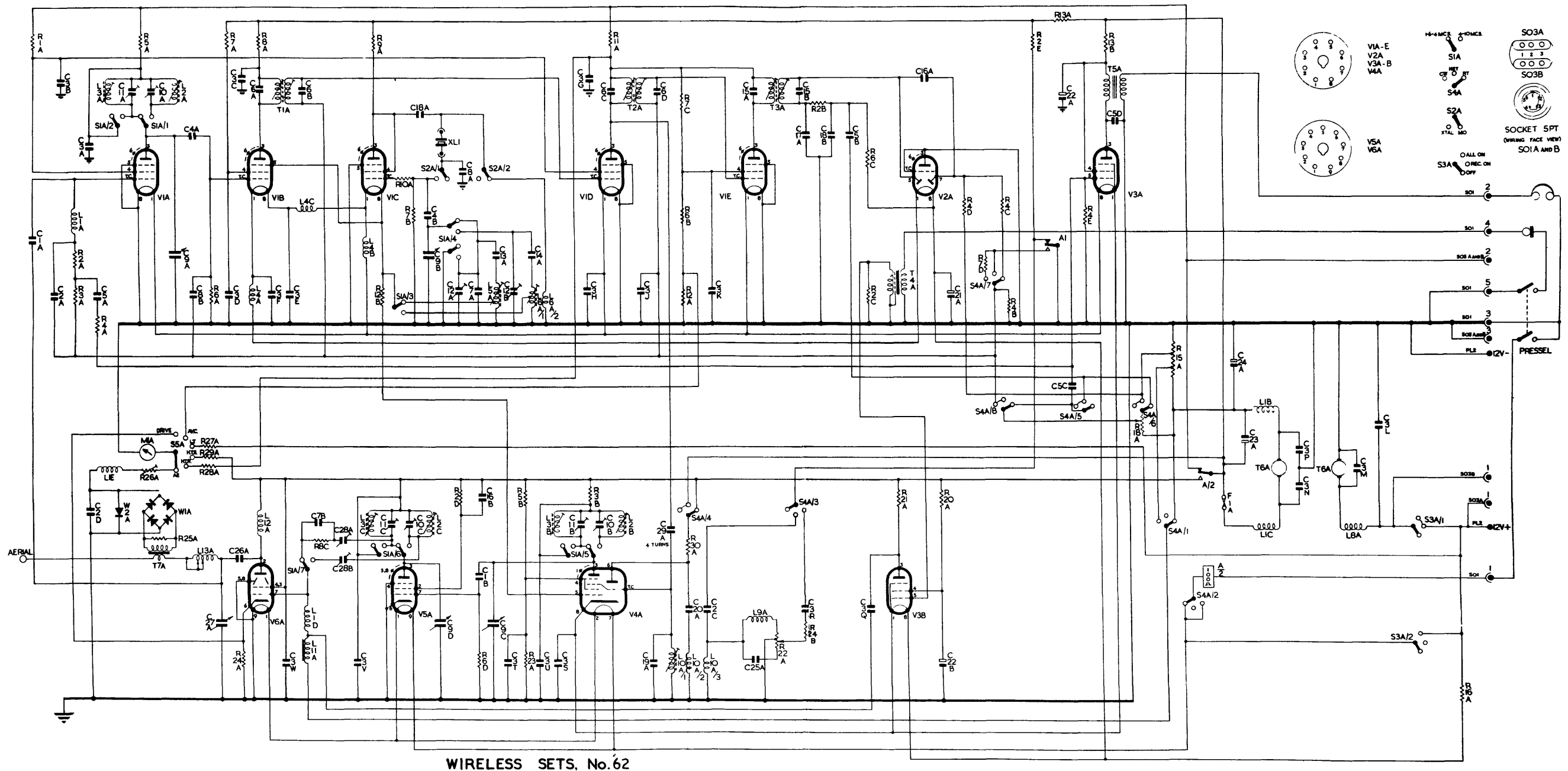


REAR WAFER



S4A/1/3/6 ON FRONT WAFER
S4A/5/8 ON MIDDLE WAFER
S4A/2/4/7 ON REAR WAFER

ALL WAFERS VIEWED FROM REAR
KNOB IN POSITION SHOWN ON
CIRCUIT



WIRELESS SETS, No. 62

T.F. 512
1 1002A

Fig. 1002A - Circuit diagram of Wireless set No. 62 after modification in accordance with Tels. F 517 Mod. Inst. No. 6

Note: These Pages 1011 and 1012, Issue 3, contain additional information.

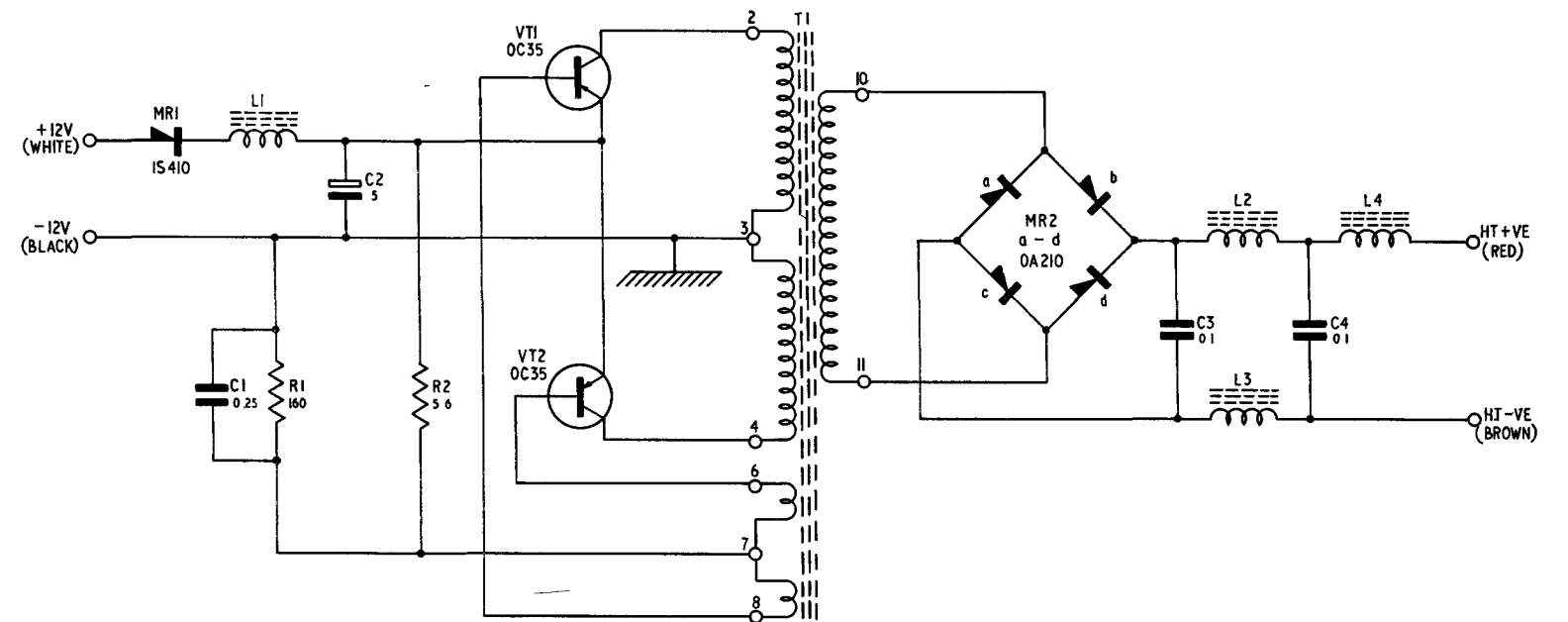
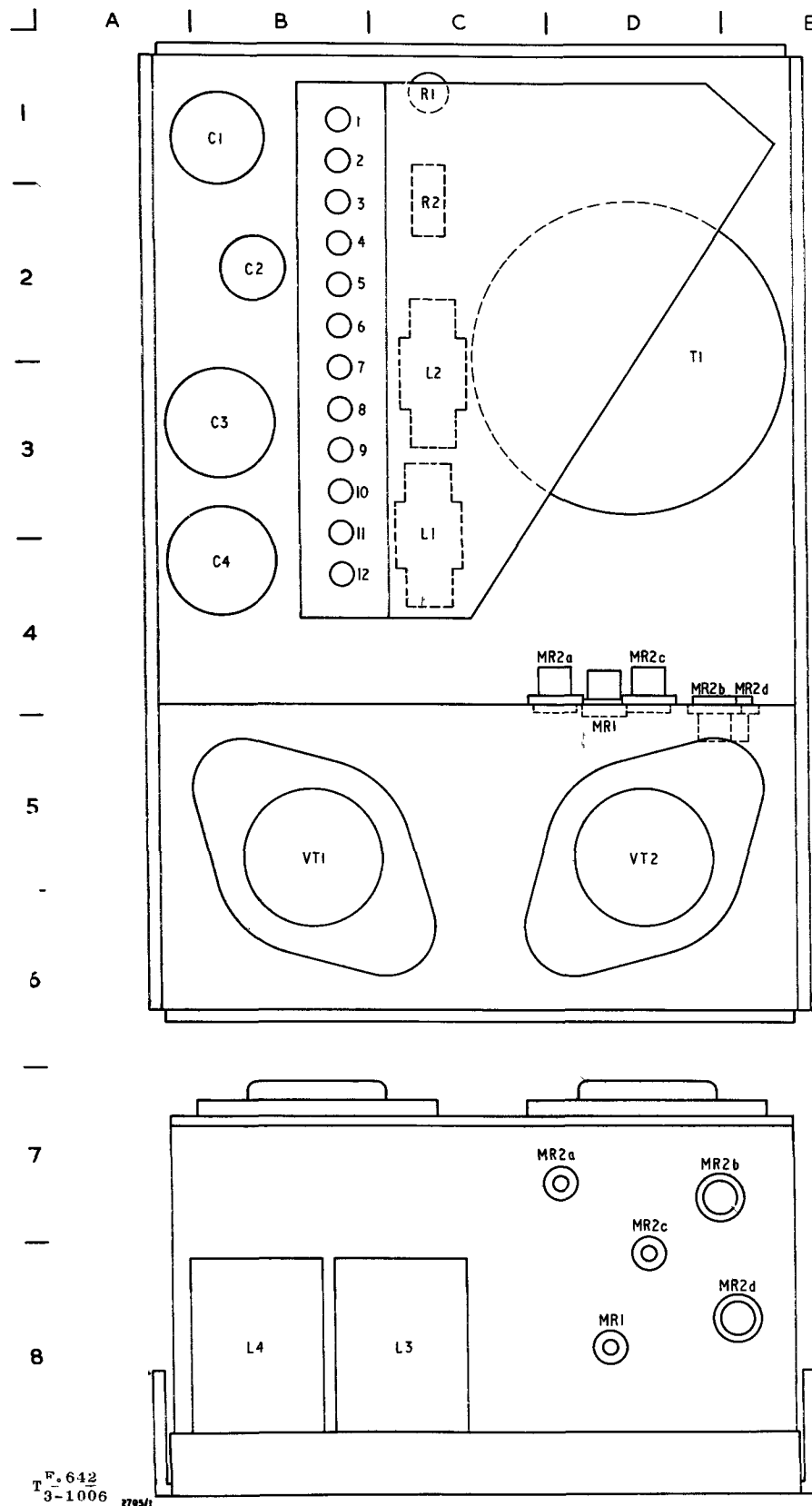


Fig 1006 - P.S.T. No 36 - circuit diagram and component layout