SERVICE MANUAL
SINGLE SIDEBAND TELERADIO SS70 & SS70A
TYPE 1N62570

HANDBOOK 62570R

AMALGAMATED WIRELESS (AUSTRALASIA) LIMITED

Engineering Products Division

422 LANE COVE ROAD, NORTH RYDE, N.S.W.

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140870

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TELERADIO SS70

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WESTERN AUSTRALIA

Perth:	231 Bulwer Street, Perth, 6000 Telephone: 28-6400 Telex: 92121 Postal: Box H525, Perth, 6001
Port Hedland:	555 Morgan Street, Port Hedland, 6721 Telephone: 3-1384 Postal: Box 327, Port Hedland, 6721

TASMANIA

Launceston:	42 Frederick Street, Launceston, 7250 Telephone: 2-1804 Telegraphic: Expanse Launceston Postal: Box 738H, Launceston, 7250
Hobart:	123 Murray Street, Hobart, 7000 Telephone: 34-3836 Postal: Box 303C, Hobart, 7001

TERRITORY OF PAPUA AND NEW GUINEA

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Rabaul:	Kamerere Street, Rabaul Telephone: 2537 Postal: Box 530, Rabaul

PART 1

TECHNICAL INFORMATION

1. INTRODUCTION

The AWA Teleradio SS70 and SS70A Type 1N62570 are completely solid-state transceivers which meet the requirements of Australian Post Office Specifications RB.209-0 and RB.209 for medium-frequency and high-frequency single sideband suppressed carrier radio telephony equipment employed in the Royal Flying Doctor Service and in privately operated fixed and land mobile radiotelephone service. Approval of the equipment is granted in Australian Post Office Type Approval Certificates No. 209-0-001 (for SS70) and No. 209-002 (for SS70A).

The SS70 and SS70A are identical except for a "fine tune" control; the control is fitted in both models but is inoperative in the SS70A.

2. PERFORMANCE SPECIFICATION

The performance quoted below is valid for a d.c. input voltage of 12.6 V ±10% and is maintained under the following climatic conditions:

Temperature:	+32 °F to +140 °F	(0 °C to +60 °C)
Humidity:	Up to 95% at +104 °F	(+40 °C)
Altitude:	Up to 30,000 feet	(9124 metres)

The transceiver may be operated up to +149 °F (+65 °C) without damage and will remain fully operational; however at elevated temperatures some performance specifications may not be met.

Frequency Range: (i) 2 MHz to 10 MHz
(ii) 1.6 MHz to 10 MHz to special order

Mode of Operation: Single-channel simplex on up to six channels

Aerial Impedance: 50 ohms (unbalanced)

Transmission Modes:	(i) Single sideband suppressed carrier (A3j)
	(ii) Single sideband with carrier 6 dB or less below peak envelope power (A3h) when an a.m. compatibility kit is fitted. This mode is known as "compatible amplitude modulation" or "amplitude modulation equivalent" [AM(E)].
Reception Modes:	(i) Single sideband suppressed carrier (A3j) and compatible amplitude modulation (A3h)
	(ii) Double sideband amplitude modulation (A3) when an a.m. compatibility kit is fitted
Operative Sideband:	(i) Upper sideband
	(ii) Lower sideband operation on any or all channels to special order
Temperature Stability:	
+41 °F to +131 °F:	±50 Hz (+5 °C to +55 °C)
+32 °F to +140 °F:	±60 Hz (0 °C to +60 °C)
Intermediate Frequency:	455 kHz
Supply Voltage:	The transceiver is designed to operate from a nominal 12-volt supply with negative earth and cannot be used with positive-earth systems. When used with a "floating" supply the negative side of the supply is automatically grounded within the transceiver.
Current Drain:	
Receive (SSB):	60 mA in absence of audio output rising to 180 mA at rated audio output
Receive (AM):	120 mA in absence of audio output rising to 220 mA at rated audio output
Transmit:	4A for 25 W p.e.p. output with 2-tone input; the current drain fluctuates during speech transmissions
Transmitter Output:	Nominal 25 watts p.e.p. (2-tone rating); ~~30 watts is typical~~

Transmitter Duty Cycle:	Capable of continuous speech operation (A3j or A3h)
Carrier Suppression:	Better than 50 dB below p. e. p.
Sideband Suppression:	Better than 50 dB for a modulating tone of 1 kHz or higher
Intermodulation Products:	Better than 26 db down relative to each tone for a 2-tone signal producing 25 W p. e. p.
Spurious Outputs:	Better than 40 dB below p. e. p.
Receiver Sensitivity:	Signal-to-noise ratio of better than 10 dB for an input signal of 1 μV; 16 dB is typical
Receiver Output:	1 watt into internal 8-ohm loudspeaker
Selectivity:	
SSB:	Less than 6 dB down between 300 Hz and 2.8 kHz; more than 60 dB down for signals 1 kHz or more outside the bandpass
AM:	Less than 6 dB down for ±4 kHz bandwidth; approximately 60 dB down at ±20 kHz
Image and Spurious Rejection:	Better than 50 dB
Automatic Gain Control:	Less than 6 dB variation in receiver output for inputs between 5 microvolts and 100 millivolts
Cross Modulation:	Interfering signals ±20 kHz from wanted signal and up to 100 mV will not produce a change of more than 3 dB in wanted output

3. DIMENSIONS

Width:	10.5/8 inches	(270 mm)
Depth:	10.1/2 inches	(267 mm)
Height:	3 inches	(76 mm)
Weight:	7 pounds	(3.2 kg)

4. ACCESSORY ITEMS

The full range of optional and accessory items is listed below.

Half-Wave Dipole Aerial (AWA Type 2Y64985) consisting of balun transformer, wire, insulators, and 100 feet of coaxial cable fitted with appropriate connectors. Wire requires cutting to length according to chart packed with the kit and the fitting of end insulator assemblies.

Chassis-mounting Coaxial Connectors (Type BNC Style UG-625B/U) which permit the use of up to six separate aerials. Dummy buttons in the rear panel of the transceiver case permit easy fitting of these connectors. (The AWA Stock Code Number of the connectors is 234665.)

Mobile Installation Kit (AWA Type 1R62571) containing mounting cradle, aerial cable, and hardware for installation in a vehicle.

High-Frequency Helical Whip Aerial (Belling and Lee Type HFW1/6) for single-frequency operation of a mobile installation.

Helical Whip Sections (Belling and Lee Type HFW1/6T) for additional operating frequencies. A section is required for each frequency.

Transportable Kit (AWA Type 1R62574) consisting of a carrying frame and canvas case which render the transceiver suitable for portable service.

Man-Pack Helical Whip (Belling and Lee Type HFW1/P) for single-frequency operation of a portable transceiver.

Aerial Coupling Unit MAC-2 (AWA type 1R62575) for operation into non-resonant wire or whip aerials.

Set of Batteries consisting of 11 nickel-cadmium cells (Eveready Type R4.5) for use with the Transportable Kit.

Battery Charger BC-1 for recharging the nickel-cadmium battery bank from 240 V a.c. mains. The charger is rated at 450 mA.

A.M. Compatibility Kit (AWA Type 6R62572) containing all components necessary for compatible a.m. operation.

Regulated Power Supply (AWA Type 1H63848) provides a regulated output of 12 V d.c. from 200-280 V a.c. mains.

5. PRINCIPLES OF OPERATION

Reference to the Block Diagram (Drg 62570G1) shows that, with the exception of the second and third intermediate amplifiers and the transmitter driver and power amplifier stages, all stages are used for both transmitting and receiving; however several stages which are in the main signal path during "receive" operation perform secondary functions during "transmit" operation. These changes in function occur in the audio circuits and the intermediate-frequency circuits.

The changeover from "receive" to "transmit" is made via four relays (15RLA, 15RLB, 5RLC, 1RLE) which are energised when the press-to-talk button is operated.

5.1 Transmission

During transmission the audio signals from the microphone or tone oscillator are amplified and fed into a balanced modulator where they combine with a 455 kHz carrier derived from the 455 kHz crystal oscillator. The 455 kHz carrier is suppressed in the balanced modulator and the double side-band suppressed carrier output is fed to a mechanical filter which passes the lower sideband into an intermediate-frequency amplifier.

The lower sideband suppressed carrier signal from the intermediate-frequency amplifier is then fed into the "channel" balanced modulator where it combines with a signal derived from the "channel" oscillator. The "difference" frequency output from the "channel" balanced modulator passes through a selected radio-frequency L-C filter to become an upper sideband suppressed carrier signal relative to the channel frequency. This signal is amplified in two radio-frequency stages before being fed to the driver.

NOTE: For lower sideband operation, the "channel" oscillator operates 455 kHz below the channel frequency and the "sum" frequency signal is taken from the "channel" balanced modulator.

The output of the driver stage is fed to the power amplifier stage which is matched for a 50 Ω aerial by a selected tuning circuit connected to the aerial change-over relay.

An automatic compressor in the audio section maintains a constant level into the sideband generator, and an automatic load control circuit maintains a constant power output over the entire frequency range.

For compatible amplitude-modulation transmission a prescribed amount of 455 kHz carrier is re-inserted at the input of the intermediate-frequency amplifier.

5.2 Reception

The operation of the transceiver during "receive" is almost the reverse of the "transmit" operation.

The aerial is connected via the aerial change-over relay and the appropriate radio-frequency filter to the radio-frequency amplifiers. The output from the second amplifier passes to the "channel" balanced modulator where the signal from the "channel" oscillator translates the channel-frequency signal down to the intermediate frequency of 455 kHz. This intermediate-frequency signal then passes through the sideband filter (or the amplitude-modulation filter and amplifier) to the three intermediate-frequency amplifiers.

For the reception of single sideband signals, the output from the third intermediate-frequency amplifier is fed to the balanced modulator of the sideband generator where the modulating signal is recovered. The audio signal is then fed via the volume control to the audio amplifiers.

For the reception of amplitude-modulated signals, the output from the third intermediate-frequency amplifier is demodulated in an envelope detector and then fed to the volume control.

In both modes of reception the gain of the two radio-frequency amplifiers and the first two intermediate-frequency amplifiers is controlled by an automatic gain control circuit which processes the output from the envelope detector. (The a.g.c. circuits also serve in the a.l.c. loop during transmission).

6. CIRCUIT DESCRIPTIONS

Refer to Circuit Diagram (Drg 62570H1).

6.1 Tone Oscillator

The tone oscillator is completely contained on printed board 4R63572 and employs a unijunction transistor (4VT1) to produce a tone of about 700 Hz. A high proportion of second harmonic is present in the output of the oscillator and provides a precision method of netting for the station being worked.

If the receiver of the station being worked is incorrectly netted the tones will be displaced in the audio spectrum and will no longer bear a harmonic relationship. This loss of harmonic relationship produces a beat tone.

For example, assume a tone of 700 Hz and a tuning error of -10 Hz. The 700 Hz tone is recovered as a 710 Hz tone and the 1400 Hz harmonic is recovered as a 1410 Hz tone. The resultant beat note is (710 x 2) $\sim$ 1410 Hz, that is 10 Hz. It will be noted that the frequency of the beat note is equal to the tuning error; therefore the degree of accuracy in netting is limited only by the ability of the operator to discern the beat note.

6.2 Audio Circuits

The audio circuits are contained on printed board 3R62572 and include five amplifier stages (3VT12, 3VT13, 3VT14, 3VT16, 3VT17), a complementary-symmetry output stage (3VT18, 3VT19), and a compressor (3VT9, 3VT11).

In the receiving mode, the audio signals from the wiper of the volume control (15RV2) are fed via relay contacts 15RLB3 into 3VT12 and the output from the complementary-symmetry stage drives the loudspeaker via relay contacts 15RLB2. During transmission audio signals from either the microphone or the tone oscillator are fed via the compressor and contacts 15RLB3 into 3VT12 and an output from the collector of 3VT13 is fed via 3C48 and contacts 5RLC1 into the balanced modulator of the single sideband generator; at the same time the other amplifier stages and the complementary-symmetry stage serve as a signal amplifier for the compressor circuit.

The compressor circuit employs the field-effect transistor (3VT9) as the shunt arm of an L-pad (3R46 is the series arm) in the audio path between the microphone or tone oscillator and contacts 15RLB3. The output from the complementary-symmetry stage is fed via contacts 15RLB2 to a comparator (base-emitter junction of 3VT11 and 3MR9) where the amplitude is evaluated. If the amplitude exceeds the level determined by the voltage divider R52/R48 the subsequent increase in the collector current of 3VT11 produces a bias which increases the conduction of the field-effect transistor thus lowering the input level at 3VT12.

There are two preset controls in the audio circuits. Potentiometer 3RV3 sets the centre point for the complementary-symmetry output transistors and potentiometer 3RV2 sets the source voltage for the field-effect transistor to the threshold of conduction.

6.3 Sideband Generator and Demodulator

The sideband generator and demodulator circuits are contained on two printed boards (5R62572 and either 10R62572 or 11R62572) and include a 455 kHz oscillator (5VT1) and emitter follower (5VT2), a ring modulator (5MR1-5MR4), and a lower sideband filter.

The 455 kHz oscillator is crystal-controlled (5XL1) and is coupled into the ring modulator through the emitter-follower stage. The ring modulator is bi-directional and functions as a demodulator without any change in configuration, the relay contacts at each end (5RLC1 - audio; 5RLC2 - intermediate frequency) serving only to route the audio and intermediate-frequency signals to the adjacent circuits as indicated on the Block Diagram.

The sideband filter is a mechanical type and passes the lower sideband relative to the 455 kHz intermediate frequency. The filter is in circuit for all operational modes except "a.m. receive" when it is bypassed by an L-C filter having a bandwidth of approximately 6 kHz.

Three preset controls and one capacitor of selected value set up the correct operating conditions for the sideband generator and demodulator. These components are as follows:

5C1: A trimmer capacitor in series with 5XL1 adjusts the oscillator frequency to approximately 5 Hz above 455 kHz at an ambient temperature of +77 °F (+25 °C). The temperature-frequency characteristic of the crystal is such that the frequency of oscillation will be 455 kHz ±7 Hz between +32 °F and +140 °F (0 °C and +60 °C).

5RV1: Sets the level of the re-inserted carrier for A3h transmission.

5RV2: Carrier balance adjustment for the ring modulator.

5C15: The value of 5C15 is selected for maximum carrier suppression. (The value of 5C15 should not exceed 22 pF.)

A regulated supply of 9 V for the oscillator and emitter follower is provided by a Zener diode regulator (3MR8) on printed board 3R62572.

6.4 Amplitude-Modulation Compatibility Kit

The amplitude-modulation compatibility kit is an optional item and is contained on printed board 6R62572. This printed board mounts directly on top of the printed board that contains the sideband generator, and includes a 5-section L-C filter, an emitter follower (6VT1), and a relay (6RLD).

The relay provides the switching circuits that set up the appropriate circuits for the reception of amplitude-modulated signals and is operated by a simple AND circuit consisting of the "break" side of contacts 15RLA2 of the p.t.t. relay and a pole of the AM-SSB switch (15SWB). The contacts of 6RLD perform the following switching functions:

6RLD1: Steer the 455 kHz intermediate-frequency signal to either the sideband filter (de-energised) or the amplitude-modulation filter (energised).

6RLD2: Connect the receiver volume control (15RV2) to either the output of the sideband demodulator (de-energised) or the output of the envelope detector (energised).

6RLD3: Remove the +9 V regulated supply from the 455 kHz oscillator and emitter follower (energised).

6RLD4: Connect the first 455 kHz amplifier (3VT1) to either the output of the sideband filter (de-energised) or the output of the emitter-follower (6VT1) associated with the amplitude-modulation filter (energised).

Instructions for incorporating the filter appear in Part 6, "Addition of Amplitude-Modulation Compatibility Kit", later in this handbook.

6.5 Intermediate-Frequency Circuits

The intermediate-frequency circuits are contained on printed board 3R62572 and consist of three tuned amplifiers (3VT1, 3VT2, 3VT3) operating at 455 kHz. The first stage operates continuously, but the second and third stages operate only during "receive" when they are energised via contacts 5RLC3 and 15RLA2 respectively.

The first stage (3VT1) is fed via terminal "A" on the printed board from either the sideband filter or the amplitude-modulation filter, and is in the direct signal path for both reception and transmission; the second and third stages (3VT2, 3VT3) are in the direct signal path only during reception.

During reception the gain of the first and second stages (and the two radio-frequency amplifiers) is controlled by a voltage derived from the sensitivity control (15RV1). Automatic gain control is also applied to these stages by means of a voltage which is derived from the envelope detector and then superimposed upon the voltage from 15RV1.

During transmission a control signal derived from the transmitter power amplifier is applied to the first intermediate-frequency stage (and the two radio-frequency amplifiers) to provide automatic load control.

(The automatic gain control and automatic load control circuits are described in Sub-Section 6.6 below.)

For A3h transmission, the 455 kHz carrier is re-inserted at the appropriate level at terminal "A" on the printed board.

6.6 Envelope Detector and A.G.C./A.L.C. Circuits

The envelope detector and a.g.c./a.l.c. circuits are contained on printed board 3R62572 and include four diodes (3MR2, 3MR4, 3MR6, 3MR7) and four transistors (3VT4, 3VT6, 3VT7, 3VT8).

During "receive" operation, the output from the third intermediate-frequency amplifier (3VT3) is rectified in the shunt envelope detector (3MR2) and then fed to the base of the emitter follower 3VT4 from which two outputs are taken.

One output from 3VT4 is taken via a 455 kHz R-C filter (3R32, 3C29) and is fed to the receiver volume control (15RV2) via relay contacts 6RLD2 provided the amplitude-modulation filter is fitted and the AM-SSB switch is set to AM. When the filter is not fitted or the AM-SSB switch is set to SSB, the audio signal is unused.

The other output from 3VT4 is used for automatic gain control and is amplified in 3VT6 and then applied via the series diode 3MR7 to the base of 3VT7. Diode 3MR7 and the voltage divider 3R36/3R37 provide a threshold for the automatic gain control and capacitor 3C32 provides the desired time constant.

The control voltage appearing at the junction of 3R38/3R39 in the emitter circuit of 3VT7 is then fed via the sensitivity control (15RV1) to the bases of 3VT1 and 3VT2, and to the a.g.c. gates of the radio-frequency amplifiers 1VT1 and 1VT2. The resistive element of 15RV1 is returned to earth via the switching transistor 3VT8 which conducts only during "receive" operation when it is switched on via contacts 15RLA2 of the p.t.t. relay.

The loop gain of the a.g.c. circuit is adjusted by 3RV1 in the collector circuit of 3VT6.

The a.g.c. circuit becomes an a.l.c. circuit during "transmit" operation and produces a control voltage for the base of the first intermediate-frequency amplifier and the a.g.c. gates of the radio-frequency amplifiers from a voltage derived from the transmitter output stage. The magnitude of the voltage from the a.l.c. sensor (located on board 8R62572) is adjusted by 8RV1 and is fed to the base of 3VT4 via the blocking diode 3MR6. The full control voltage at the junction of 3R38/3R39 is applied to the base of the first intermediate-frequency amplifier (3VT1) and to the a.g.c. gates of the radio-frequency amplifiers (1VT1, 1VT2) because of the open-circuit condition of the earthy side of 15RV3.

Transistors 3VT4, 3VT6, and 3VT7 are energised by a regulated supply of +9 V derived from the Zener regulator (3MR8).

6.7 Channel Oscillator and Balanced Modulator

The channel oscillator and balanced modulator circuits are contained on printed board 2R62572 and include a multi-channel oscillator (2VT1), an untuned buffer amplifier (2VT2), and a ring modulator (2MR1-2MR4).

The crystal oscillator operates 455 kHz above the suppressed carrier frequency of the channel for upper sideband emission (or 455 kHz below for lower sideband emission).

IMPORTANT: In defining single sideband emissions, the Australian Post Office uses the term "assigned frequency". The assigned frequency is the centre of the frequency band allocated to the service concerned and for an upper sideband A3j emission having a bandwidth of 3 kHz it is 1.5 kHz above the suppressed carrier frequency. (The suppressed carrier frequency is indicated when assigments are made.)

In SS70 units, the variable capacitor 15C24 is wired in parallel with the series trimmers of the crystals to give the operator a fine tuning control of limited range. The capacitor is adjusted by the front panel control designated FINE TUNE.

The ring modulator is bi-directional and operates continuously to translate the intermediate-frequency signal to channel frequency (transmit mode) or the received signal to intermediate frequency (receive mode).

6.8 Radio-Frequency Section

The radio-frequency section includes the 2-stage amplifier contained on printed board 1R62572 and the filters associated with each channel. Reference to the Block Diagram shows that the arrangement of the radio-frequency section is the same for both reception and transmission in that the signal path is through the filter into the amplifier.

The input and output connections to the radio-frequency section are set up by contacts 1RLE2 (input) and 1RLE1 (output) of relay 1RLE which is slaved to the primary p.t.t. relay (15RLA). During "receive" operation relay 1RLE is de-energised and the filter is connected to the aerial via contacts 1RLE2 and the aerial change-over contacts (15RLA1); the output of the amplifier is connected into the channel balanced modulator. For "transmit" operation the filter is connected to the channel balanced modulator and the output of the amplifier is connected to the transmitter driver stage.

Individual filters are fitted for each channel and each filter is aligned to the channel frequency. The procedure for selecting, fitting, and aligning the filters will be found in Part 2, "Preparation for Service on Assigned Channels", later in this handbook.

The gain of the field-effect transistors (1VT1, 1VT2) in the amplifier section is controlled by the a.g.c./a.l.c. circuits as described in Sub-Section 6.6 above.

6.9 Transmitter Driver and A.L.C. Sensor

The transmitter driver stage and the a.l.c. sensor are contained on printed board 8R62572. The driver stage consists of a broadband amplifier (8VT1) and the a.l.c. sensor consists of an envelope detector (8MR1) and a level control (8RV1).

The output from the second radio-frequency amplifier (1VT2) at a level of approximately 100 mV r.m.s. is fed to 8VT1 via the wideband transformer 8TR1. The transistor is energised from the regulated +28 V supply and is coupled to the output stage via the wideband transformer 8TR2 in the collector circuit. The voltage divider 8R11/8R12/8RV2 between the +28 V rail and earth sets up the correct idling current of 15-20 mA for the output transistor (15VT1).

Sampling of the transmitter output for the a.l.c. circuit is effected by the envelope detector 8MR1 which is connected to the collector of the output transistor. The magnitude of the signal for the d.c. amplifier in the a.l.c. loop is adjusted by 8RV1 and the signal is fed to the amplifier via a blocking diode. (The d.c. amplifier and blocking diode are on board 3R62572; refer Sub-Section 6.6 above.)

6.10 Transmitter Power Amplifier

The transmitter power amplifier stage is mounted wholly on the chassis and includes the output transistor (15VT1) and the individual tuned circuits for each channel.

The output transistor operates in Class B with an idling current of 15-20 mA and is energised from the regulated +28 V supply rail. The metering resistor (15R6) in the +28 V line allows measurement of the collector current at the test points designated + PA - on the rear panel of the case.

Each output circuit consists of a pi-section followed by a trap circuit that is resonant at the second harmonic of the channel frequency. Components in each output circuit are selected according to the table in Drg 62570D14 and final adjustment is made by:

(i) the slug in the inductor of the pi-section (tuning)
(ii) the trimmer in the output capacitive arm of the pi-section, and
(iii) the variable capacitor in the harmonic trap circuit.

The method of adjustment of the output stage varies considerably from the methods normally encountered in Class C valve amplifiers. Whereas in the tank circuit of a valve amplifier it is customary to tune for a dip in the anode current, transistor linear amplifiers are adjusted for maximum output consistent with linearity and permissible collector current. Further details of the tuning procedure will be found in Part 2 later in this handbook.

Details of the procedure for setting up the output circuit for a particular channel are given in Part 2 later in this handbook.

6.11 <u>+28 V Regulated Supply</u>

The +28 V regulated for the transmitter driver and output stages is obtained from a series regulator which is fed from the combined output of a d.c./d.c. converter and the primary supply. The rectifier of the d.c./d.c. converter and the regulator are contained on printed board 7R62572, the remainder of the components being mounted on the chassis.

The oscillator section of the d.c./d.c. converter operates at a frequency of approximately 5 kHz and feeds a bridge rectifier to produce approximately 19.4 volts from an input of 12.6 volts. The d.c. output of the converter is added to the primary supply by connecting the negative side of the rectifier to the positive side of the primary thus giving a total unregulated voltage of 32 volts from a primary supply of 12.6 volts.

The series regulator (7VT2) employs differential sensing in a circuit of conventional configuration. Although the regulator maintains the output at a steady level, understanding of the circuit is easier if a change in the output level is assumed. For example, a decrease in the output level of one volt produces a reduction of one volt in the emitter potential of 7VT3 because of the constant voltage drop across the Zener diode 7MR6, but the decrease in the base potential of the same transistor is less than one volt because of the voltage division across 7R6, 7R7/7R8, 7R9. The subsequent increase in conduction in 7VT3 increases the conduction in 7VT1 thus increasing the base current (and the collector current) in 7VT2. This increase in current in 7VT2 restores the original output voltage.

The regulator is adjusted at the factory by selection of 7R7 and 7R9 in the error-sensing voltage divider and no further adjustments are necessary unless components are changed. Details of the performance test for the regulator will be found in Part 7, "Servicing Procedures", later in this handbook.

6.12 Power Control Circuits

The on/off switch (15SWD) is ganged to the volume control and applies the primary supply directly to all stages that are used in both receiving and transmitting. The primary supply is also applied via 15SWD and contacts 15RLA2 to the third intermediate-frequency amplifier.

Operation of the press-to-talk button energises the slave relays 15RLB, 5RLC and 1RLE in addition to effecting aerial changeover via contacts 15RLA1.

The switching functions of the slave relays are clearly shown in the Block Diagram.

7. EQUIPMENT SCHEDULE

The basic SS70, as supplied to a customer without optional and accessory items, comprises the following items:

(a) SS70 transceiver, fitted with channels and facilities to the customer's order, complete with microphone.

(b) Operator's Handbook, 1-62570R

(c) Operating Instruction Card, 2-62570R

(d) Foam plastic case

(e) Cardboard Carton

8. CRYSTAL SPECIFICATIONS

(Refer also Drg. 62570D14)

Channel Frequency Crystals (Channel frequency +455 kHz)	56046D101
455 kHz Crystal	56046D105

End of Part

PART 2

PREPARATION FOR SERVICE ON ASSIGNED CHANNELS

The preparation for service on an assigned channel (or channels) depends upon the existing state of the transceiver, different procedures being required for each of the four possible cases. These four cases are:

(i) Change of frequency within the same segment of the frequency range. (See Drg 62570D14 for details of segments.)

(ii) Change of frequency into another segment of the frequency range.

(iii) Addition of a channel (or channels).

(iv) Initial fitting of a channel (or channels).

Case 1 requires a new crystal and realignment of all radio-frequency circuits.

Case 2 requires a new crystal, changes in the frequency-determining components, and adjustment of all radio-frequency circuits.

Case 3 requires the addition (for each channel) of a crystal, a radio-frequency filter, and frequency-determining components for the transmitter output circuit; and alignment of all radio-frequency circuits.

Case 4 requires action similar to that required for Case 3 and is normally performed at the factory.

The procedures for the selection, fitting, and adjustment of all appropriate components are detailed below.

1. SELECTION OF COMPONENTS

The frequency-determining components for each segment of the total frequency range are shown in the table in Drg 62570D14. When the assigned frequency coincides with the edge of a segment the components appearing on either the line above or the line below can be used.

When ordering components from AWA, the following information must be provided for each channel:

Equipment Title	e.g Teleradio SS70
Serial Number	Serial No. 54
Suppressed Carrier Frequency	2.955 MHz
Operative Sideband	Upper sideband

2. FITTING OF COMPONENTS

The following procedure details the fitting of components for only one channel. When more than one channel is involved all components involved in the same assembly group should be fitted before proceeding to the next assembly group.

1. Remove the top and bottom covers from the transceiver case.

2. Remove the cover from the transmitter output section (accessible from the bottom of the chassis).

3. Remove the cover bearing the designations RF1 through to RF6 from the top side of the chassis.

4. Mount the radio-frequency filter in the appropriate position and secure with a 4-40 UNC x 1/4 inch screw and internal-tooth lock washer. (In the cases of channel 2 and channel 5 the filters are secured by the tapped spacers associated with the assembly cover.)

5. Solder the printed board to the two feed-through insulators that project through the board.

6. If the filter being fitted is for channel 1, solder a tinned copper link between feed-through insulator LT3 and the earth track of the board.

   If the filter is for other than channel 1, solder a tinned copper link to the earth track of the channel 1 board.

7. Refit the cover plate bearing the designations RF1 through to RF6.

8. Remove the printed board from the opposite side of the transmitter output section. (If any channel has been previously fitted unsolder the coloured leads to the printed board before removing the board clear of the chassis.)

9. Mount L2, C4, and C5 on the board in the positions indicated by the stencilling on the board. (L2-1 means L2 for channel 1, L2-2 means L2 for channel 2, and so on.) Solder the pigtails to the copper tracks.

10. Refit the printed board and reconnect the coloured leads that were disconnected in step 8. The colour coding is as follows:

Brown connects to Pin F for Channel 1
Red connects to Pin H for Channel 2
Orange connects to Pin K for Channel 3
Yellow connects to Pin G for Channel 4
Green connects to Pin J for Channel 5
Blue connects to Pin L for Channel 6

TABLE 2.1 - INDUCTOR/SWITCH WIRING

	Inductor Tags	Switch Tags	Wire Colour
Channel 1	L1-1 (4)	SWA/5R (3)	Brown
	L1-1 (1)	SWA/6R (3)	Brown
Channel 2	L1-2 (4)	SWA/5R (4)	Red
	L1-2 (1)	SWA/6R (4)	Red
Channel 3	L1-3 (4)	SWA/5R (5)	Orange
	L1-3 (1)	SWA/6R (5)	Orange
Channel 4	L1-4 (2)	SWA/5R (6)	Yellow
	L1-4 (1)	SWA/6R (6)	Yellow
Channel 5	L1-5 (2)	SWA/5R (7)	Green
	L1-5 (1)	SWA/6R (7)	Green
Channel 6	L1-6 (2)	SWA/5R (8)	Blue
	L1-6 (1)	SWA/6R (8)	Blue

TABLE 2.2 - CAPACITOR WIRING

	Capacitor	From	To
Channel 1	C1-1	L1-1 (1)	L1-1 (3)
	C2-1	L1-1 (2)	*Earth
	C3-1	L1-1 (1)	*Earth
Channel 2	C1-2	L1-2 (1)	L1-2 (3)
	C2-2	L1-2 (2)	*Earth
	C3-2	L1-2 (1)	*Earth

* Nearest extruded tag on the walls of the output box.

TABLE 2.2 - CAPACITOR WIRING (Cont'd)

	Capacitor	From	To
	C1-3	L1-3 (1)	L1-3 (3)
Channel 3	C2-3	L1-3 (2)	*Earth
	C3-3	L1-3 (1)	*Earth
	C1-4	L1-4 (1)	L1-4 (3)
Channel 4	C2-4	L1-4 (4)	*Earth
	C3-4	L1-4 (1)	*Earth
	C1-5	L1-5 (1)	L1-5 (3)
Channel 5	C2-5	L1-5 (4)	*Earth
	C3-5	L1-5 (1)	*Earth
	C1-6	L1-6 (1)	L1-6 (3)
Channel 6	C2-6	L1-6 (4)	*Earth
	C3-6	L1-6 (1)	*Earth

* Nearest extruded tag on the walls of the output box.

11. Mount the aerial connector (coaxial) in the appropriate hole in the rear panel of the case and connect it to the appropriate tag on the channel selector wafer.

    Channel 1 to SWA/7R (3)
    Channel 2 to SWA/7R (4)
    Channel 3 to SWA/7R (5)
    Channel 4 to SWA/7R (6)
    Channel 5 to SWA/7R (7)
    Channel 6 to SWA/7R (8)

    NOTE: If a common aerial connector is required instead of separate connectors for each channel, connect SWA/7R/(9) to the aerial connector for channel 1, i.e. SKG.

12. Mount the transmitter output tuning inductor L1 in the position indicated by the stencilling on the chassis. (L1-1 means L1 for channel 1, L1-2 means L1 for channel 2, and so on.) The mounting hardware consists of a 6-32 UNC x 1/4 inch screw and an internal-tooth lock washer.

    CAUTION: Do not overtighten the mounting screw. Overtightening will strip the thread in the base of the coil former.

13. Bridge tags 2 and 4 on inductor L1 using tinned copper wire. (Refer to the circuit diagram for identification of the tags.)

14. Connect L1 to wafers 5R and 6R of the channel selector in accordance with Table 2.1 using the coloured lead supplied with the transceiver.

15. Connect capacitors C1, C2, and C3 in accordance with Table 2.2.

16. Refit the cover to the transmitter output section.

17. Fit the crystal on board 2R62572.

3. ALIGNMENT OF RADIO-FREQUENCY FILTER

1. Connect an a.c. voltmeter between pin R on board 3R62572 and chassis.

2. Set the volume and sensitivity controls fully clockwise. Set the AM-SSB switch to SSB.

3. Connect a signal generator to the aerial connector and set the generator to the suppressed carrier frequency ±1 kHz (+ for USB, - for LSB).

4. Set the signal level to about 10 mV and adjust the frequency to produce a tone of about 1 kHz in the loudspeaker.

5. Adjust the slugs in the radio-frequency filter for maximum indication on the voltmeter reducing the input signal as the filter approaches resonance.

6. Reduce the input level to 1 μV and carefully re-adjust all slugs for maximum indication on the voltmeter.

4. ADJUSTMENT OF TRANSMITTER OUTPUT CIRCUIT

Correct adjustment of the transmitter output circuit can be achieved only when the power output, the collector current, and the linearity are measured simultaneously. These qualities can be measured with relatively simple test equipment as shown in Drg 62570C3.

If an oscilloscope of superior performance (vertical amplifier flat to 10 MHz) is available, the linearity can be checked by direct presentation of the output envelope on the oscilloscope. The vertical amplifier of such an oscilloscope should be connected across the wattmeter in lieu of the envelope detector as shown in the test set-up diagram. The power output can also be calculated from the peak-to-peak amplitude of the envelope pattern.

The alignment procedure is as follows:

1. Check the p.a. idling current as described in the performance test for P.A. IDLING CURRENT in Drg 62570C6.

   IMPORTANT: The idling current must be 15-20 mA before any attempt is made to align the transmitter output circuit.

2. If the accuracy of the setting of the carrier reinsertion control (5RV1 on board 5R62572) is unknown or suspect set the control to mid-position.

3. Set the automatic load control potentiometer (8RV1 on board 8R62572) fully clockwise.

4. Connect a voltmeter between the test points designated + PA - on the rear panel of the case.

5. Connect an audio oscillator and attenuator pad across the microphone as shown in Drg 62570C3. Set the oscillator frequency and level as indicated in the diagram.

6. Connect a 50 Ω wattmeter, two envelope detectors, and an oscilloscope as shown in Drg 62570C3.

   OR

   Connect a 50 Ω wattmeter to the aerial connector and connect a high-quality oscilloscope across the wattmeter.

7. Set the AM-SSB switch to AM.

8. Operate the p.t.t. button and adjust the tuning inductor (L1) and the loading capacitor (C4) in that order for maximum power output and optimum linearity ensuring that the collector current is not allowed to exceed 1 ampere (330 millivolts on the voltmeter).

9. Adjust the carrier reinsertion control (5RV1) for maximum trace length on the linearity tracer (or perfect crossover on the high-quality oscilloscope).

10. Advance the automatic load control potentiometer (8RV1) clockwise until the power output is 12.5 watts (100 V p-p on high-quality oscilloscope).

11. Carefully readjust L1 and C4 for maximum power output and optimum linearity.

12. Set 8RV1 to give a power output of 12.5 watts (100 V p-p on high-quality oscilloscope). The collector should be in the vicinity of 800 mA (approximately 260 mV on the voltmeter).

13. Check the carrier level (by switching off the audio oscillator) and adjust 5RV1 as necessary to set the level at 6.25 watts (50 V p-p on high-quality oscilloscope).

14. Adjust C5 for minimum second harmonic output.

NOTE: A suitable tunable receiver can be used to monitor the second harmonic. The receiver should be coupled to the transmitter via a 22 pF capacitor and adjusted to give a convenient reading on the "S" meter or on an audio level meter connected across the loudspeaker.

End of Part

PART 3

AERIAL SYSTEMS

1. USE OF CORRECT AERIAL

The aerial system is as important as the transceiver in the performance of an installation and the full capability of the Teleradio SS70 cannot be realised without an efficient aerial system.

The Teleradio SS70 is designed for operation with the aerials listed in Part 1, Section 4 of this handbook under the heading "Accessory Items". These aerials are electrically matched to the transceiver and produce excellent results.

Other aerials, particularly those used in older installations, may prove unsatisfactory and can cause costly internal damage to the transceiver. The use of such aerials may also invalidate any guarantees on the transceiver.

In addition to the aerials for fixed, mobile, and portable installations as listed in Part 1, AWA can supply aerials for special applications such as in ships and ocean platforms. It is essential that the aerial suit the requirements of an installation and AWA will be pleased to advise on the aerial requirements for any special application.

Remember ! A 25-watt transmitter with an efficient aerial can outperform a 200-watt transmitter with an unsuitable aerial.

2. AERIAL IMPEDANCE

All of the recommended aerials are designed to present an impedance of 50 ohms to the transceiver; however minor variations can be produced by location, ground effect, and nearby objects. These variations are of small magnitude and will have little effect on the performance of the transceiver.

If possible a check of the voltage standing wave ratio at the transceiver end of the aerial feeder cable should be made before using an aerial. Suitable instruments are:

Kyoritsu Model K-109 Standing Wave Ratio Indicator
Bird "Thruline" Model 43 Directional Wattmeter

An aerial having a v.s.w.r. of greater than 1.5 to 1 must not be used for transmitting.

3. AERIALS FOR FIXED INSTALLATIONS

The recommended aerial for a fixed installation is a half-wave dipole fed at the centre via a 1:1 balun transformer and 50-ohm coaxial cable. The AWA Half-Wave Dipole Aerial Type 2Y64985 is such an aerial.

A separate aerial should be erected for each channel.

3.1 Half-Wave Dipole Aerial

The aerial is supplied as a kit and requires only the cutting to length of the two arms and the fitting of the end insulator assemblies. Information necessary for the determination of length is supplied with the kit.

The following points must be borne in mind when completing the aerial:

(i) The calculated length is the distance between the outer ends of the two arms.

(ii) The arms must be of equal length. Each arm should be measured from the middle of the centre assembly outwards to HALF the calculated length.

(iii) About six inches extra length must be allowed in each arm for attaching the end insulator assemblies.

3.2 Height of the Aerial

The characteristic impedance of a half-wave dipole aerial varies with height above ground. The angle of radiation also varies with height above ground.

When the aerial is about one-quarter wavelength high the characteristic impedance closely matches that of the transceiver and the angle of radiation is favourable for distances up to approximately 500 miles; therefore every effort should be made to place the centre of the aerial at that height. The length of each arm of the half-wave dipole aerial is very nearly equal to one-quarter wavelength and can be considered as being the recommended height for the aerial.

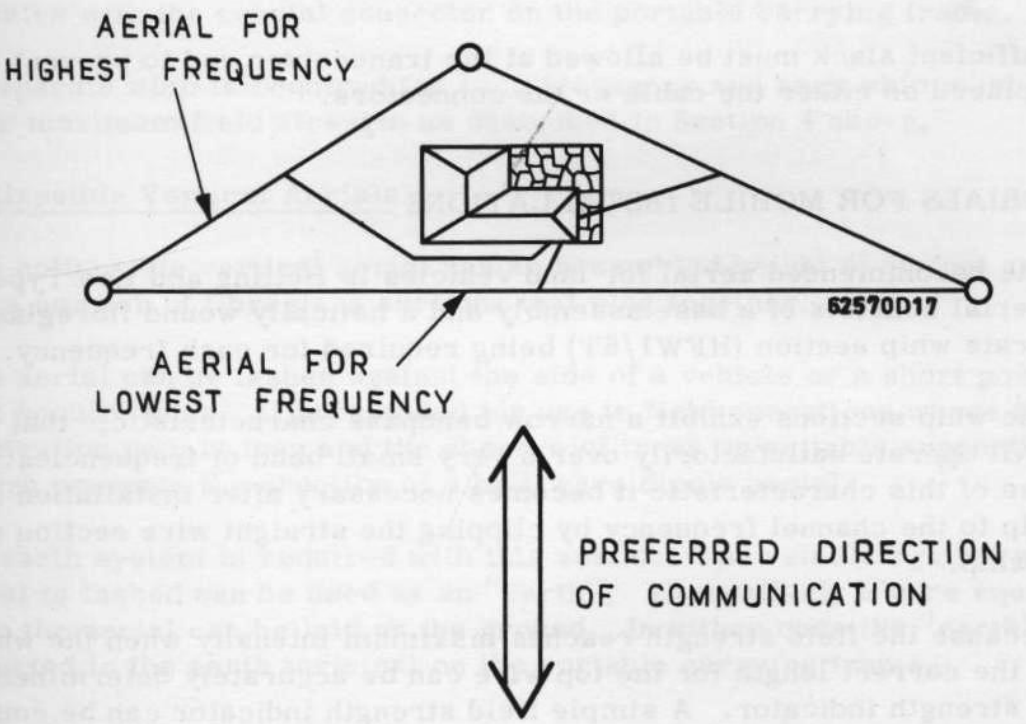
When the communication path exceeds 500 miles the height of the aerial must be increased to obtain a favourable angle of radiation, the height becoming critical as the distance increases. The height should be increased in proportion to the distance; for example, for a path of 750 miles the aerial height should be increased by a half. The following formula can be used to calculate the height:

$$\text{Required Height} = \frac{\text{Distance in Miles x Length of Each Arm}}{500}$$

3.3 Direction of the Aerial

A half-wave dipole aerial exhibits a directional radiation pattern, the direction of maximum gain being at right angles (broadside) to the axis of the aerial. However the pattern is reasonably broad and little loss occurs within the first forty-five degrees either side of the line of maximum radiation.

When locating the aerial supporting poles or towers an effort should be made to place the most important communication path within this 90-degree arc. In cases where two or three aerials are required the supports should form a flat triangle with the preferred direction of communication at right angles to the base of the triangle. A typical arrangement is shown in the diagram below.



TYPICAL ARRANGEMENT FOR THREE AERIALS

In all installations the aerials should be kept clear of obstructions, e.g. trees and power lines, otherwise the directivity and efficiency of the aerial will suffer.

3.4 Aerial Feeder Cable

The coaxial feeder cable in the aerial kit is extremely efficient and weatherproof, but is susceptible to mechanical damage by pressure, strain, and heat. The cable must be handled carefully and installed in a manner that affords maximum protection against damage.

Sharp bends must be avoided and the cable must be supported to prevent movement and strain. Where an air span is longer than 10 feet the cable should be supported by a wire catenary or a rigid support such as a metal pipe. Electricians cable clips are recommended for securing the cable to walls and so on inside a building.

Although the cable is weatherproof it can be damaged by excessive heat. The cable should be kept clear of sources of heat such as fireplaces, hot water systems, and exhaust fans.

Sufficient slack must be allowed at the transceiver end to prevent strain being placed on either the cable or the connectors.

4. AERIALS FOR MOBILE INSTALLATIONS

The recommended aerial for land vehicles is Belling and Lee Type HFW1/6. This aerial consists of a base assembly and a helically wound fibreglass whip, a separate whip section (HFW1/6T) being required for each frequency.

The whip sections exhibit a narrow bandpass characteristic; that is, the whip will operate satisfactorily over a very small band of frequencies. Because of this characteristic it becomes necessary after installation to tune the whip to the channel frequency by clipping the straight wire section at the top of the whip.

Because the field strength reaches maximum intensity when the whip is resonant the correct length for the top wire can be accurately determined by using a field strength indicator. A simple field strength indicator can be constructed by shunting a 0-1 mA meter with a r.f. diode and attaching a stiff wire about 12 inches long to each of the meter terminals. This instrument should then be set up about 15 feet away from the vehicle with the stiff wires forming a straight vertical line.

The top wire of the whip should be shortened about one-quarter of an inch at a time until the meter reading ceases to increase or just begins to decrease.

If a suitable instrument is available the voltage standing wave ratio of the aerial should be checked. This ratio should not exceed 1.5 to 1.

5. AERIALS FOR PORTABLE INSTALLATIONS

Three types of aerials are available for use with portable stations. These types are:

(i) Helically wound single-frequency whips

(ii) Collapsible vertical aerials.

(iii) End-fed wire aerials.

5.1 Helically Wound Single-Frequency Whips

The recommended whips are Belling and Lee Type HFW1/P which are similar to the whip sections used in mobile installations. The whip sections are shorter than the equivalent mobile whips and are fitted with a connector which mates with the coaxial connector on the portable carrying frame.

A separate whip is required for each frequency and each whip must be tuned for maximum field strength as described in Section 4 above.

5.2 Collapsible Vertical Aerials

The collapsible vertical aerial has an assembled height of 36 feet and consists of a number of fibreglass sections that plug together.

The aerial can be lashed against the side of a vehicle or a short post and does not require guys. It is intended for use in field operations where the communication path is long and the absence of trees or suitable supporting structures prevents the erection of a half-wave dipole aerial.

An earth system is required with this aerial. The vehicle against which the aerial is lashed can be used as an "earth"; alternatively a wire equal in length to the aerial can be laid on the ground. In either case the "earth" must be connected to the earth terminal on the portable carrying frame.

An aerial tuning unit MAC-2 must be used with the aerial to present the correct impedance of 50 ohms at the aerial connector of the transceiver.

5.3 End-Fed Wire Aerials

For operation on a single frequency, a quarter-wavelength of wire can be connected directly to the aerial terminal on the portable carrying frame. The free end of the aerial should be raised to about twenty feet using any convenient support, e.g. a tree or building. Insulation of the free end is necessary and can be provided by a porcelain "egg" insulator.

An earth system must be used with this aerial. A vehicle or ground wire can be used as described in Sub-Section 5.2 above.

For multi-channel operation an end-fed aerial can be used in conjunction with an aerial tuning unit MAC-2. In such installations the aerial should be about 30 feet long.

6. AERIALS FOR SPECIAL APPLICATIONS

In some installations the length and location of the aerial are determined by other than radio considerations. Such conditions are encountered in ships, ocean platforms, and large buildings, where the aerial is often some considerable distance from the transceiver.

In these cases the aerial is usually a fixed length of wire or a vertical self-supporting rod. Because such aerials are not of the electrical length that presents an impedance of 50 ohms to the transceiver it becomes necessary to install an aerial tuning unit to convert the impedance to 50 ohms.

The AWA Aerial Tuning Unit ATU-11 is designed for this purpose and can be remotely controlled for multi-channel operation from the channel selector of the transceiver. A power supply of 12 V d.c. or 24 V d.c. is required for the motor-driven switches in the unit.

End of Part

PART 4

THE BATTERY

1. AMPERE-HOUR RATING FOR FIXED INSTALLATIONS

The capacity (ampere-hours) will be dictated by the average current drain and the duration of usage. In cases where the transmitter duty cycle is low the average current drain will be about 150 milliamperes whereas in cases with a higher duty cycle the average current will approach 2 amperes. (The rating of 2 amperes is based on continuous operation with equal transmit and receive times.)

The estimated current drain should then be multiplied by the probable daily usage (in hours) to give the daily drain in ampere-hours. If this figure is then multiplied by the desired number of days between battery recharging, the result gives the required ampere-hour rating of the battery. Conversely, if the ampere-hour rating of an available battery is known, the number of days of available service can be calculated by dividing the rating by the drain.

A reputable battery manufacturer should be consulted to determine the style of battery best suited to an installation.

2. LOCATION IN FIXED INSTALLATIONS

The most popular type of battery for fixed installations is the lead-acid accumulator.

When such batteries are used they should be housed in a ventilated closet preferably located outside the room in which the transceiver is located. The battery closet should be vented to outside air because of the injurious effect of battery fumes on metal, paintwork, and fabrics. The actual location of the battery closet should be consistent with the shortest practical length for the battery leads.

3. BATTERY CABLES AND FUSES

The battery cables are supplied without fittings at the battery end. Lugs or spring clamps should be fitted to the leads to permit connection to the battery terminals.

Any surplus cable should be doubled back along the cable or formed into a neat coil, and then secured within the battery closet. Should it be necessary to extend the battery cables, the size of the additional cables should be such that the voltage drop in the "transmit" condition is less than 100 millivolts.

The transceiver ends of the cables are fitted with fuse holders that mate with leads coming from the transceiver case. A 10 A fuse must be fitted in each fuse holder.

Before mating the battery cables check the battery connections - the RED lead must connect to the POSITIVE terminal of the battery.

4. MAINTENANCE OF LEAD-ACID BATTERIES

The battery should not be left in a discharged condition for any appreciable length of time. Recharging is required when the specific gravity falls to 1.225.

IMPORTANT: The transceiver must not be switched on while the battery is connected to a charger.

The battery terminals should be kept free from corrosion. Any corrosive accumulation may be removed by water to which some household ammonia or baking soda has been added, the solution being applied by a stiff-bristle brush. Care should be taken to prevent either the solution or the corrosive material from entering the cells. Cell caps should be rinsed in the same solution to clear the vent holes.

Battery terminals and clamps should be polished bright with a wire brush and coated with a high quality petroleum jelly such as "Vaseline".

Water is evaporated from the electrolyte, but the acid is not. Therefore water must be added from time to time so that the plates are completely covered. The level should be checked at least once per week especially during hot weather.

Distilled water is preferable for replenishing but clear drinking water is an acceptable substitute. Bore water or water having a high mineral content must not be used. Too much water should not be added since the gassing that accompanies recharging may cause excessive splashing of the electrolyte on nearby objects.

A fully charged battery has a specific gravity of 1.280.

5. NICKEL-CADMIUM BATTERIES IN TRANSPORTABLE KIT

5.1 Characteristics

The characteristics of the nickel-cadmium cells used in the transportable kit differ considerably from those of the lead-acid batteries used with fixed or mobile installations; therefore a close study of the following notes is recommended.

When discharge is carried below one volt per cell a very rapid fall to zero volts occurs. Because of slight differences in cell capacity one cell may reach zero volts before another and this can result in cells reversing polarity. Polarity reversal causes no damage but should be avoided for maximum possible life.

Cycle life is at an optimum when over-discharge is avoided, recharging is performed regularly, and depth of discharge is kept as shallow as possible.

The self-discharge rate for unused cells is high for the first month, a remaining capacity of 70 per cent being normal. After the first month the capacity decreases only gradually, falling to about 60 per cent at the end of the fourth month.

Temperature is important to the life of nickel-cadmium cells particularly in regard to self-discharge which increases considerably at high temperatures. Permissible temperature ranges are as follows:

Charge:	+32 °F to +113 °F (0 °C to +45 °C)
Discharge:	-4 °F to +113 °F (-20 °C to +45 °C)
Storage:	-40 °F to +140 °F (-40 °C to +60 °C)

5.2 Storage

Before storage the cells should be given a normal charge. During storage the cells should be protected from dust accumulation across the terminals and from shorting terminals.

After storage for prolonged periods the cells will have lost some capacity because of self-discharge. Full capacity will be regained after two or three cycles of charge and discharge.

5.3 Service and Recharging Periods

The conditions of service can differ widely in portable applications; therefore it is not possible to lay down specific times of expected service for completely charged batteries. Because recharging depends upon the state of charge of the batteries it is also impossible to lay down exact recharging times.

The following notes will be of assistance in avoiding complete discharge and overcharge, and their observance will result in reliable operation of the transceiver and long life for the cells.

(i) A fully charged battery will provide two and three-quarter hours of CONTINUOUS 2-WAY COMMUNICATION assuming equal transmit and receive times.

(ii) A fully charged battery will provide 30 hours of receiving.

(iii) For every hour of continuous 2-way communication the battery requires 5 hours of recharging.

(iv) For every hour of receiving the battery requires one-half hour of recharging.

(v) The duration of any recharging period must not exceed 14 hours. (The apparent contradiction of Note (iv) is due to the rounding off of the recharging rate to one-half hour for every hour of operation.)

(vi) When the state of charge of a battery is unknown, the battery can be recharged for 12 hours.

(vii) The recharging rate is 450 mA and must not be exceeded. The AWA Battery Charger BC-1 produces the correct charging rate.

IMPORTANT: The transceiver must not be switched on while the battery charger is connected to the battery.

End of Part

PART 5

INSTALLATION AND OPERATION

1. INSTALLATION IN A BUILDING

The transceiver should be located away from direct sunlight in a position that affords protection against mechanical damage, a wall shelf being considered ideal. In such locations the microphone clip can be mounted at a convenient height on the wall near the shelf.

Where a wall shelf conflicts with the room furnishings a telephone table or desk can be used with the microphone clip secured to the furniture piece within easy reach of the operator.

Because of the comparative lightness of the transceiver it is recommended that some means be employed to prevent accidental dragging on to the floor.

For details concerning batteries and battery cables refer to Part 4 of this handbook.

2. INSTALLATION IN A VEHICLE

All hardware items and the aerial cable for the installation of the transceiver in a land vehicle are contained in Mobile Installation Kit Type 1R62571. A list of the items in this kit appears in Part 8 of this handbook.

IMPORTANT: The transceiver is designed for operation from NEGATIVE EARTH electrical systems. If the vehicle has a POSITIVE EARTH system a separate battery must be used to supply the transceiver; this battery must not be connected in any way to the electrical wiring in the vehicle.

The location of the transceiver in the vehicle will depend upon the type of vehicle and the personal comfort of the operator, but the recommended arrangement is to fit the mounting cradle horizontally below the fascia panel in a position which gives easy access to the operating controls. The microphone clip is then mounted conveniently close to the operator's position.

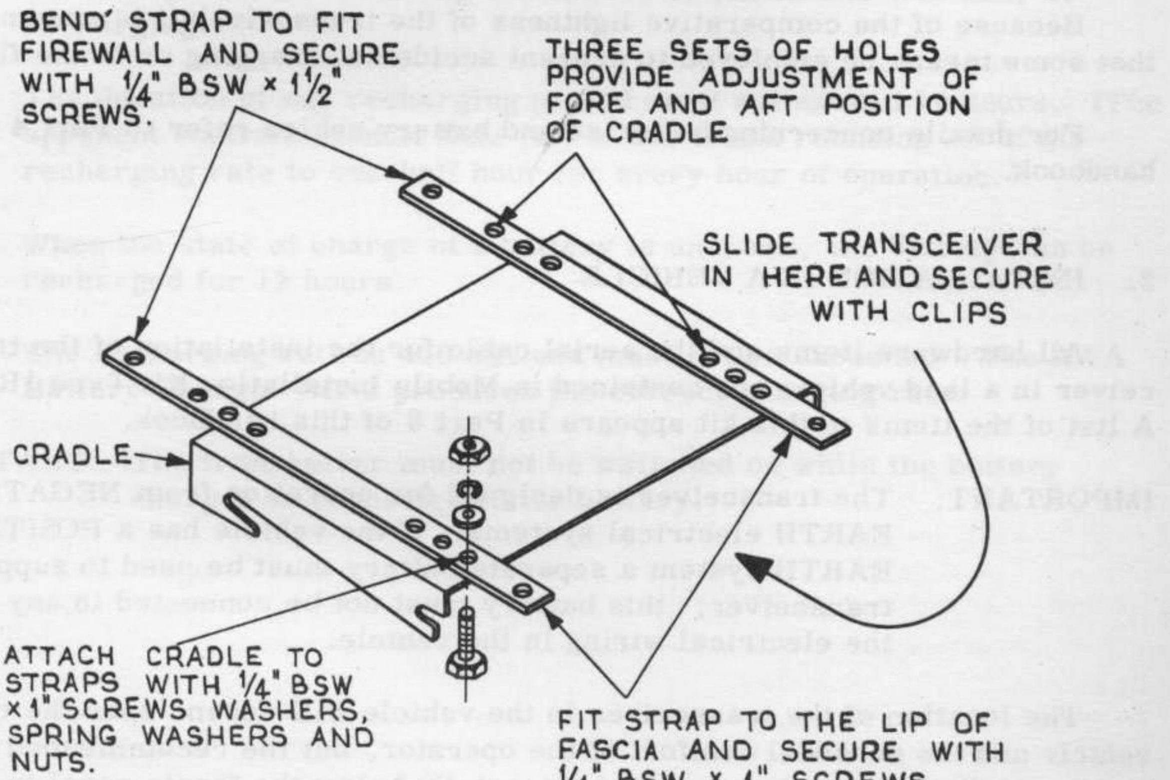
Fitting details for the mounting cradle are shown in the drawing on the next page.

The aerial cable is fitted with a coaxial connector at the transceiver end and should be cut to the shortest practical length after routing from the transceiver to the aerial.

When the transceiver is supplied from the vehicle battery, the battery cables should be connected to the BATTERY TERMINALS and any surplus length should be doubled back along the cable or formed into a neat coil and then secured to the firewall behind the fascia panel. Solderless lugs should be fitted; cable fracture adjacent to the lugs may result from the use of soldered fittings.

Before connecting the battery cables to the transceiver check that the cable polarity is correct - RED IS POSITIVE. A 10 A fuse must be fitted in each fuse holder.

Refer to Part 3 of this handbook for details concerning the whip aerials used in mobile installations.



INSTALLATION OF CRADLE

3. PREPARATION FOR PORTABLE SERVICE.

Four steps are required to prepare a transceiver for portable service. These steps are:

(i) Fitting of eleven nickel-cadmium cells into the battery compartment of the carrying frame.

(ii) Fitting of the transceiver into the carrying frame.

(iii) Initial charging of the nickel-cadmium battery bank.

(iv) Connection of an aerial. (Refer Part 3, Section 5)

The procedure for fitting the nickel-cadmium cells into the battery compartment follows. (See also the diagrams on the next page)

1. Arrange two banks each of five cells as shown in the diagram and bind each bank with adhesive tape.

2. Make the series connections between the cells in each bank.

3. Solder a lead about four inches long to the +ve terminal of each bank.

4. Place the lower bank in the position shown in the diagram and solder the black lead from the battery charging socket to the -ve terminal of the bank.

5. Fit insulating strip A over the terminals of the cells in the lower bank.

6. Place insulating strip B in position and partially insert the upper bank being careful to avoid short-circuiting of any cell. Complete the series connection from the +ve terminal of the lower bank to the -ve terminal of the upper bank. Push the upper bank into position.

7. Partially insert the single cell. Complete the series connection from the +ve terminal of the upper bank to the -ve terminal of the cell. Connect the red lead from the battery charging socket to the +ve terminal of the cell. Push the cell into position.

8. Clamp the upper and lower banks with bracket C.

Before securing the transceiver in the frame, connect the aerial lead to the appropriate connector at the rear of the transceiver and then connect the battery leads making sure that a 5 A ANTI-SURGE fuse is fitted in each fuse holder. Then engage the rear bollards of the transceiver in the sloping notches in the sides of the frame and clip the spring fasteners on the frame over the front bollards of the transceiver.

The battery bank must be charged for TWELVE HOURS at 450 mA. Battery charger BC-1 produces the correct charging rate and is fitted with a plug which engages with the 5-way socket on the frame.

The preparation for portable service is completed by attaching an aerial. Turn to Part 3, Section 5 for further details.

Refer to Part 4, Sub-Section 5.3 for information concerning discharge and recharging periods of the battery bank.

4. THE CONTROLS AND THEIR USE

AM/SSB Switch

The AM/SSB switch changes the mode of operation of the transceiver to permit communication with stations using either amplitude modulation (AM) or single sideband (SSB).

Most of the old systems employ amplitude modulation; the newer systems employ single sideband. This switch must be set to suit the station you are working.

FINE TUNE Control (SS70 only)

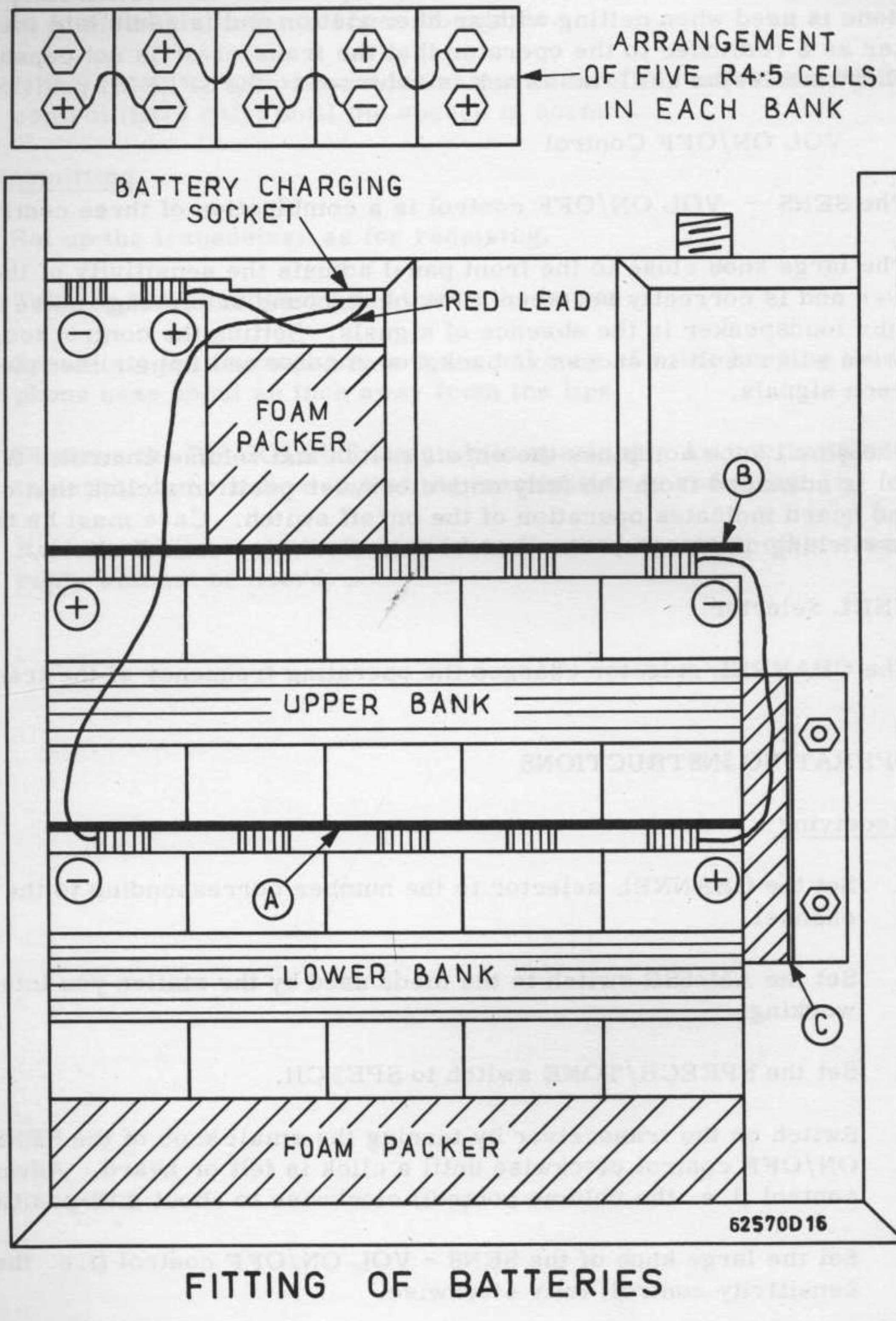
The FINE TUNE control is used during reception of a single sideband signal to make the speech sound natural. At the same time the control adjusts the transceiver precisely to the frequency of the other station. This precise adjustment of frequency is known as "netting".

In an incorrectly adjusted transceiver the speech is either unintelligible or unnaturally high pitched. In either case careful adjustment of the control restores the speech to normal.

If the station being worked is an AWA SS70 or an AWA SS220, netting can be adjusted while receiving a tone transmission from the station. If the tone has a bubbling sound the FINE TUNE control should be adjusted until the burble disappears. This method is extremely accurate and best results are obtained when the volume is at a high level. It may require patience and experience before the operator can readily distinguish the burble and its disappearance when the control reaches the correct setting.

SPEECH/TONE Control

The SPEECH/TONE control must be set at the SPEECH position for normal operation of the transceiver. The TONE position provides an intentionally



FITTING OF BATTERIES

distorted tone from the transmitter when the press-to-talk button is operated. This tone is used when netting with another station and is audible in the loudspeaker as a reminder to the operator that the transceiver is not capable of speech transmission until the switch is returned to the SPEECH position.

SENS - VOL ON/OFF Control

The SENS - VOL ON/OFF control is a combination of three controls.

The large knob close to the front panel adjusts the sensitivity of the receiver and is correctly set when a low background or "frying" noise is heard from the loudspeaker in the absence of signals. Setting the control too far clockwise will result in excessive background noise and impair the intelligibility of speech signals.

The small knob combines the on/off switch and volume control. When the control is advanced from the fully anti-clockwise position a click that can be felt and heard indicates operation of the on/off switch. Care must be taken when switching off to rotate the control anti-clockwise until it clicks.

CHANNEL Selector

The CHANNEL selector changes the operating frequency of the transceiver.

5. OPERATING INSTRUCTIONS

5.1 Receiving

1. Set the CHANNEL selector to the number corresponding to the desired channel.
2. Set the AM/SSB switch to the mode used by the station you intend working.
3. Set the SPEECH/TONE switch to SPEECH.
4. Switch on the transceiver by turning the small knob of the SENS - VOL ON/OFF control clockwise until a click is felt or heard. Advance the control (i.e. the volume control) clockwise to about mid-position.
5. Set the large knob of the SENS - VOL ON/OFF control (i.e. the sensitivity control) fully clockwise.
6. When the station is heard adjust the volume control to the desired level.

7. Turn the sensitivity control anti-clockwise until the background noise is just audible in the absence of signals.

8. If the received speech sounds unnatural carefully adjust the FINE TUNE control (SS70 only) until the speech is normal.

5.2 Transmitting

1. Set up the transceiver as for receiving.

2. Take up the microphone and press the button.

3. Speak into the microphone in a normal tone of voice keeping the microphone case about an inch away from the lips.

4. Observe the RF OUTPUT lamp while speaking. An intermittent blinking of the lamp indicates that the transmitter is radiating.

5. Release the microphone button when finished speaking otherwise the reply will not be heard.

End of Part

PART 6

ADDITION OF AMPLITUDE-MODULATION COMPATIBILITY KIT

The amplitude-modulation compatibility kit consists of printed board 6R62572 which surmounts on printed board 5R62572.

1. FITTING OF PRINTED BOARD

1. Unsolder the following connections on printed board 5R62572:

Lead Identification	Pin on Board 5R62572
Slate ex Pin A on Board 5R62572	Z
Blue on White ex Wiring Form	Unmarked
Red on White ex Wiring Form	Unmarked
Coaxial - Orange	Q
Coaxial - Outer	U
Coaxial - Blue/Red	M*
Coaxial - Outer	T
Screened Lead - Red	C

* Leave other coaxial lead attached to M

2. Slip a bead over the pins on board 5R62572 that register with holes A, B, F, and M on board 6R62572.

3. Fit board 6R62572 over the beads and solder the four pins that project through the board at holes A, B, F, and M.

4. Make the following connections using the leads supplied with the board:

Lead Identification	Pin on Board 6R62572	Pin on Board 5R62572
Yellow (1.1/4")	C	Y
Slate (2.1/4")	G	Z
Yellow on white (5.1/4")	K	C
Coaxial (5.3/4")	M	J
Coaxial - Outer	Earth	H
Screened Lead (14")	L	O) Board
Screen	Not connected	P) 3R62572

5. Reconnect the following leads:

Lead Identification	Pin on Board 6R62572
Slate ex Pin A on Board 5R62572	H
Blue on White ex Wiring Form	A
Red on White ex Wiring Form	B
Coaxial - Orange	E
Coaxial - Outer	D
Coaxial - Blue/Red	N
Coaxial - Outer	Earth
Screened Lead - Red	J

6. Transfer the coaxial lead (inner) from Pin B on board 3R62572 to Pin A on the same board.

2. FILTER PERFORMANCE TEST

The filters are aligned during routine production testing at the factory and should not require any further adjustment; however the following test should be performed before placing the transceiver in service.

1. Connect an a.c. voltmeter between pin R on board 3R62572 and chassis.

2. Set the sensitivity control fully clockwise and set the AM-SSB switch to SSB.

3. Connect a signal generator to the aerial connector. Set the signal generator to a channel frequency by adjusting the frequency for a zero beat in the loudspeaker of the transceiver.

4. Set the AM-SSB switch to AM.

5. Set the output level from the generator to 3 μV and modulate the signal with a 1 kHz tone to a depth of 30%.

6. Adjust the volume control to give a convenient reference reading on the voltmeter.

7. Carefully detune the signal generator either side of the channel frequency and note the frequencies at which the output level falls to one-half the reference level of step 6. These frequencies should be equally displaced from the channel frequency.

   If the filter is asymmetric:

   (a) reset the signal generator to the channel frequency as described in steps 2 and 3,
   (b) reset the AM-SSB switch to AM,
   (c) carefully readjust the slugs in L5, L4, L3, L2, and L1 in that order until maximum output indication is obtained, and
   (d) re-test the filter.

End of Part

STAGE GAIN TABLE

Reference Level: +450 mV across 3C31

Injection Point	Signal Frequency	Signal Level	Remarks
3VT3 Collector	455 kHz	600 mV	
3VT3 Base	455 kHz	4.5 mV	
3VT2 Collector	455 kHz	48 mV	10:1 stepdown in 3L2
Terminal 3G	455 kHz	250 μV	
Terminal 3A	455 kHz	32 μV	S/N approx. 40 dB
Terminal 2C	455 kHz	5.6 μV	S/N approx. 35 dB
Terminal 2D	* 2020 kHz	75 μV	
	* 4010 kHz	80 μV	
	* 6880 kHz	90 μV	
	* 10000 kHz	100 μV	
Terminal 1K	* 2020 kHz	5 μV	) Apparent gain between
	* 4010 kHz	5.6 μV	) 1A and 1K due to
	* 6880 kHz	5.6 μV	) impedance step-up in
	* 10000 kHz	6.3 μV	) r.f. filter
Terminal 1A (or aerial connector)	* 2020 kHz	1.4 μV	
	* 4010 kHz	1.4 μV	
	* 6880 kHz	1.8 μV	
	* 10000 kHz	3.6 μV	

* Actual test frequencies; interpolate for expected performance at other frequencies

5.2 A.G.C. and Audio Stages

The gain in each stage is assessed by direct measurement of voltages at a specific point in the circuit under conditions of reference level at another point in the circuit.

The reference level is +450 mV across 3C31 and in practice the a.g.c. and audio levels can be measured while the i.f. stages are being checked.

STAGE GAIN TABLE

Reference Level: +450 mV across 3C31

Measuring Point	Level	Remarks
3VT4 Base	+1.4 V *	Rectified bias
3VT4 Emitter	+450 mV *	
Terminal 3R	2.8 V r.m.s. *	Generator set to 454 kHz

* With respect to chassis

6. STAGE GAINS IN THE SSB TRANSMITTING MODE

The stage gains in the transmitting mode can be assessed by determining the level necessary at specific points in the circuit to produce a reference level at another point in the circuit, i.e. signal substitution.

The reference level is 100 mV r.m.s. between terminal G on board 1R62572 and chassis, i.e. the driver input.

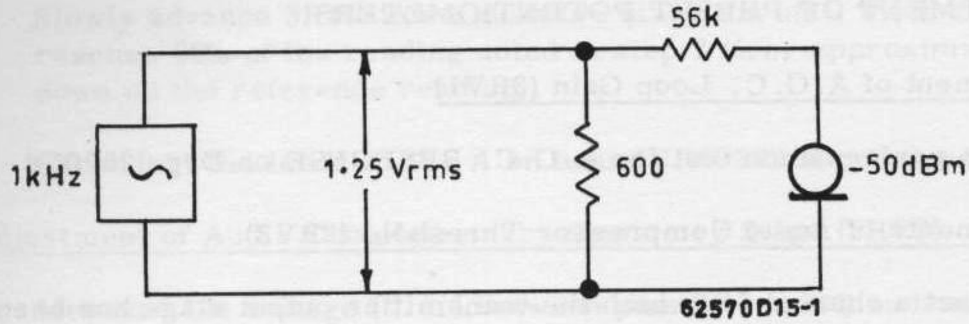
STAGE GAIN TABLE

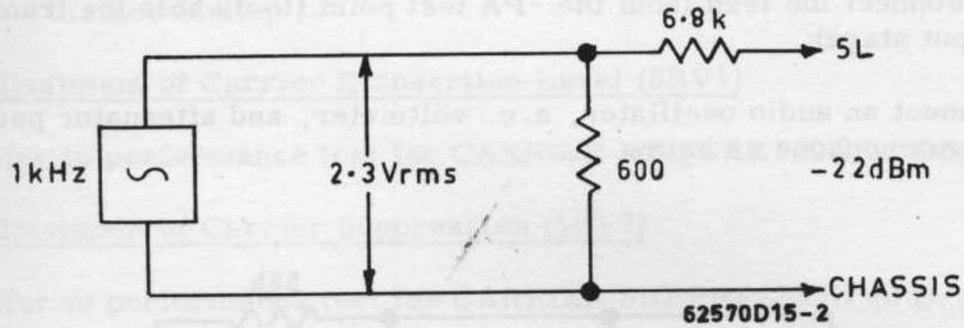
Reference Level: 100 mV r.m.s. at terminal 1G.

Injection Point	Signal Frequency	Signal Level	Remarks
Across microphone	1 kHz	-50 dBm	Audio input level
Terminal 5L	1 kHz	-22 dBm	Sideband generator input
Terminal 5J	454 kHz	20 to 25 mV*	Sideband filter input
Terminal 3A	454 kHz	15 ±5 mV*	Sideband filter output
Terminal 3G	454 kHz	45 ±15 mV*	Balanced modulator input
Terminal 2D	Channel	15 to 20 mV*	Balanced modulator output
Terminal 1K	Channel	15 ±5 mV*	R.F. Amplifier input

* Open circuit e.m.f. from 50 Ω source

The recommended methods for injecting the kHz tone are as follows:





7. ALIGNMENT OF 455 kHz I.F. STAGES

1. Connect an a.c. voltmeter between pin R on board 3R62572 and chassis.

2. Set the sensitivity control fully clockwise and set the AM-SSB switch to SSB.

3. Select the lowest frequency channel.

4. Connect a signal generator to the aerial connector and set the generator to the suppressed carrier frequency ±1 kHz (+ for USB, - for LSB).

5. Set the signal level to about 10 mV and adjust the frequency to produce a tone of about 1 kHz in the loudspeaker.

6. Reduce the signal level to 1 μV and adjust the volume control to give a convenient reading on the a.c. voltmeter.

7. Adjust the slugs in 3L3, 3L2, and 3L1 on board 3R62572 in that order for maximum reading on the voltmeter.

8. ADJUSTMENT OF PRESET POTENTIOMETERS

8.1 Adjustment of A.G.C. Loop Gain (3RV1)

Refer to performance test for A.G.C. RESPONSE on Drg 62570C4.

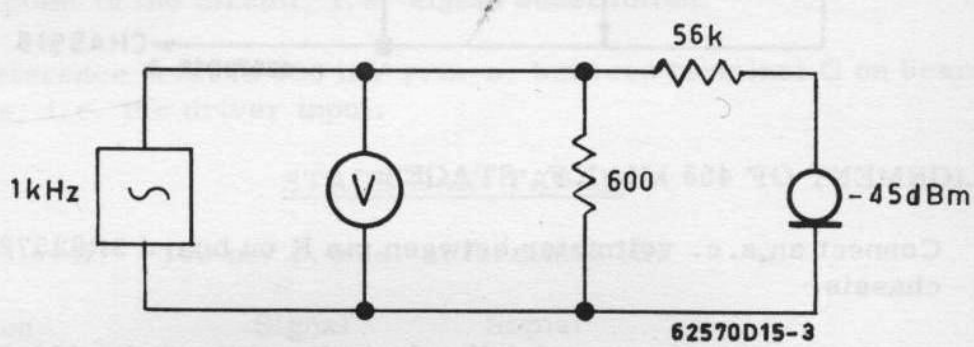
8.2 Adjustments of Audio Compressor Threshold (3RV2)

1. Select a channel for which the transmitter output stage has been properly tuned and connect a 50 Ω dummy load to the aerial connector.

   OR

   Disconnect the lead from the -PA test point (to disable the transmitter output stage).

2. Connect an audio oscillator, a.c. voltmeter, and attenuator pad across the microphone as below.



3. Set the frequency to 1 kHz and adjust the level at the input of the pad to 2.3 V r.m.s. (equal to -45 dBm at the microphone).

4. Connect an a.c. voltmeter between pin R on board 3R62572 and chassis.

5. Set 3RV2 fully clockwise.

6. Operate the p.t.t. button and note the reading on the a.c. voltmeter.

7. Set 3RV2 fully anti-clockwise. (This causes the meter reading to fall.)

8. Slowly advance 3RV2 in a clockwise direction until the meter reading reaches 95% of the reading noted in step 7 (i.e. approximately 0.5 dB down on the reference reading).

9. Reconnect the leads to Pin A on board 7R62572 if necessary.

8.3 Adjustment of Audio Complementary Symmetry Stage (3RV3)

1. Measure the voltage (d.c.) between pins S(+) and Q on board 3R62572.

2. Transfer the +ve side of the meter to the +ve end of 3C54.

3. Adjust 3RV3 until the meter reading is exactly one-half the reading obtained in step 1.

8.4 Adjustment of Carrier Reinsertion Level (5RV1)

Refer to performance test for CARRIER REINSERTION on Drg 62570C6.

8.5 Adjustment of Carrier Suppression (5RV2)

Refer to performance test for CARRIER SUPPRESSION on Drg 62570C6.

8.6 Adjustment of A.L.C. Sensor (8RV1)

Refer to performance test for POWER OUTPUT on Drg 62570C6.

8.7 Adjustment of P.A. Idling Current (8RV2)

Refer to performance test for P.A. IDLING CURRENT on Drg 62570C6.

9. ADJUSTMENT OF CHANNEL FREQUENCY

To ensure that the actual frequency of each channel is within the tolerance stipulated by the licensing authority it is necessary to employ a frequency counter of appropriate accuracy.

If such an instrument is not available the frequency of each channel can be adjusted with sufficient accuracy for reliable communication by "netting" to the base station of the radiotelephone system.

The method of adjusting the channel frequency is described in Sub-Sections 9.1 and 9.2 below.

9.1 Frequency Adjustment with a Counter

1. Connect a 50 Ω dummy load to the aerial connector.

2. Couple the frequency counter to the dummy load via a suitable capacitor.

3. Set the FINE TUNE control to mid-position.

4. Set the AM-SSB switch to AM.

5. Operate the p.t.t. button and adjust the appropriate trimmer (2C7, 2C8, and so on) adjacent to the channel crystal on board 2R62572 until the correct frequency count is obtained. (In some cases it may be necessary to add a 15 pF capacitor (ceramic, disc, NPO) in parallel with the trimmer to extend the range of adjustment.)

9.2 Netting to Another Station

1. Set the FINE TUNE control to mid-position.

2. Set the AM-SSB switch to SSB.

3. While receiving a speech signal from the other station carefully adjust the appropriate trimmer (2C7, 2C8, and so on) until the speech sounds natural.

NOTE: The mode of transmission from the base station can be A3j, A3h, or A3. For A3h and A3 transmissions, correct adjustment of the trimmer coincides with the disappearance of the carrier beat note, i.e. zero beat.

End of Part

PART 8

COMPONENT SCHEDULE

1. EXPLANATORY NOTES

The component schedule is laid out as follows:

Column 1	Circuit Reference Number
Column 2	Description
Column 3	Component Manufacturer and Reference
Column 4	AWA Stock Code Number

Because of unavailability at the date of manufacture, some components in the equipment may differ slightly from the components listed in the schedule. These substitute components do not degrade the performance of the equipment.

When ordering replacement components from AWA, the type number of the unit (or sub-unit) and the circuit reference number of the component should be quoted in addition to the details appearing in the component schedule. This information will ensure the supply of a suitable substitute component should the listed component be obsolete or unsuitable.

2. R.F. AMPLIFIER 1R62572

1C1	1000 pF ±20%, 500 VDCW, ceramic disc	Ducon CDS High-K	225027
1C2	0.047 μF +80 -20%, 25 VDCW, ceramic, disc barrier layer	Ducon CDR "Redcap"	226822
1C3	0.1 μF ±10%, 250 VDCW, polyester, radial leads	Philips C280AE/A	227096
1C4	2.2 μF +50 -20%, 35 VDCW, tantalum	STC TAG	227936
1C5	Not used		
1C6	0.047 μF +80 -20%, 25 VDCW, ceramic, disc, barrier layer	Ducon CDR "Redcap"	226822
1C7	100 pF ±20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	222215
1R1	100 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	616045
1R2	47 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	614994
1R3	47 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	603123
1R4	47 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	603123
1R5	Not used		

R.F. Amplifier 1R62572 (continued)

1R6	470 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	606615
1R7	100 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	616045
1R8	47 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	614994
1R9	47 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	603123
1R10	Not used		
1R11	1.2 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608338
1RLA	Not used		
1RLB	Not used		
1RLC	Not used		
1RLD	Not used		
1RLE	Relay	Siemens V23012/A0002/A004	
	Alternative type	V23012/A0102/A004	
1TR1	Transformer	AWA 1LH65382	
1VT1	Transistor	RCA 3N159	
1VT2	Transistor	RCA 3N159	

3. MIXER AND OSCILLATOR 2R62572

2C1	680 pF ±5%, 100 VDCW, polystyrene	Allied Capacitors	
2C2	100 pF ±5%, 100 VDCW, polystyrene	Allied Capacitors	
2C3	0.1 μF +80 -20%, 25 VDCW, ceramic, disc, barrier layer	Ducon CDR "Redcap"	227082
2C4	0.01 +80 - 20%, 25 VDCW, ceramic, disc, barrier layer	Ducon CDR "Redcap"	226374
2C5	Not used		
2C6	0.01 μF +80 -20%, 25 VDCW, ceramic, disc, barrier layer	Ducon CDR "Redcap"	226374
2C7	2 to 20 pF, variable, trimmer	Philips C010 EA/20E	231028
2C8	2 to 20 pF, variable, trimmer	Philips C010 EA/20E	231028
2C9	2 to 20 pF, variable, trimmer	Philips C010 EA/20E	231028
2C10	Not used		
2C11	2 to 20 pF, variable, trimmer	Philips C010 EA/20E	231028
2C12	2 to 20 pF, variable, trimmer	Philips C010 EA/20E	231028
2C13	2 to 20 pF, variable, trimmer	Philips C010 EA/20E	231028

Mixer and Oscillator 2R62572 (continued)

2MR1	Diode, germanium	Philips OA47	597212
2MR2	Diode, germanium	Philips OA47	597212
2MR3	Diode, germanium	Philips OA47	597212
2MR4	Diode, germanium	Philips OA47	597212
2R1	68 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	615517
2R2	470 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	606615
2R3	220 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	605276
2R4	100 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	604069
2R5	Not used		
2R6	680 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	607308
2R7	470 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	606615
2TR1	Transformer	AWA 1LH65383	
2TR2	Transformer	AWA 1LH65383	
2VT1	Transistor	AWV AS302	
2VT2	Transistor	AWV AS302	

4. I.F. AUDIO AND A.G.C. AMPLIFIER 3R62572

3C1	0.0033 μF +100 -20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	225785
3C2	Not used		
3C3	330 pF ±5%, 125 VDCW, polystyrene	Allied Capacitors TCS 112	223729
3C4	Not used		
3C5	Not used		
3C6	0.1 μF +80 -20%, 25 VDCW, ceramic, disc, barrier layer	Ducon CDR "Redcap"	227082
3C7	10 μF +50 -20%, 25 VDCW, tantalum	STC TAG	228788
3C8	0.001 μF ±5%, 50 VDCW, styroseal	Ducon DFB	
3C9	0.0033 μF +100 -20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	225785
3C10	Not used		
3C11	12 pF ±1%, 500 VDCW, ceramic, disc	Ducon CDS NPO	220564
3C12	0.1 μF +80 -20%, 25 VDCW, ceramic, disc, barrier layer	Ducon CDR "Redcap"	227082
3C13	330 pF ±5%, 125 VDCW, polystyrene	Allied Capacitors TCS 112	223729

I. F. Audio and A. G. C. Amplifier 3R62572 (continued)

3C14	10 μF +50 -20%, 25 VDCW, tantalum	STC TAG	228788
3C15	Not used		
3C16	0.0033 μF +100 -20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	225785
3C17	12 pF ±1%, 500 VDCW, ceramic, disc	Ducon CDS NPO	220564
3C18	330 pF ±5%, 125 VDCW, polystyrene	Allied Capacitors TCS 112	223729
3C19	10 μF +50 -20%, 25 VDCW, tantalum	STC TAG	228788
3C20	Not used		
3C21	3.3 pF ±0.25 pF, 500 VDCW, ceramic, disc	Ducon CDS NPO	220159
3C22	10 μF +50 -20%, 25 VDCW, tantalum	STC TAG	228788
3C23	0.0033 μF +100 -20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	225785
3C24	560 pF ±5%, 100 VDCW, styroseal	Ducon DFB 118	224485
3C25	Not used		
3C26	220 pF ±20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	223303
3C27	10 μF +50 -10%, 16 VDCW, electrolytic, tubular, d/e	Philips C426AR/E10	228769
3C28	0.1 μF +80 -20%, 25 VDCW, ceramic, disc, barrier layer	Ducon CDR "Redcap"	227082
3C29	0.001 μF ±20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	225027
3C30	Not used		
3C31	1 μF ±10%, 35 VDCW, tantalum, CS13	Sprague 150D	227739
3C32	200 μF +50 -10%, 6.4 VDCW, electrolytic, tubular, d/e	Philips C426AR/C200	
3C33	Not used		
3C34	10 μF +50 -10%, 16 VDCW, electrolytic, tubular, d/e	Philips C426AR/E10	228769
3C35	Not used		
3C36	0.1 μF +80 -20%, 25 VDCW, ceramic, disc	Ducon CDR "Redcap"	227082
3C37	25 μF +50 -10%, 25 VDCW, electrolytic, tubular, d/e	Philips C426AR/F25	229432
3C38	1 μF +50 -20%, 35 VDCW, tantalum	STC TAG	227850
3C39	10 μF +50 -10%, 16 VDCW, electrolytic, tubular, d/e	Philips C426AR/E10	228769
3C40	Not used		

I. F. Audio and A. G. C. Amplifier 3R62572 (continued)

3C41	0.047 μF ±10%, 250 VDCW, polyester, radial leads	Philips C280AE/A	226784
3C42	10 μF +50 -20%, 25 VDCW, tantalum	STC TAG	228788
3C43	0.001 μF ±20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	225027
3C44	10 μF +50 -10%, 16 VDCW, electrolytic, tubular, d/e	Philips C426AR/E10	228769
3C45	Not used		
3C46	47 μF ±10%, 6 VDCW, tantalum, CS13	Sprague 150D	229556
3C47	125 μF +50 -10%, 16 VDCW, electrolytic, tubular, d/e	Philips C426AR/E125	229724
3C48	4 μF +50 -10%, 40 VDCW, electrolytic, tubular, d/e	Philips C426AR/G4	228159
3C49	10 μF +50 -10%, 16 VDCW, electrolytic, tubular, d/e	Philips C426AR/E10	228769
3C50	0.001 μF ±20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	225027
3C51	4 μF +50 -10%, 40 VDCW, electrolytic, tubular, d/e	Philips C426AR/G4	228159
3C52	39 pF ±5%, 500 VDCW, ceramic, tubular	Ducon CTR N750	221290
3C53	6.4 μF +50 -10%, 25 VDCW, electrolytic, tubular, d/e	Philips C426AR/F6.4	228330
3C54	250 μF +50 -10%, 16 VDCW, electrolytic, tubular, d/e	Philips C437AR/E250	229756
3L1	Inductor 455 kHz	AWA CP No. 54146	
3L2	Inductor 455 kHz	AWA CP No. 54146	
3L3	Inductor 455 kHz	AWA CP No. 54146	
3MR1	Diode, silicon	STC 1N914	597291
3MR2	Diode, germanium	Philips OA47	597212
3MR3	Diode, silicon	STC IN914	597291
3MR4	Diode, silicon	STC IN914	597291
3MR5	Not used		
3MR6	Diode, silicon	STC IN914	597291
3MR7	Diode, germanium	Philips OA47	597212
3MR8	Diode, zener 9.1 V ±5%, 1 W	Motorola IN4739A	597156
3MR9	Diode, silicon	STC IN914	597291

I.F. Audio and A.G.C. Amplifier 3R62572 (continued)

3R1	1 M Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	
3R2	2.2 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	609472
3R3	680 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	607308
3R4	47 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	603123
3R5	10 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	612071
3R6	330 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	605891
3R7	47 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	603123
3R8	390 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	
3R9	22 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	613681
3R10	47 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	603123
3R11	1 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608062
3R12	2.2 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	609472
3R13	100 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	604069
3R14	1 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608062
3R15	Not used		
3R16	33 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	614492
3R17	8.2 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	611869
3R18	100 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	604069
3R19	1 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608062
3R20	10 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	612071
3R21	Not used		
3R22	3.3 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	610326
3R23	47 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	614994
3R24	100 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	616045
3R25	100 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	604069
3R26	3.3 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	610326
3R27	1 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608062
3R28	4.7 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	610976
3R29	1 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608062
3R30	Not used		
3R31	4.7 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	610976
3R32	10 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	612071
3R33	56 Ω ±5%, 1/4 W, carbon film	Philips B8-305-05B	603366
3R34	220 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	605276
3R35	Not used		

I.F. Audio and A.G.C. Amplifier 3R62572 (continued)

3R36	33 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	614492
3R37	47 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	614994
3R38	220 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	605276
3R39	2.7 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	609891
3R40	Not used		
3R41	2.2 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	609472
3R42	47 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	603123
3R43	6.8 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	611551
3R44	1 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608062
3R45	Not used		
3R46	10 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	612071
3R47	100 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	616045
3R48	6.8 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	611551
3R49	820 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	
3R50	Not used		
3R51	10 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	612071
3R52	2.2 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	609472
3R53	330 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	
3R54	820 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	
3R55	Not used		
3R56	18 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	
3R57	33 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	614492
3R58	1 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608062
3R59	1.8 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	609095
3R60	Not used		
3R61	2.7 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	609891
3R62	15 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	602026
3R63	120 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	604381
3R64	5.6 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	611317
3R65	4.7 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	610976
3R66	6.8 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	611551
3R67	1 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608062
3R68	3.9 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	610547
3R69	470 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	606615
3R70	Not used		
3R71	4.7 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	610976
3R72	3.9 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	610547

I. F. Audio and A. G. C. Amplifier 3R62572 (continued)

3R73	560 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	606857
3R74	47 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	614994
3R75	Not used		
3R76	39 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	614701
3R77	270 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	605656
3R78	1.8 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	609095
3R79	390 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	606268
3RV1	1 kΩ ±20%, 1/4 W, moulded, carbon, variable, rotary, linear, printedboard	Plessey MP dealer	620043
3RV2	10 kΩ ±20%, 1/4 W, moulded, carbon, variable, rotary, linear, printed board	Plessey MP dealer	620206
3RV3	47 kΩ ±20%, 1/4 W, moulded, carbon, variable, rotary, linear, printed board	Plessey MP dealer	620342
3VT1	Transistor	AWV AS200	906377
3VT2	Transistor	AWV AS302	
3VT3	Transistor	AWV AS302	
3VT4	Transistor	AWV AS148	
3VT5	Not used		
3VT6	Transistor	AWV AS148	
3VT7	Transistor	AWV AS148	
3VT8	Transistor	Fairchild 2N3642	906681
3VT9	Transistor F.E.T.	Fairchild 2N4360	
3VT10	Not used		
3VT11	Transistor	AWV AS148	
3VT12	Transistor	AWV AS148	
3VT13	Transistor	AWV AS148	
3VT14	Transistor	Fairchild 2N4121	906718
3VT15	Not used		
3VT16	Transistor	Fairchild AY1121	
3VT17	Transistor	Fairchild AY1120	
3VT18	Transistor	Fairchild AY6109	
	Heat sink, multifinned, TO-18	Wakefield Eng. NF203	397716
3VT19	Transistor	Fairchild AY6108	
	Heat sink, multifinned, TO-18	Wakefield Eng. NF203	397716

5. TONE OSCILLATOR 4R62572

4C1	0.01 μF ±5%, 50 VDCW, styroseal	Ducon DFB	226379
4C2	1 μF +50 -20%, 35 VDCW, tantalum	STC TAG	227850
4R1	120 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	
4R2	330 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	605981
4R3	100 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	604069
4VT1	Transistor, unijunction	G.E. (USA) 2N2646	906620

6. SSB FILTER AND BALANCE MODULATOR 5R62572

5C1	5 to 65 pF, variable, solid dielectric	Philips 2222-808-01001	
5C2	820 pF ±5%, 100 VDCW, polystyrene	Allied Capacitors TCS	
5C3	1200 pF ±5%, 100 VDCW, polystyrene	Allied Capacitors TCS	
5C4	10 μF +50 -10%, 16 VDCW, electrolytic, tubular, d/e	Philips C426AR/E10	228769
5C5	Not used		
5C6	0.1 μF +80 -20%, 25 VDCW, ceramic, disc, barrier layer	Ducon CDR "Redcap"	227082
5C7	0.1 μF +80 -20%, 25 VDCW, ceramic, disc, barrier layer	Ducon CDR "Redcap"	227082
5C8	0.022 μF ±10%, 250 VDCW, polyester, radial leads	Philips C280AE/A	226633
5C9	0.022 μF ±10%, 250 VDCW, polyester, radial leads	Philips C280AE/A	226633
5C10	Not used		
5C11	Not used		
5C12	0.01 μF +100 -20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	222300
5C13	680 pF ±5%, 100 VDCW, polystyrene	Allied Capacitors	
5MR1	Diode, silicon	STC IN914	597291
5MR2	Diode, silicon	STC IN914	597291
5MR3	Diode, silicon	STC IN914	597291
5MR4	Diode, silicon	STC IN914	597291
5MR5	Diode, silicon	STC EM401	596998

SSB Filter and Balance Modulator 5R62572 (continued)

5R1	68 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	615517
5R2	330 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	605981
5R3	1.5 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608727
5R4	22 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	613681
5R5	Not used		
5R6	2.7 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	609891
5R7	1 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608062
5R8	680 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	607308
5R9	330 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	605981
5R10	Not used		
5R11	330 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	605981
5R12	Not used		
5R13	680 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	607308
5R14	470 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	
5R15	4.7 MΩ ±10%, 1/4 W, composition, Gde 2, RC7-K	IRC BTS	
5RLA	Not used		
5RLB	Not used		
5RLC	Relay, complete with dust cover	STC PZ4A/2600	
5RV1	2.2 kΩ ±20%, 1/4 W, moulded carbon, variable, rotary, linear, printed board	Plessey MP dealer	
5RV2	470 Ω ±20%, 1/4 W, moulded carbon, variable, rotary, linear, printed board	Plessey MP dealer	
5TR1	Transformer	AWA ILH65381	
5VT1	Transistor	AWV AS302	
5VT2	Transistor	AWV AS302	
5XL1	Crystal 455 kHz	AWA Specification 56046D105	

7. A.M. FILTER 6R62572

6C1	0.01 μF ±5%, 50 VDCW, styroseal	Ducon DFB	226379
6C2	330 pF ±5%, 125 VDCW, polystyrene	Allied Capacitors TCS112	223729

A.M. Filter 6R62572 (continued)

6C3	4.7 pF ±0.5 pF, 500 VDCW, ceramic, disc	Ducon CDS NPO	220217
6C4	330 pF ±5%, 125 VDCW, polystyrene	Allied Capacitors TCS112	223729
6C5	Not used		
6C6	2.7 pF ±0.1 pF, 500 VDCW, ceramic, disc	Ducon CDS NPO	
6C7	330 pF ±5%, 125 VDCW, polystyrene	Allied Capacitors TCS112	223729
6C8	2.7 pF ±0.1 pF, 500 VDCW, ceramic, disc	Ducon CDS NPO	
6C9	330 pF ±5%, 125 VDCW, polystyrene	Allied Capacitors TCS112	223729
6C10	Not used		
6C11	4.7 pF ±0.5 pF, 500 VDCW, ceramic, disc	Ducon CDS NPO	220217
6C12	0.001 μF ±5%, 50 VDCW, polystyrene	Allied Capacitors	
6C13	470 pF ±5%, 125 VDCW, polystyrene	Allied Capacitors TCS116	224217
6L1	Inductor	AWA 259V57998	
6L2	Inductor	AWA 259V57998	
6L3	Inductor	AWA 259V57998	
6L4	Inductor	AWA 259V57998	
6L5	Not used		
6L6	Inductor	AWA 259V57998	
MR1	Diode, silicon	STC 1N914	597291
R1	470 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	
R2	470 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	
R3	4.7 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	610976
R4	1.2 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608338
RLA	Not used		
RLB	Not used		
RLC	Not used		
RLD	Relay, complete with dust cover	STC PZ4/2600	
VT1	Transistor	AWV AS302	

8. POWER SUPPLY 7R62572

7C1	2.2 μF +50 -20%, 35 VDCW, tantalum	STC TAG	227936
7C2	0.47 μF ±10%, 250 VDCW, polyester, radial	Philips C280AE/A	227472
7C3	25 μF +50 -10%, 25 VDCW, electrolytic, tubular, d/e	Philips C426AR/F25	229432
7C4	64 μF +50 -10%, 64 VDCW, electrolytic, tubular, d/e	Philips C437AR/H64	229625
7MR1	Rectifier, silicon	AWV 1N3193	597233
	Preferred alternative	STC EM401	
7MR2	Rectifier, silicon	STC EM401	
7MR3	Rectifier, silicon	STC EM401	
7MR4	Rectifier, silicon	STC EM401	
7MR5	Rectifier, silicon	STC EM401	
7MR6	Diode, zener, 6.2 V ±5%, 400 mW	Philips BZY88/C6V2	596890
7R1	330 Ω ±2%, 1/2 W, metal oxide, RFG5-E	Electrosil TR5	605973
7R2	10 Ω ±2%, 1/2 W, metal oxide, RFG5-E	Electrosil TR5	601112
7R3	22 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	613681
7R4	1.8 kΩ ±2%, 1/2 W, metal oxide, RFG5-E	Electrosil TR5	609094
7R5	Not used		
7R6	3.3 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	610326
7R7	Selective value		
7R8	12 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	612536
7R9	Selective value		
7VT1	Transistor	Fairchild TT3638	906678
7VT2	Transistor	RCA 2N3055	906667
7VT3	Transistor	AWV AS147	906368

9. P.A. DRIVER 8R62572

8C1	0.1 μF ±10%, 250 VDCW, polyester, radial leads	Philips C280AE/A	227096
8C2	0.0027 μF ±10%, 250 VDCW, polyester, radial leads	Philips C280AE/A	
8C3	Not used		
8C4	Not used		
8C5	Not used		

P.A. Driver 8R62572 (continued)

8C6	100 pF ±20%, 500 VDCW, ceramic disc	Ducon CDS High-K	222215
8C7	220 pF ±20%, 500 VDCW, ceramic disc	Ducon CDS High-K	223203
8C8	0.022 μF ±10%, 250 VDCW, polyester, radial leads	Philips C280AE/A	226633
8L1	Inductor	AWA 224V57973	
8MR1	Diode, silicon	STC 1N914	597291
8R1	39 Ω ±2%, 1/2 W, metal oxide, RFG5-E	Electrosil TR5	602927
8R2	2.2 k ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608062
8R3	39 Ω ±2%, 1/2 W, metal oxide, RFG5-E	Electrosil TR5	602927
8R4	390 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	606268
8R5	Not used		
8R6	10 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	612071
8R7	2.2 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	608062
8R8	6.8 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	611551
8R9	10 kΩ ±5%, 1/8 W, carbon film	Philips B8-031-04NB	612071
8R10	Not used		
8R11	200 Ω ±5%, 5 W, metal oxide	Welwyn F33	
8R12	22 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	
8RV1	4.7 kΩ 20%, 1/4 W, variable, rotary, linear	Plessey MP PCB	620168
8RV2	200 Ω ±20%, 1/4 W, variable, rotary, linear	Plessey MP PCB	
8TR1	Transformer	AWA 1LH65344	
8TR2	Transformer	AWA 1LH65345	
8VT1	Transistor	RCA 40290	
	Heat sink, multifinned, TO-5	Wakefield Eng. NF207	397717

10. KOKUSAI FILTER ASSEMBLY 10R62572

10C1	6800 pF ±1%, 100 VDCW, styroseal	Ducon DFB	
10C2	360 pF ±1%, 100 VDCW, styroseal	Ducon DFB	

Kokusai Filter Assembly 10R62572 (continued)

10C3	450 pF ±1%, 100 VDCW, styroseal	Ducon DFB	
10C4	1200 pF ±1%, 100 VDCW, styroseal	Ducon DFB	
10FL1	Filter	Kokusai MF 455ZL-24J	
10L1	Inductor 455 kHz	AWA CP No. 54146	
10L2	Inductor 455 kHz	AWA CP No. 54146	

11. TELEFUNKEN FILTER ASSEMBLY 11R62572

11C1	680 pF ±5%, 100 VDCW, polystyrene	Allied Capacitors	
11C2	Selective value		
11FL1	Filter, sideband	Telefunken FE32-F	
11L1	Inductor 455 kHz	AWA CP No. 54165	

12. COMPONENTS MOUNTED ON CHASSIS 1N62570

15C1) to) 15C5)	Not used		
15C6) to) 15C10)	Not used		
15C11) to) 15C15)	Not used		
15C16) to) 15C20)	Not used		
15C21	130 pF ±5%, 500 VDCW, metallised mica	Elmenco HRDM-15	222582
15C22	2000 μF +100 -10%, 18 VDCW, electrolytic, tubular, d/e	Ducon ET6F	229923
15C23	1000 μF +100 -10%, 18 VDCW, electrolytic, tubular, d/e	Ducon ET6C	229907

Components Mounted on Chassis 1N62570 (continued)

15C24	3.5 - 21.5 pF, variable, miniature, CVA7-B	Oxley	231158
15C25	22 pF ±5%, 500 VDCW, ceramic, disc	Ducon CDS NPO	220883
15C26	12 pF ±1 pF, 500 VDCW, ceramic, disc	Ducon CDS NPO	220564
15C27	470 pF ±5%, 5 VDCW, metallised mica	Elmenco HRDM-15	
15C28	0.0033 µF ±20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	
15C29	0.0033 µF ±20%, 500 VDCW, ceramic, disc	Ducon CDS High-K	
15C30	39 pF ±5%, 500 VDCW, ceramic, disc	Ducon CDS NPO	221293
15C31	50 µF +50% -10%, 25 VDCW, electrolytic, tubular, d/e	Philips C426AR/F50	229596
15C32	0.047 µF +80 -20%, 25 VDCW, ceramic, disc, barrier layer	Ducon CDR "Redcap"	226822
15C33	0.047 µF +80 -20%, 25 VDCW, ceramic, disc, barrier layer	Ducon CDR "Redcap"	226822
15C34	0.01 µF +100 -20%, 500 VDCW, ceramic, tubular	Ducon CTR High-K	222300
15C35	56 pF ±5%, 500 VDCW, metallised mica	Ducon MSA	221777
15C36	100 pF ±5%, 500 VDCW, ceramic, disc	Ducon CDS N750	222214
15FS1	Fuseholder, line type, consisting of:		
	Cap, moulded	AWA CP36547	188021
	Eyelet, heavy duty		315000
	Barrel	AWA CP36548	790338
	Spring	AWA CP25762	797762
	Fuse link, glass cartridge, 10A	Beswick TDC10, Gde A	370074
15FS2	Fuseholder, line type, consisting of:		
	Cap moulded	AWA CP36547	188021
	Eyelet, heavy duty		315000
	Barrel	AWA CP36548	790339
	Spring	AWA CP25762	797762
	Fuse link, glass cartridge, 10 A	Beswick TDC10, Gde A	370074

Components Mounted on Chassis 1N62570 (continued)

15L1) to) 15L5)	Not used		
15L6	Not used		
15L7	Inductor	AWA 221V57973	
15L8	Inductor	AWA 221V57973	
15L9	Inductor	AWA 221V57973	
15LP1	Lamp, bezel	Ducon BNG 5S	
	Lamp, 14 V, 80 mA	Ducon RM6	
15LS1	Speaker, 4 inch, 8 ohms	AWA CP36547	188021
15MR1	Diode, silicon	AWV IN3193	597233
	Preferred alternative	STC EM401	
15MR2	Diode, silicon	AWV IN3193	597233
	Preferred alternative	STC EM401	
15MR3	Diode, silicon	AWV IN3193	597233
	Preferred alternative	STC EM401	
15MR4	Diode, zener, 68 V, 400 mW	Philips BZX70/C68	597331
15MR5	Diode, silicon	STC EM401	596998
15R1	10 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	601115
15R2	10 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	601115
15R3	22 Ω ±5%, 1/4 W, carbon film	Philips B8-035-05B	602321
15R4	10 kΩ ±5%, 1/4 W, carbon film	Philips B8-035-05B	612027
15R5	600 Ω Selected on test		601500
15R6	0.33 Ω ±5%, wire wound	IRC ASW2	
15R7	470 Ω ±5%, 1/8 W, carbon film	Philips B8-031-04NB	606615
15RLA	Relay, magnetic, d.c. miniature, plug-in Coil: 230 Ω Springsets: 2c Ag, high current	Siemens Halske V23154-D0418-F104	599910
15RLB	Relay, magnetic, d.c. miniature, plug-in Coil: 230 Ω Springsets: 4C Ag, single contact	Siemens Halske V23154-D0418-B110	599912
15RV1	Variable, dual concentric, each section 10 kΩ, fitted with s.p.s.t. rotary switch	AWA 62570V60	

Components Mounted on Chassis 1N62570 (continued)

15RV2	Variable, dual concentric, each section 10 kΩ, fitted with s.p.s.t. rotary switch	AWA 62570V60	
15SKA	Not used		
15SKB	Connector, coaxial, bulkhead receptacle	Amphenol BNC, UG-625B/U	234665
15SWA	Switch, Oak, F, multi-section		
	Section 1: (wafers 1 and 2)	AWA 62570V64	
	Section 2: (wafers 3 and 4)	AWA 62570V63	
	Section 3: (wafers 5 to 7)	AWA 62570V62	
15SWB	Switch, slide, Oak 78, black		
15SWC	Switch, slide, Oak 78, black		
15SWD	Switch, s.p.s.t., operated by 15 RV2; see also 15RV1/15RV2	AWA 62570V60	
15TR1	Transformer	AWA 1LH65327	
15TR2	Transformer	AWA 1LH65348	
15VT1	Transistor	2N3950	906802
	Alternative types 2N4933 and 2N5070		
15VT2	Transistor	RCA 2N3055	906667
15VT3	Transistor	RCA 2N3055	906667

13. HALF-WAVE DIPOLE AERIAL 2Y64985

Centre Assembly, including:	Qty 1	AWA 6398W10
Balun Transformer A & R 358B	Qty 1	
Coaxial Cable Assembly	Qty 1	AWA 64985V11
Porcelain Insulators	Qty 2	
Wire, 12 SWG, copper	2 x 120 ft	
Insulator Assembly, including:	Qty 2	AWA 64985V4A
Porcelain Insulators		
Cutting Chart	Qty 1	AWA 64985D1

14. MOBILE INSTALLATION KIT 1R62571

Aerial Cable Assembly,	1 off	AWA 62571V5	
Clamp, Utilux H250	6 off		208942
Clamp, Utilux H962	6 off		208101
Cradle Strap	2 off	AWA 61968V14	
Grommet Material, 3/8 inch	4 in		591062
Mounting Cradle	1 off	AWA 63838X3	
Nut, 10-32 UNF, steel	2 off		493490
Nut, 1/4 BSW, steel	8 off		493981
Screw, No. 6 x 3/8 inch, self-tapping	12 off		760374
Screw, 10-32 UNF x 3/4 inch, pan head, steel	2 off		778452
Screw, 1/4 BSW x 1 inch, hexagon head, steel	6 off		746732
Screw, 1/4 BSW x 1.1/2 inch, hexagon head, steel	2 off		746748
Washer, 2 BA, plain, large, brass	2 off		921002
Washer, 2 BA, lock, internal teeth	2 off		921212
Washer, 1/4 inch, steel	8 off		921858
Washer, 1/4 inch, spring	8 off		921658

15. TRANSPORTABLE KIT 1R62574

Carrying Bag, canvas	AWA 62574W8
Carrying Frame	AWA 62574W9

16. COMMON REPLACEMENT PARTS

Connector, coaxial, plug (mates with aerial connectors on transceiver)	BNC UG-88C/U	234630
Connector, coaxial, plug, right angle, (used in portable carrying frame)	BNC UG-913/U	

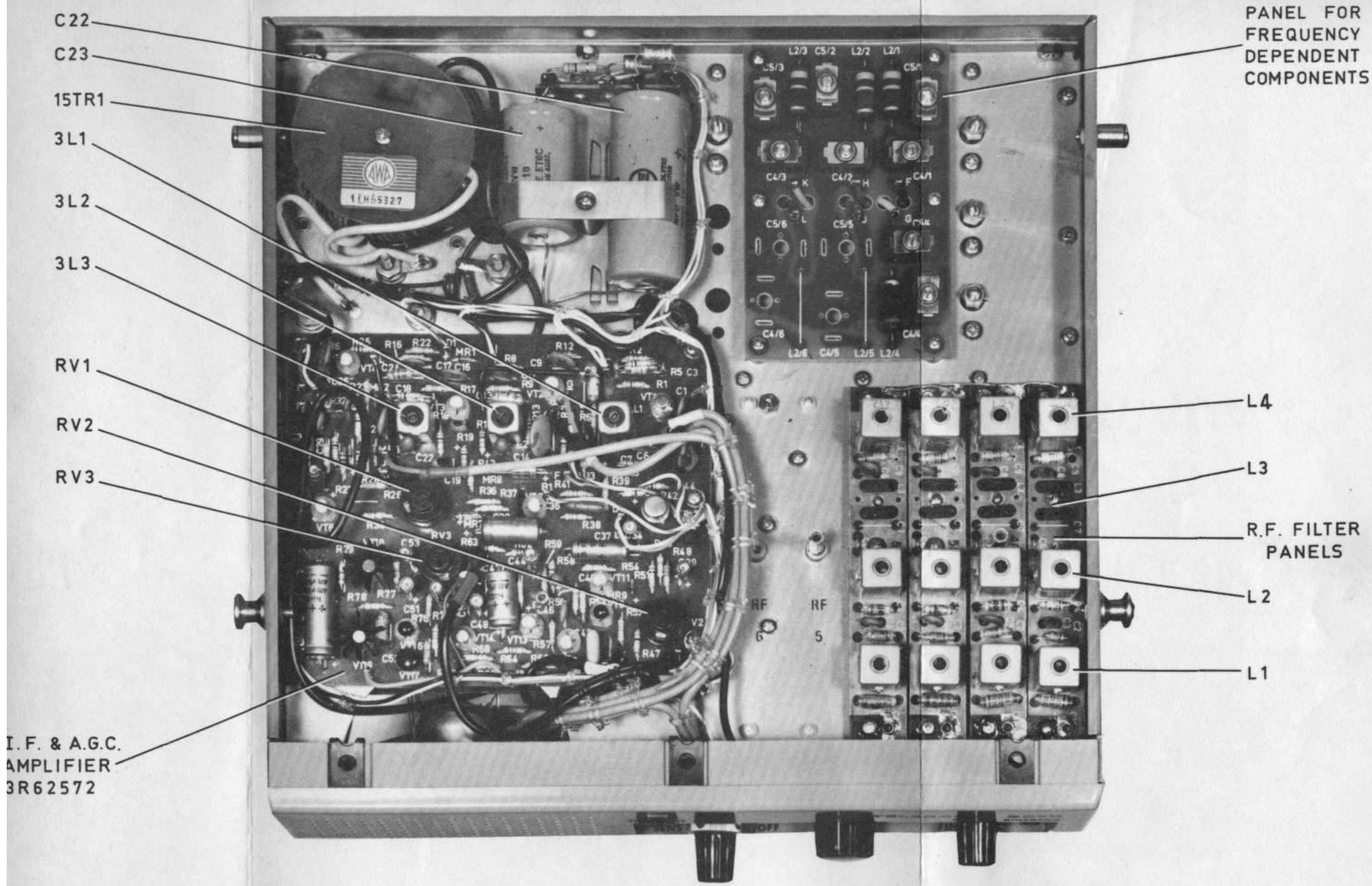
Common Replacement Parts (continued)

Connector, coaxial, receptacle, chassis mounting, SO-239 (used in portable carrying frame)		794305
Fuse holder, barrel section		790338
Fuse holder, cap section		118021
Fuse link, glass cartridge, 10 A (for use in fixed or mobile installations)		370074
Fuse link, glass cartridge, 5 A anti-surge (for use with nickel-cadmium batteries in portable installations)		369967
Grub screw, 6-32 UNC x 3/8 inch, Allen head (used on SENSITIVITY control)		
Knob, black (for VOLUME control)	Elma 71-14-1/8	
Knob, black (for FINE TUNE control)	Elma 71-14-1/4	
Knob, black (for CHANNEL selector)	Elma 73-21-1/4	
Knob cover, black (for VOLUME and FINE TUNE controls)	Elma 1450-14	
Knob cover, black (for CHANNEL selector)	Elma 1450-21	
Knob, metal, less grub screws (for SENSITIVITY control)	AWA 62570V137	
Lamp, 14 V, 80 mA, (for RF OUTPUT lamp)	Ducon RM6/14V/80	
Microphone Assembly (complete)	AWA 4E63837	
Microphone Clip (part of Microphone Assembly)	AWA 63837W6-2	
Plug, 5-pin (mates with battery charger charger socket on portable carrying frame)		234071

Common Replacement Parts (continued)

Rubber foot, grey	345067

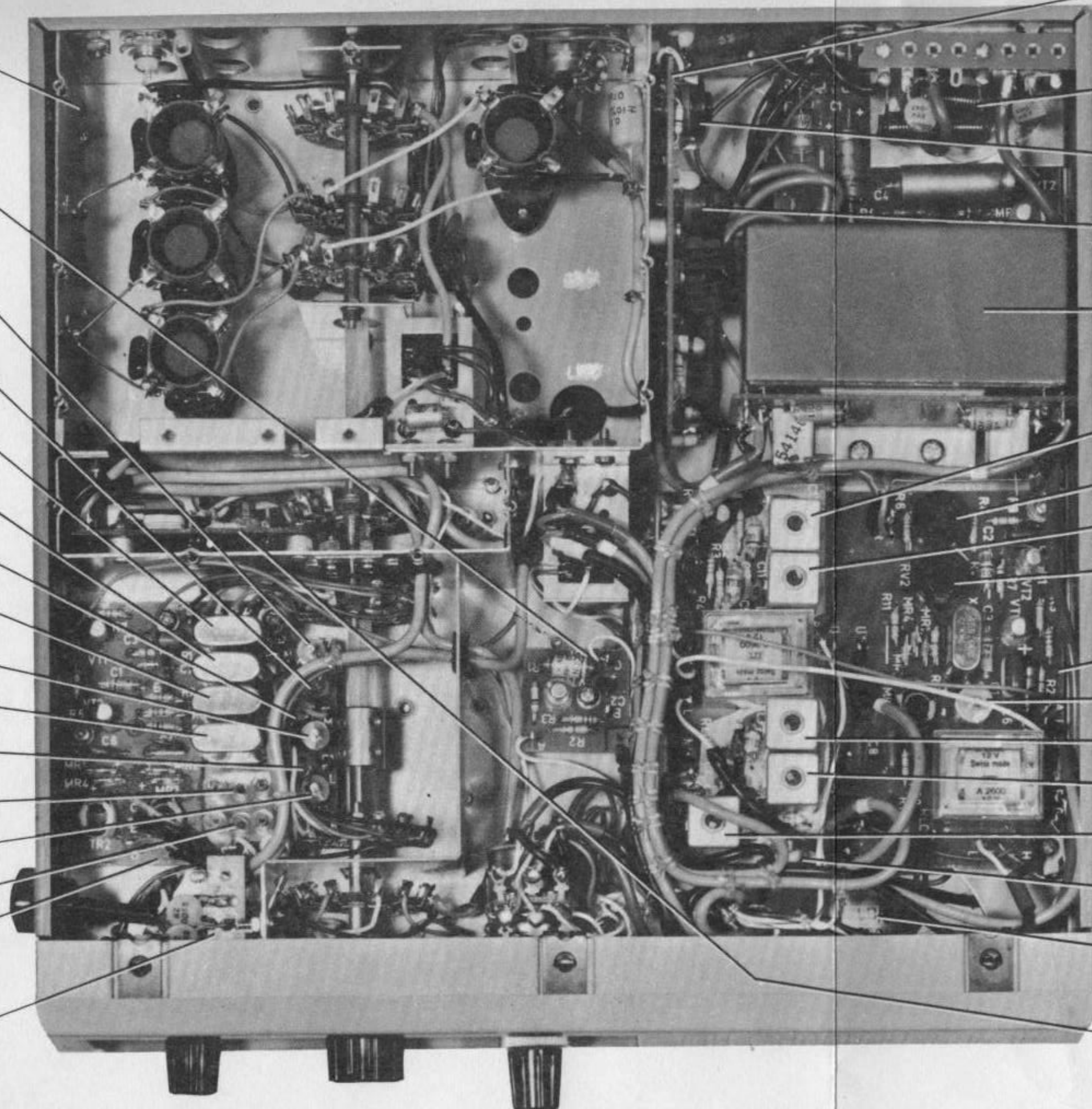
End of Part



TOP VIEW

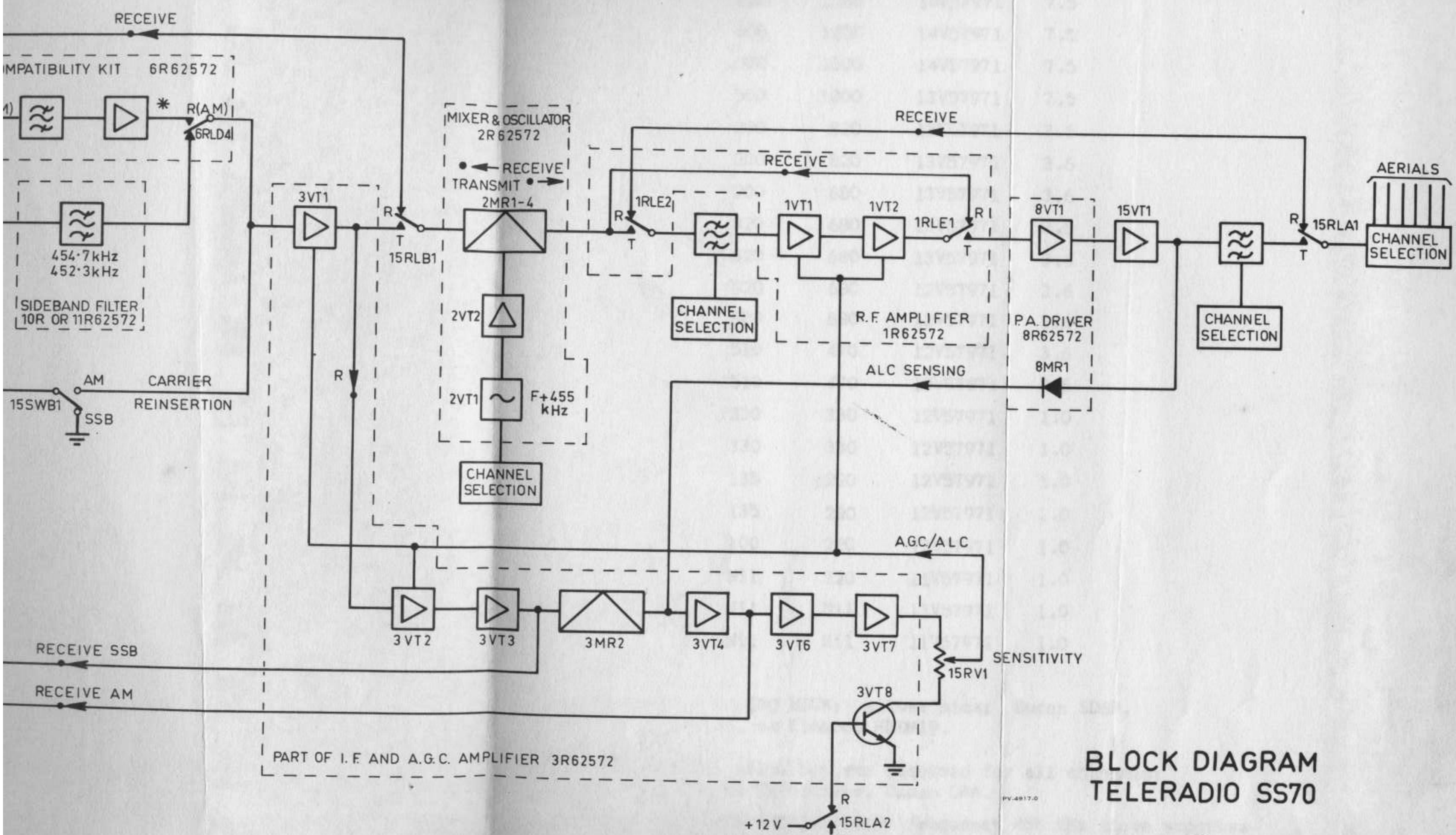
10654

SS70
INTERIOR VIEWS



BOTTOM VIEW

10655

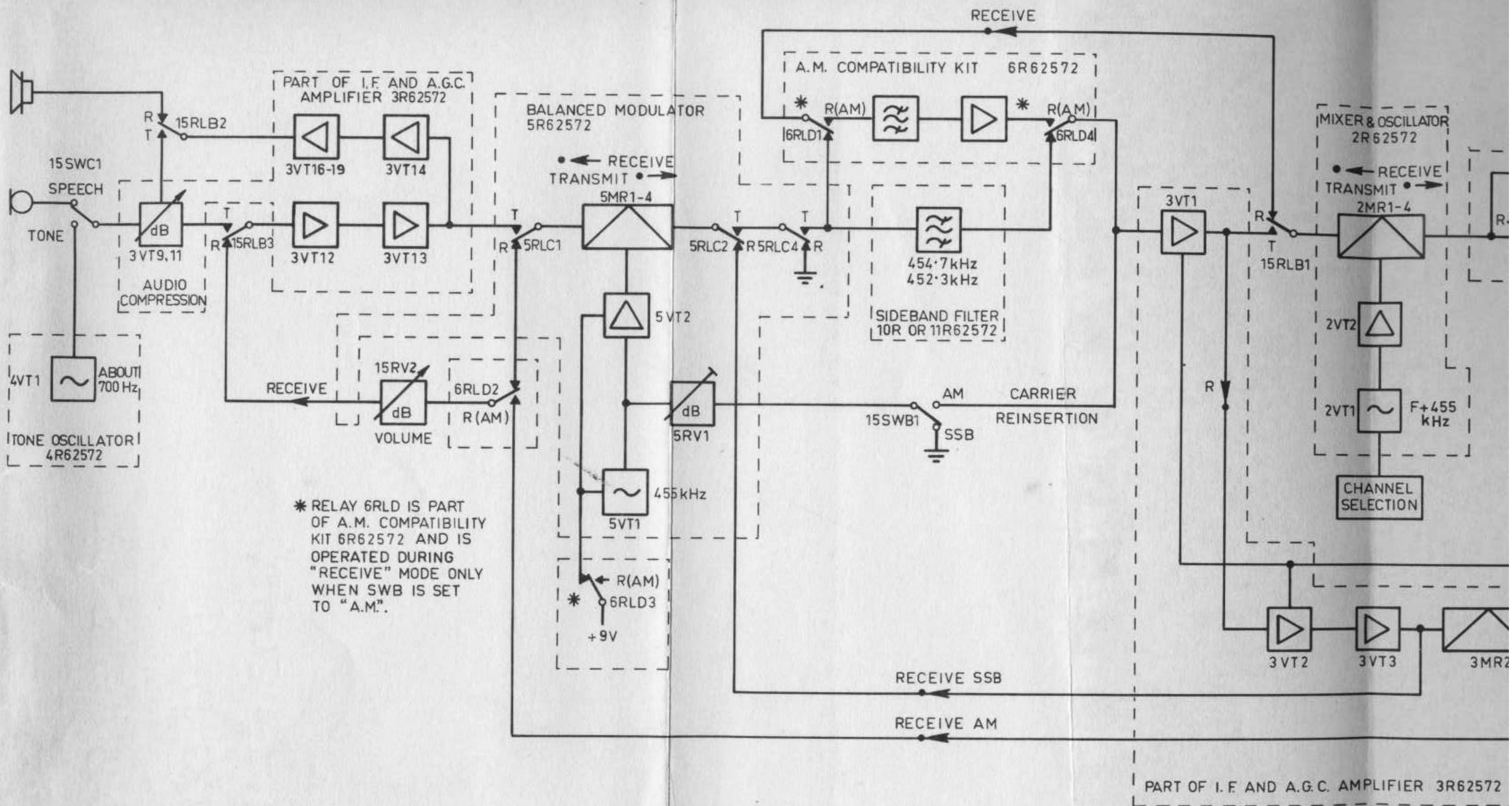


BLOCK DIAGRAM
TELERADIO SS70

AMALGAMATED WIRELESS (AUSTRALASIA) LIMITED SYDNEY

AWA DRG 62570G1

0 ISSUE



RECEIVE
A.M. COMPATIBILITY KIT 6R62572
PART OF I.F. AND A.G.C. AMPLIFIER 3R62572
BALANCED MODULATOR 5R62572
MIXER & OSCILLATOR 2R62572
15RLB2
15SWC1
SPEECH
TONE
3VT9,11
AUDIO COMPRESSION
15RLB3
3VT16-19
3VT14
3VT12
3VT13
RECEIVE
TRANSMIT
5MR1-4
5RLC1
5RLC2
5RLC4
6RLD1
R(AM)
6RLD4
454·7 kHz
452·3 kHz
SIDEBAND FILTER 10R OR 11R62572
3VT1
15RLB1
2MR1-4
2VT2
2VT1
F+455 kHz
CHANNEL SELECTION
4VT1
ABOUT 700 Hz
TONE OSCILLATOR 4R62572
15RV2
VOLUME
6RLD2
R(AM)
5VT2
5RV1
455 kHz
5VT1
6RLD3
+9V
15SWB1
AM
SSB
CARRIER REINSERTION
3VT2
3VT3
3MR2
RECEIVE SSB
RECEIVE AM
✱ RELAY 6RLD IS PART OF A.M. COMPATIBILITY KIT 6R62572 AND IS OPERATED DURING "RECEIVE" MODE ONLY WHEN SWB IS SET TO "A.M.".

Freq. (MHz)	RF Filter	C1 (pF)	C2 (pF)	C3 (pF)	L1	L2 (μH)
2.0	1R62573	680	2400	1500	14V57971	7.5
2.15	1R62573	680	2200	1500	14V57971	7.5
2.3	1R62573	680	1800	1500	14V57971	7.5
2.4	2R62573	680	1800	1500	14V57971	7.5
2.45	2R62573	560	1800	1200	14V57971	7.5
2.55	2R62573	560	1500	1000	14V57971	7.5
2.7	2R62573	510	1500	1000	13V57971	7.5
2.95	2R62573	510	1200	820	13V57971	7.5
3.1	3R62573	470	1200	820	13V57971	3.6
3.5	3R62573	390	1000	680	13V57971	3.6
3.7	3R62573	330	820	680	13V57971	3.6
4.0	4R62573	330	820	680	13V57971	3.6
4.15	4R62573	330	820	680	12V57971	3.6
4.4	4R62573	330	680	680	12V57971	3.6
4.8	4R62573	270	510	470	12V57971	3.6
5.0	5R62573	270	510	470	12V57971	3.6
5.5	5R62573	220	330	330	12V57971	1.0
6.0	6R62573	220	330	330	12V57971	1.0
6.7	6R62573	220	135	220	12V57971	1.0
7.0	7R62573	220	135	220	12V57971	1.0
7.2	7R62573	180	100	220	12V57971	1.0
7.65	7R62573	180	Nil	220	11V57971	1.0
8.0	8R62573	150	Nil	Nil	11V57971	1.0
9.0	9R62573	135	Nil	Nil	11V57971	1.0
10.0						

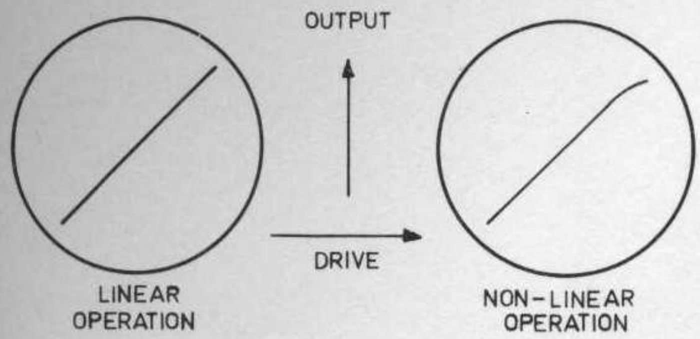
C1, C2, and C3: 5% tolerance; 500 VDCW; silver mica; Ducon SD6P, Elmenco HRDM15, or Elmenco HRDM19.

C4, C5: Not listed in table but are required for all channels; 45-220 pF, mica dielectric, Ducon CWA.

Crystal: AWA Specification 56046D101; frequency 455 kHz above suppr
ed carrier frequency for USB, or 455 kHz below suppressed carrier frequency for LSB.

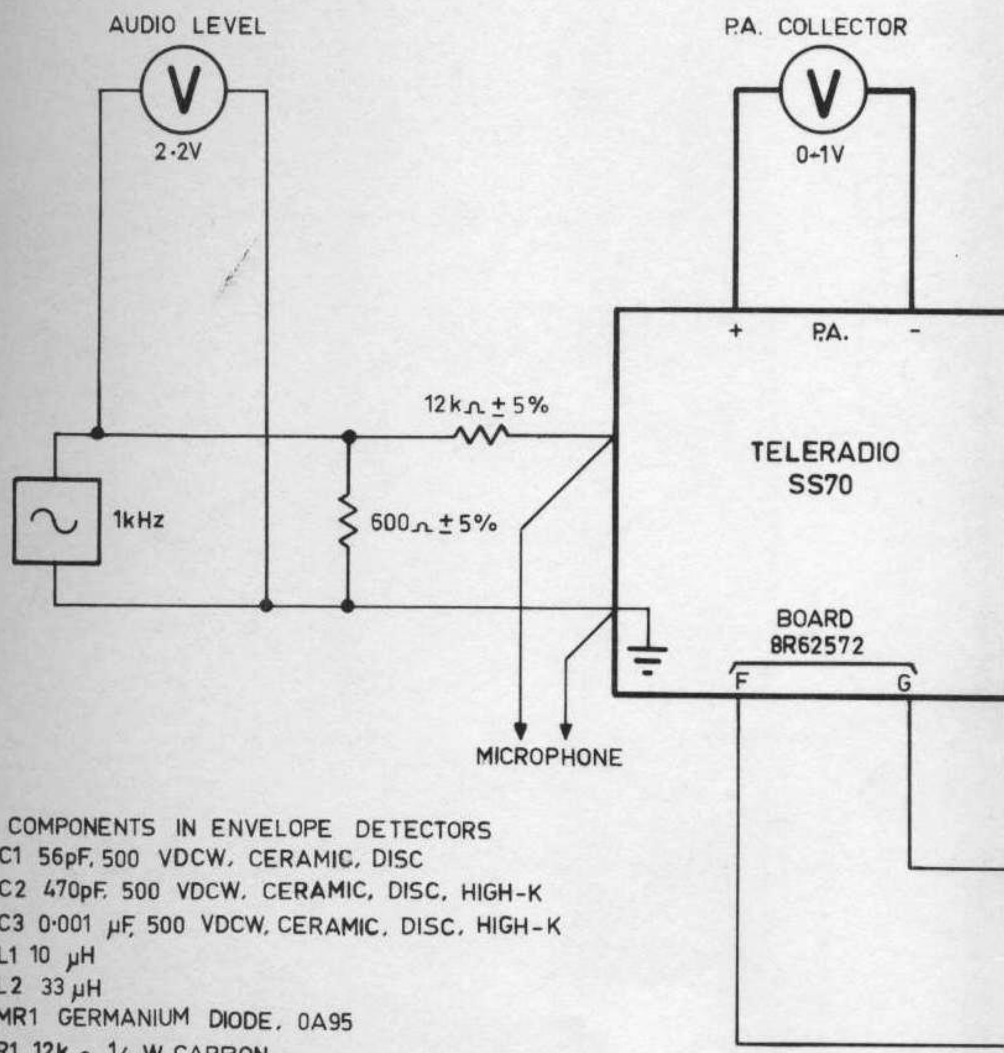
FREQUENCY-DETERMINING COMPONENTS

TELERADIO SS70 AND SS70A



TELEQUIPMENT S51
TURNED THOUGH 9
TO GIVE TRACE C

VERTICLE GAIN SE



COMPONENTS IN ENVELOPE DETECTORS

C1 56pF, 500 VDCW, CERAMIC, DISC

C2 470pF, 500 VDCW, CERAMIC, DISC, HIGH-K

C3 0·001 μF, 500 VDCW, CERAMIC, DISC, HIGH-K

L1 10 μH

L2 33 μH

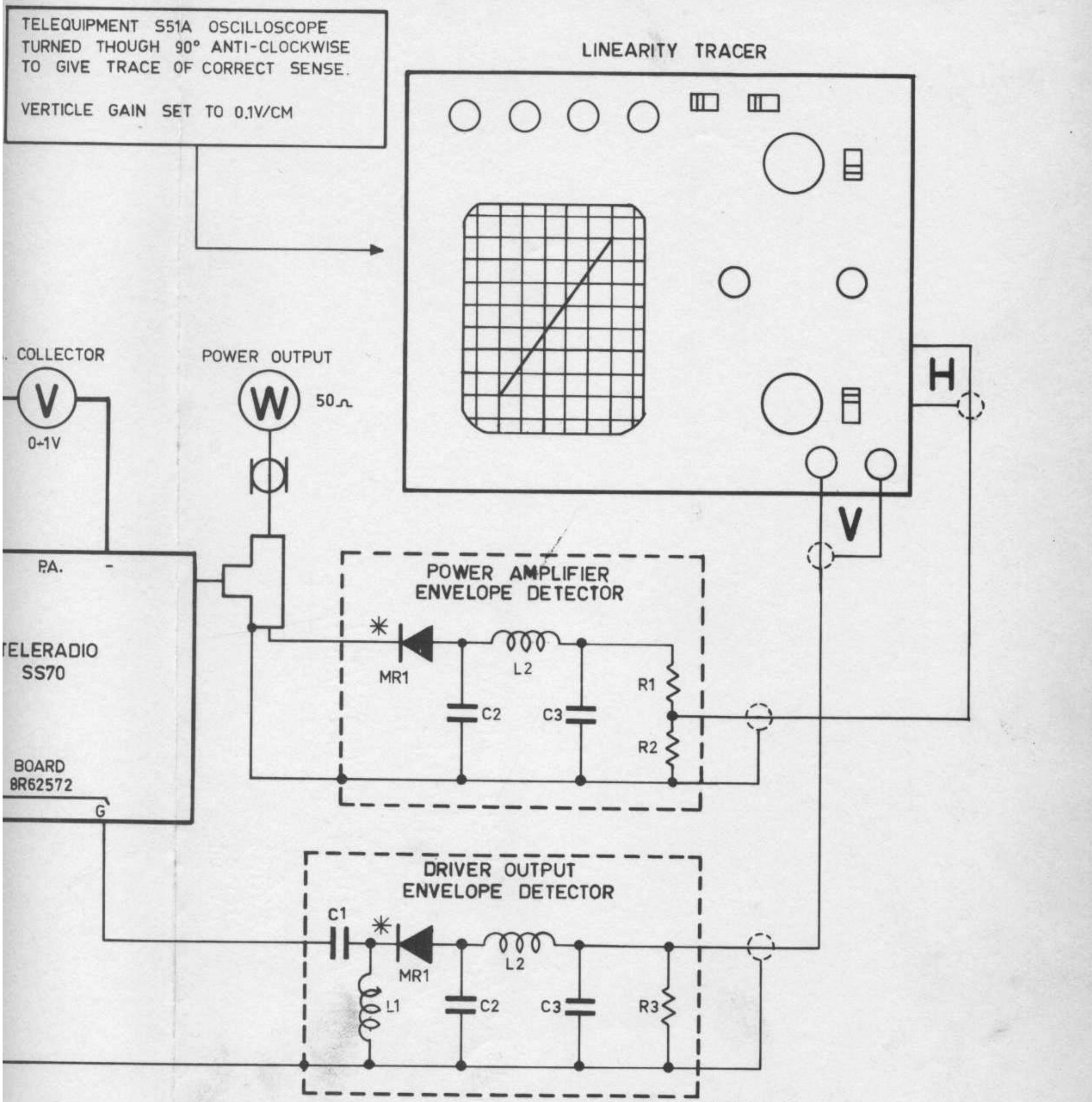
MR1 GERMANIUM DIODE, 0A95

R1 12kΩ, 1/8 W. CARBON

R2 6·8kΩ, 1/8 W. CARBON

R3 4·7kΩ, 1/8 W. CARBON

✳ POLARITY AS SHOW
TELEQUIPMENT S51A
ONE OR BOTH DIOD
BE REVERSED TO
SENSE ON OTHER I



POLARITY AS SHOWN IS CORRECT FOR TELEQUIPMENT S51A OSCILLOSCOPE. ONE OR BOTH DIODES MAY HAVE TO BE REVERSED TO OBTAIN CORRECT SENSE ON OTHER INSTRUMENTS.

TEST EQUIPMENT FOR POWER AMPLIFIER TUNING TELERADIO SS70 AND SS70A

PV4913-0

AMALGAMATED WIRELESS (AUSTRALASIA) LIMITED SYDNEY

AWA

DRG 62570C3

0	ISSUE

TEST	TEST SIGNAL	MEASURING INSTRUMENT	OTHER CONDITIONS
Current Drain		Ammeter in series with +ve battery lead	No signal input; volume and fully clockwise
Sensitivity at 100 mW and 1 W Outputs	Suppressed carrier frequency ±1 kHz at aerial connector; + for USB, - for LSB (ANY CHANNEL)	Voltmeter (a.c.) between pin R on board 3R62572 and chassis	Volume and sensitivity contr just test signal level to gi voltmeter. Note test signal Increase test signal level t voltmeter. Note test signal
Signal-to-Noise Ratio	As above	As above	Sensitivity control fully cl generator output to 1 µV. A give 2 V r.m.s. on meter. S ator. Measure output level.
A.G.C. Response	As above (HIGHEST FREQUENCY CHANNEL)	As above	Sensitivity control fully cl erator output to 5 µV. Adju 890 mV r.m.s. on voltmeter. level to 100 mV. Measure ou performance can be corrected board 3R62572.)
Frequency Response	As above (LOWEST FREQUENCY CHANNEL)	As above	Volume control at mid-positi output to 100 µV. Adjust se about 900 mV r.m.s. on voltm signal generator to vary rec 350 Hz and up to 2.6 kHz. N output levels.
Distortion at 1 W output	As above (ANY CHANNEL)	As above with distortion meter connected in parallel	Sensitivity control fully cl erator output to 100 µV. Ad give 2.8 V r.m.s. on voltmet
Image Response	As above (ANY CHANNELS)	Voltmeter (a.c.) between pin R on board 3R62572 and chassis	Sensitivity control fully cl erator output to 1 µV. Adju 890 mV r.m.s. on voltmeter. level to about 500 µV and tu in the vicinity of the image USB; -910 kHz for LSB) unti 1 kHz. Adjust test signal t voltmeter. Note test signal

ERFORMANCE TESTS - S.S.B. RECEIVING MODE

OTHER CONDITIONS AND PROCEDURE	TYPICAL PERFORMANCE
No signal input; volume and sensitivity controls fully clockwise	70 mA
Volume and sensitivity controls fully clockwise. Adjust test signal level to give 890 mV r.m.s. on voltmeter. Note test signal level. Increase test signal level to give 2.8 V r.m.s. on voltmeter. Note test signal level.	Less than 1 μV; minimum performance is 1 μV Less than 3 μV; minimum performance is 10 μV
Sensitivity control fully clockwise. Test signal generator output to 1 μV. Adjust volume control to give 2 V r.m.s. on meter. Switch off signal generator. Measure output level.	317 mV r.m.s. on voltmeter (16 dB); minimum performance is 634 mV r.m.s. (10 dB)
Sensitivity control fully clockwise. Set signal generator output to 5 μV. Adjust volume control to give 890 mV r.m.s. on voltmeter. Increase test signal level to 100 mV. Measure output level. (Inferior performance can be corrected by adjustment of 3RV1 on board 3R62572.)	1.12 V r.m.s. on voltmeter (2 dB increase); minimum performance is 1.98 V r.m.s. (6 dB increase)
Volume control at mid-position. Set signal generator output to 100 μV. Adjust sensitivity control to give about 900 mV r.m.s. on voltmeter. Alter frequency of signal generator to vary receiver output down to 350 Hz and up to 2.6 kHz. Note lowest and highest output levels.	Variation between lowest and highest output levels 4 dB
Sensitivity control fully clockwise. Set signal generator output to 100 μV. Adjust volume control to give 2.8 V r.m.s. on voltmeter. Measure distortion.	3%; minimum performance is 5%
Sensitivity control fully clockwise. Set signal generator output to 1 μV. Adjust volume control to give 890 mV r.m.s. on voltmeter. Increase test signal level to about 500 μV and tune the signal generator in the vicinity of the image frequency (+910 kHz for USB; -910 kHz for LSB) until the receiver output is 1 kHz. Adjust test signal to give 890 mV r.m.s. on voltmeter. Note test signal level.	1.4 mV at 7 MHz (62 dB); 500 μV at 10 MHz (54 dB); minimum performance is 330 μV (50 dB)

TEST	TEST SIGNAL	MEASURING INSTRUMENT	OTH
Current Drain		Ammeter in series with +ve battery lead	No signal input fully clockwise
Signal-to-Noise Ratio	Channel frequency modulated 30% by 1 kHz tone at aerial connector (ANY CHANNEL)	Voltmeter (a.c.) between pin R on board 3R62572 and chassis	Sensitivity con erator output t 890 mV r.m.s. c Measure output
A.G.C. Response	As above (HIGHEST FREQUENCY CHANNEL)	As above	Sensitivity con erator output t give 890 mV r.m nal to 100 mV.
Frequency Response	As above (HIGHEST FREQUENCY CHANNEL)	As above	Sensitivity con erator output t about 900 mV r.m ulating tone fr highest and low
Distortion at 1 W output	As above (HIGHEST FREQUENCY CHANNEL)	As above with distortion meter connected in parallel	Sensitivity con erator output t 2.8 V r.m.s. on

ERFORMANCE TESTS - A.M. RECEIVING MODE

OTHER CONDITIONS AND PROCEDURE	TYPICAL PERFORMANCE
No signal input; volume and sensitivity controls fully clockwise.	140 mA
Sensitivity control fully clockwise. Set signal generator output to 3 µV. Adjust volume control to give 890 mV r.m.s. on voltmeter. Remove modulation. Measure output level. Repeat test on all channels.	282 mV r.m.s. on voltmeter (10 dB); minimum performance is 10 dB for 8 µV input
Sensitivity control fully clockwise. Set signal generator output to 10 µV. Adjust volume control to give 890 mV r.m.s. on voltmeter. Increase test signal to 100 mV. Measure output level.	1.12 V r.m.s. on voltmeter (2 dB increase); minimum performance is 1.98 V r.m.s. (6 dB increase)
Sensitivity control fully clockwise. Set signal generator output to 1 mV. Adjust volume control to give about 900 mV r.m.s. on the voltmeter. Vary the modulating tone from 300 Hz to 2.8 kHz and note the highest and lowest output levels.	Variation between lowest and highest output levels 3 dB; minimum performance is 6 dB
Sensitivity control fully clockwise. Set signal generator output to 1 mV. Adjust volume control to give 2.8 V r.m.s. on voltmeter. Measure distortion.	2%; minimum performance is 5%

PERFORMANCE TESTS

A.M. RECEIVING MODE

TELERADIO SS70 AND SS70A

PV-4915-0

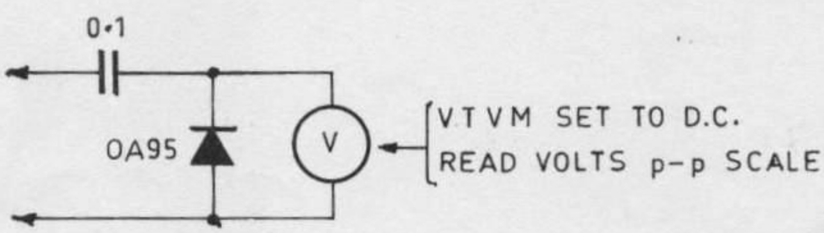
AMALGAMATED WIRELESS (AUSTRALASIA) LIMITED SYDNEY

AWA DRG 62570C5

0 ISSUE

TEST	MEASURING INSTRUMENT	OTHER CONDI
Regulation of P.A. Supply	33 Ω/30 W resistor between +PA test point and chassis; voltmeter (d.c.) across resistor	Disconnect lead from -PA test point (to i button and measure voltage. Connect anot with first resistor and measure voltage.
P.A. Idling Current	Milliammeter (d.c.) inserted in red lead between pin A on board 7R62572 and +PA test point	AM-SSB switch to SSB. Shorting link acros (50 Ω/25 W) CONNECTED TO AERIAL CONNECTOR. current. (Incorrect performance can be cc 8R62572 board.)
Power Output	Wattmeter (50 Ω/25 W) connected to aerial connector; peak reading voltmeter connected across wattmeter *	SPEECH-TONE switch to TONE. Operate p.t.t (Incorrect performance can be corrected by 8R62572.) Move SPEECH-TONE switch to SPEE speak in a normal tone of voice about one peaks should not exceed 100 V p-p. Check
Carrier Suppression	As for measurement of power output	Short circuit across microphone output (15 Operate p.t.t. button and measure peak-to- (Inferior performance can be corrected by extreme cases may require change in value not exceed 22 pF.)
Carrier Reinsertion	As for measurement of power output	AM-SSB switch to AM. Operate p.t.t. buttor channels. (Incorrect performance can be cc board 5R62572.)
Frequency Measurement	Frequency counter coupled via suitable capacitor to watt-meter	AM-SSB switch to AM; FINE TUNE control hal and measure frequency. (Incorrect performa ment of channel trimmer on board 2R62572; additional 15 pF NPO capacitor across the t

* Oscilloscope of superior performance or probe as shown below



RFORMANCE TESTS - TRANSMITTING MODE

OTHER CONDITIONS AND PROCEDURE	PERFORMANCE
-PA test point (to isolate p.a. stage). Operate p.t.t. ltage. Connect another 33 Ω/30 W resistor in parallel nd measure voltage.	33 Ω, 28 V 16.5 Ω, 25 V
Shorting link across microphone leads and DUMMY LOAD TO AERIAL CONNECTOR. Operate p.t.t. button and measure performance can be corrected by adjustment of 8RV2 on	15 - 20 mA
TONE. Operate p.t.t. button and measure power. e can be corrected by adjustment of 8RV1 on board H-TONE switch to SPEECH. Operate p.t.t. button and e of voice about one inch from microphone; speech ed 100 V p-p. Check all channels.	12.5 W (100 V p-p)
microphone output (15C28); SPEECH-TONE switch to SPEECH. and measure peak-to-peak voltage across wattmeter. can be corrected by adjustment of 5RV2 on board 5R62572; uire change in value of 5C15 on same board; 5C12 should	1 V p-p (40 dB below p.e.p.)
Operate p.t.t. button and measure power. Check all performance can be corrected by adjustment of 5RV1 on	Lowest output level 6.25 W (50 V p-p)
FINE TUNE control half meshed. Operate p.t.t. button . (Incorrect performance can be corrected by adjust- er on board 2R62572; extreme cases may require capacitor across the trimmer.) Check all channels.	Channel frequency

PERFORMANCE TESTS

TRANSMITTING MODE

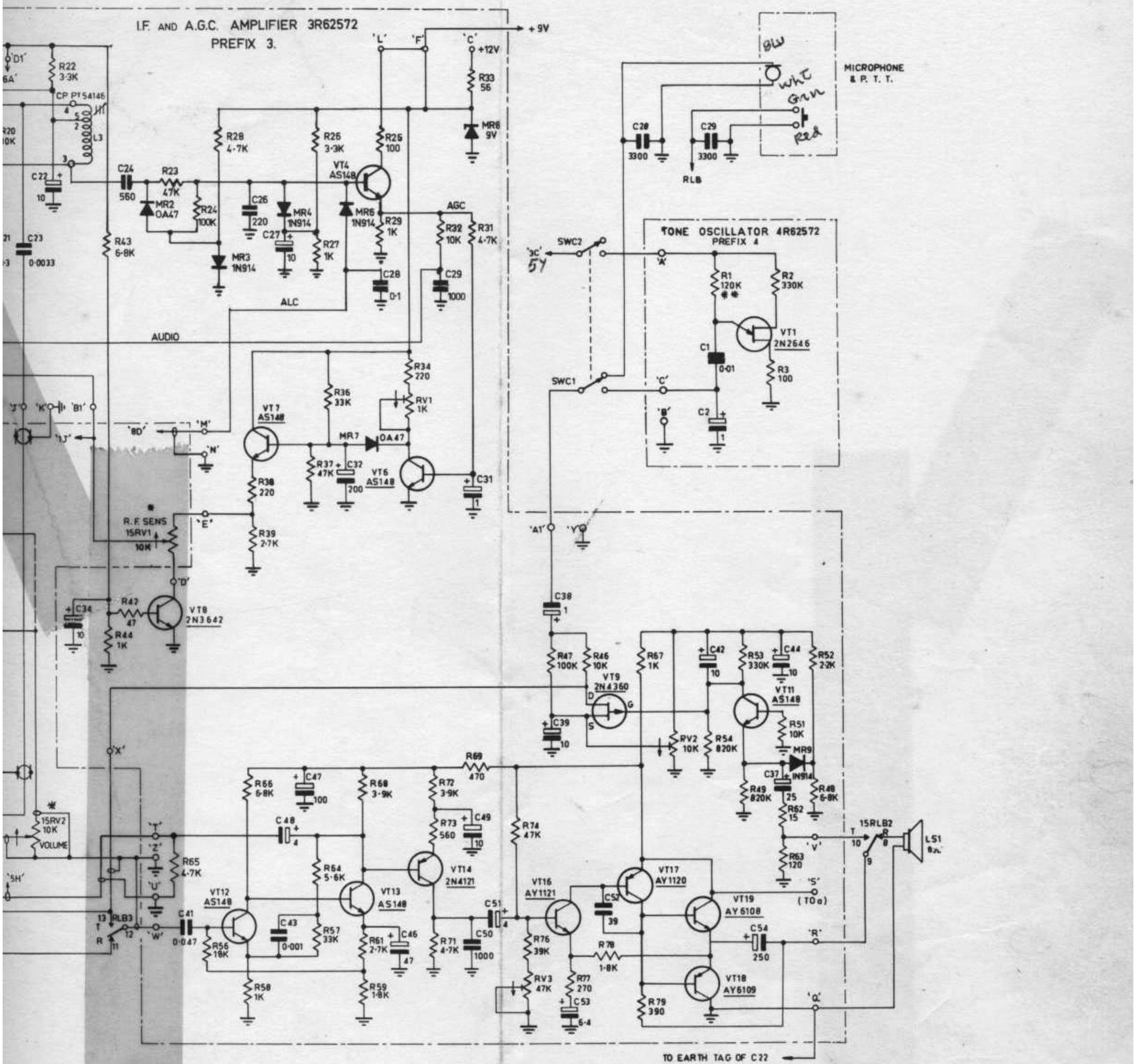
TELERADIO SS70 AND SS70A

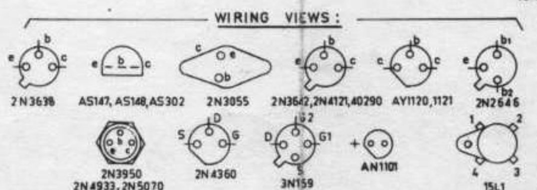
PV-4916-0

AMALGAMATED WIRELESS (AUSTRALASIA) LIMITED SYDNEY

AWA DRG 62570C6

0 ISSUE





N A.M. COMPATIBLE KIT 6R62572
TTED USE DOTTED LINE
NECTION.

ON TRANSFORMERS ILH65342
LH65346 INDICATES THE POSITION
HE IDENTIFICATION DOT.

RV1 & SWD ARE CONCENTRIC CONTROLS
1 IS 100K ON UNITS UP TO S/N 320.

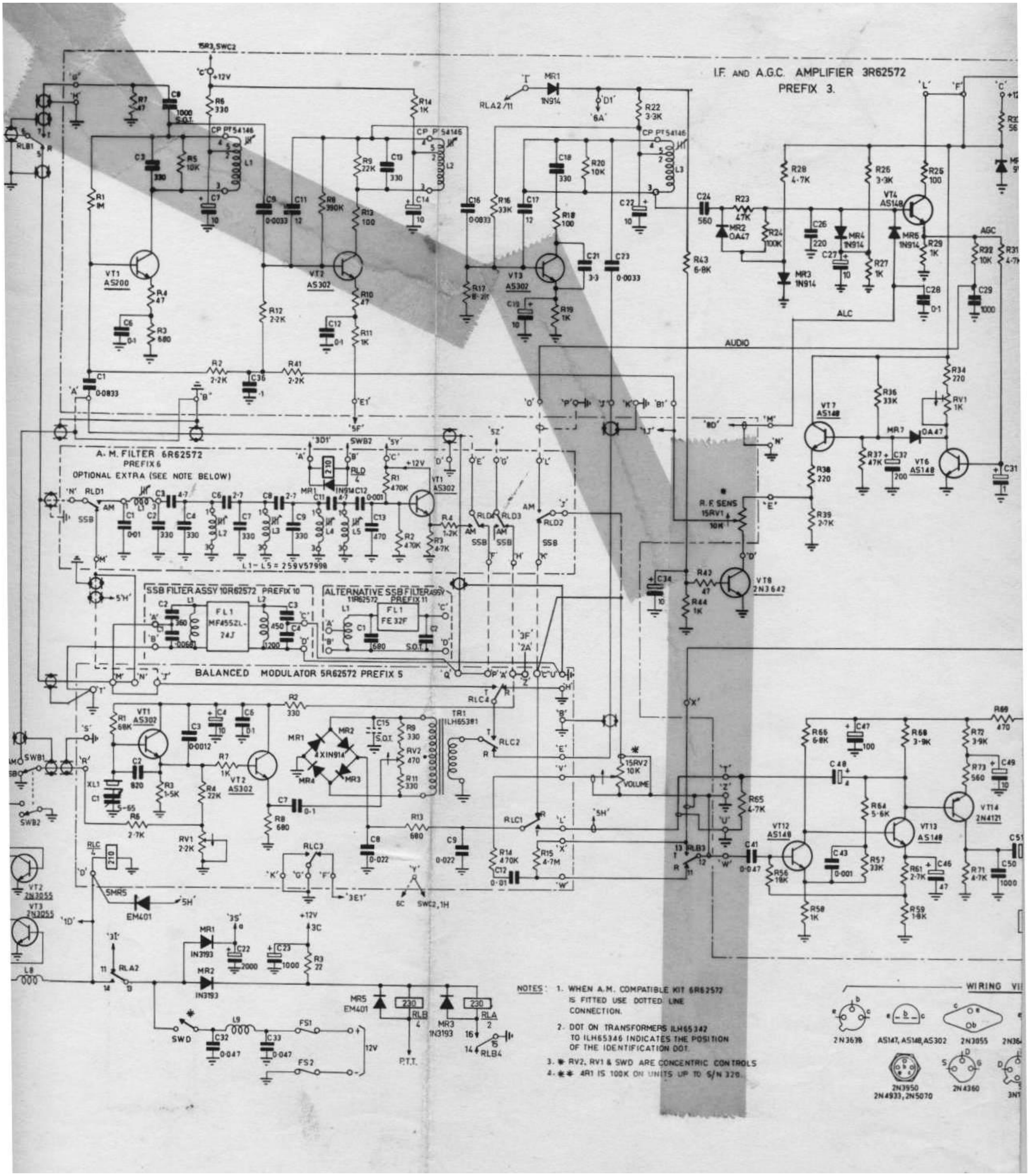
CHASSIS COMPONENT PREFIXED BY 15

SSB TRANSCEIVER SS70, SS70A
TYPE IN62570

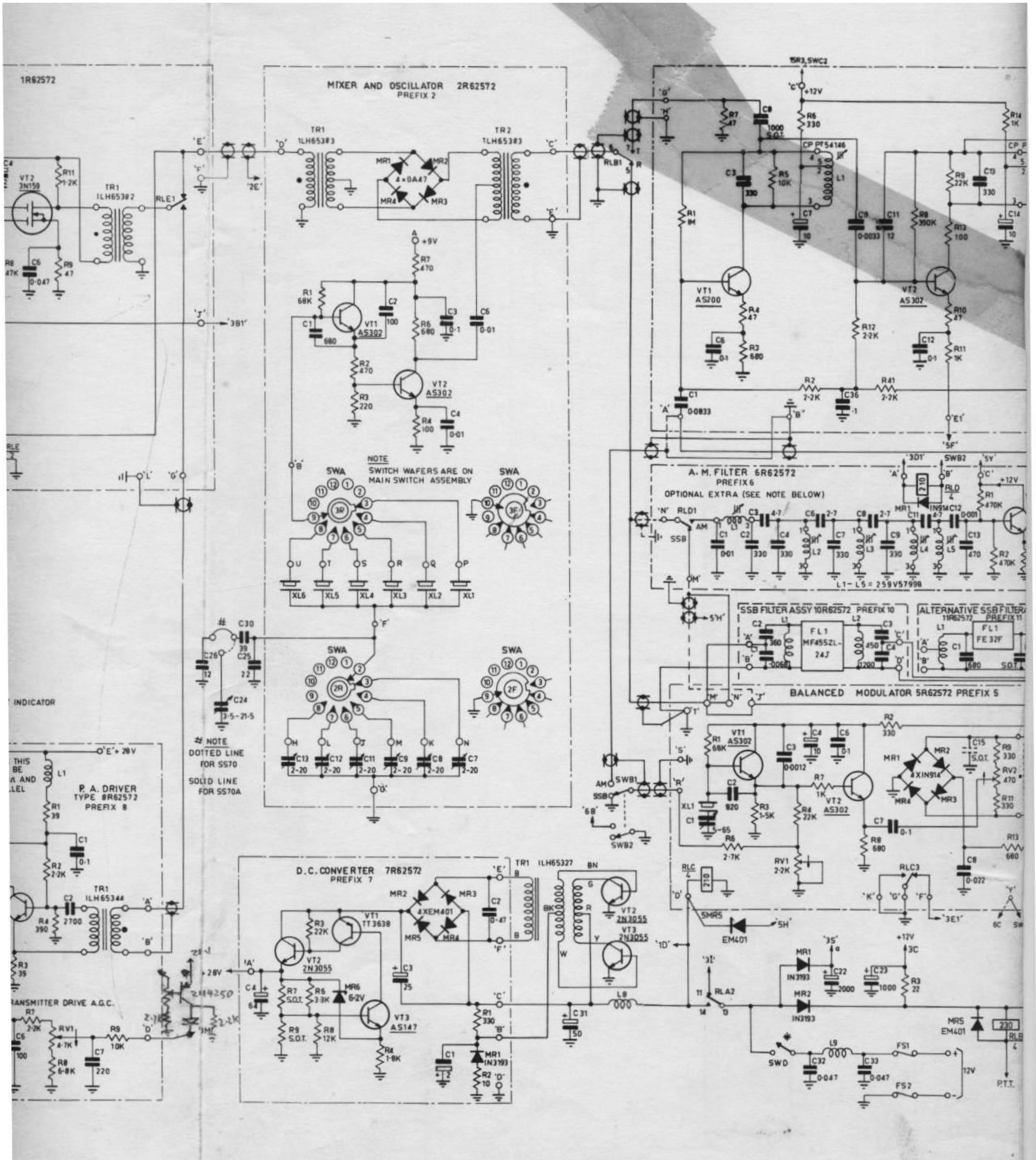
AMALGAMATED WIRELESS (AUSTRALASIA) LIMITED SYDNEY

DRG 62570H1

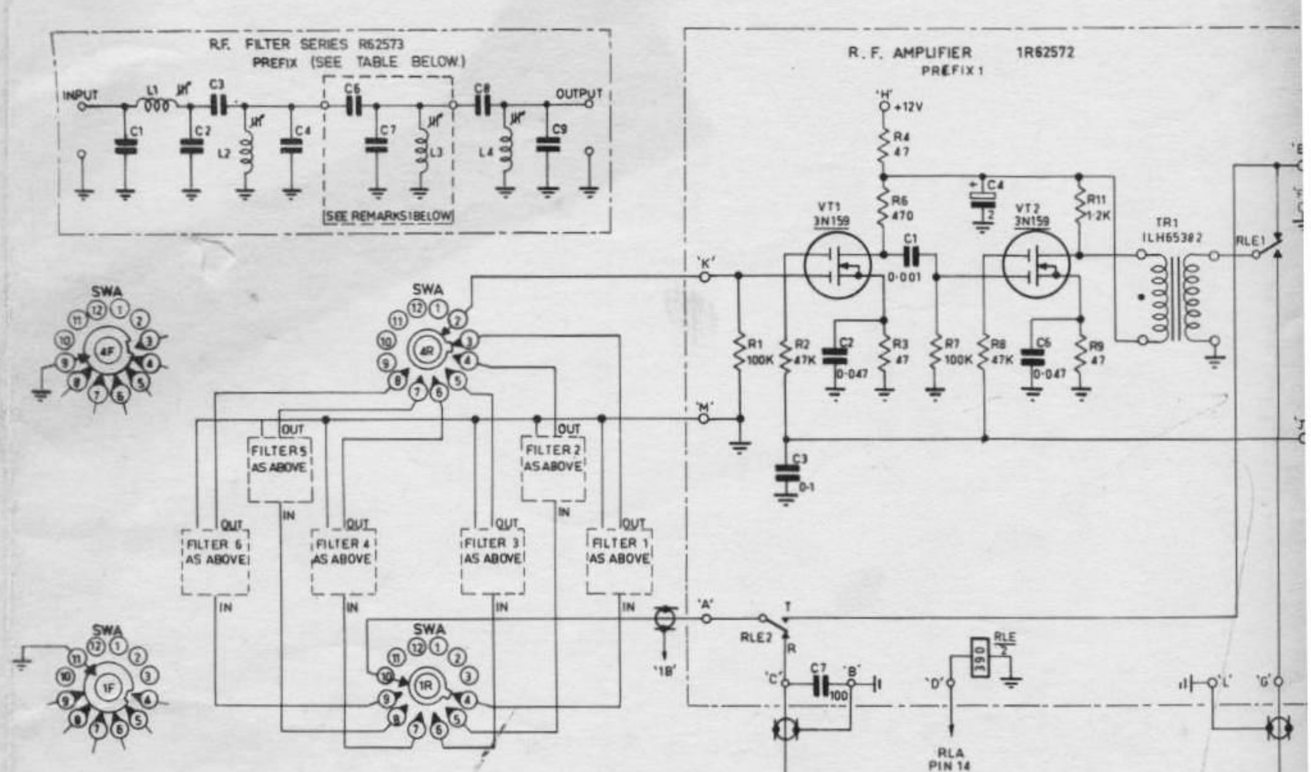
9 8 7 6 5 4 3 2 1 0 ISSUE



NOTES:
1. WHEN A.M. COMPATIBLE KIT 6R62572 IS FITTED USE DOTTED LINE CONNECTION.
2. DOT ON TRANSFORMERS ILH65342 TO ILH65346 INDICATES THE POSITION OF THE IDENTIFICATION DOT.
3. * RV2, RV1 & SWD ARE CONCENTRIC CONTROLS
4. ** 4R1 IS 100K ON UNITS UP TO S/N 320.



1R62572
MIXER AND OSCILLATOR 2R62572
PREFIX 2
NOTE
SWITCH WAFERS ARE ON MAIN SWITCH ASSEMBLY
A.M. FILTER 6R62572
PREFIX 6
OPTIONAL EXTRA (SEE NOTE BELOW)
L1 - L5 = 259V57998
SSB FILTER ASSY 10R62572 PREFIX 10
ALTERNATIVE SSB FILTER
BALANCED MODULATOR 5R62572 PREFIX 5
NOTE
DOTTED LINE FOR SS70
SOLID LINE FOR SS70A
P. A. DRIVER
TYPE 8R62572
PREFIX 8
TRANSMITTER DRIVE A.G.C.
D.C. CONVERTER 7R62572
PREFIX 7
INDICATOR
P.T.T.



	COMPONENTS IN R.F. FILTER TYPES 1R TO 9R62573								REMARKS
	FREQ RANGE MHz	C2	C9	C4, C7	C3, C6, C8	C1	L1, L4	L2, L3.	
1R	2 - 2·4	360	330	820	12	0·0033	278V57998	262V57998	1. L3, C6, C7 ARE NOT USED IN 2-6 MHz RANGE.
2R	2·4 - 3·1	240	220	470	6·8	0·0022	-	-	
3R	3·1 - 4·0	150	130	270	3·9	0·0015	-	-	
4R	4·0 - 5·0	330	300	620	10	0·0033	260V57998	261V57998	2. C2, C4, C7, C9 TO BE POLYSTYRENE 100V 5%
5R	5·0 - 6·0	200	180	430	6·8	0·0022	-	-	
6R	6·0 - 7·0	150	130	300	6·8	0·0012	-	-	
7R	7·0 - 8·0	120	110	240	5·6	0·001	-	-	3. C1 TO BE POLYSTYRENE 100V 5%
8R	8·0 - 9·0	100	91	220	4·7	0·001	-	-	
9R	9·0 - 10	68	62	130	3·3	680	-	-	4. C3, C6, C8 TO BE NPO 500V 5%

NOTE CAPACITOR VALUES MAY VARY ON EARLY PRODUCTION FILTERS