# Signal Generators
# SG63E and SG63F

Division of ADVANCE ELECTRONICS LIMITED

# Contents SG63E and SG63F

# Introduction



The Advance Signal Generators SG63E and SG63F provide AM. FM or CW signals in the frequency range of 4 to 230MHz. These two instruments are electrically similar but differ in the type of mechanical coupling between the tuning control and tuning components. Although the instruments have been designed primarily for use in servicing radio receivers, operating up to VHF, and television receivers operating in bands 1 to 3, the comprehensive specification makes them suitable for various laboratory applications.

The basic tuning accuracy of the instruments is obtained by means of a directly calibrated frequency scale and a slow-motion drive. This accuracy may be improved by utilizing the 5MHz calibration markers provided by the internal crystal oscillator to an accuracy of $\pm$ 0.03%.

The X-sweep facility and phasing control permits the user to examine the response of a tuned circuit or discriminator on an oscilloscope.

# Specification

# Section 2

FREQUENCY RANGES

| | |
|---|---|
| 4 to 7.5 MHz | 25 to 50 MHz |
| 7.5 to 13 MHz | 50 to 100 MHz |
| 13 to 25 MHz | 100 to 230 MHz |

SCALE ACCURACY
± 1%. Logging scale and cursor adjustment provided.

CRYSTAL CHECK
At 5 MHz intervals, accurate to ± 0.03%. Detector output available on front panel.

RF OUTPUT
Monitored at 100mV. Accuracy ± 1.0dB at SET level up to 180 MHz when accurately terminated.

ATTENUATOR
100dB in four 20dB steps with a continuously variable control of 20dB. Step attenuator accuracy: ± 2dB overall.

OUTPUT IMPEDANCE
Nominal 75Ω unterminated. 50Ω available to special order

LEAKAGE
Less than 3μV in a single-loop coil positioned close to instrument.

FUNCTIONS
(1) Continuous wave.
(2) AM 30% nominal at 1000 Hz ± 10%.
(3) 0 to 400kHz total internal FM sweep at supply frequency up to 180MHz.
(4) External FM 20Hz to 20kHz. Total sweep approximately 6kHz/V of applied signal. Maximum total sweep 400kHz up to 180MHz.
(5) Fixed internal FM150kHz ± 30kHz total sweep. Modulation frequency 1000Hz ± 10%.
(6) Fixed internal FM total sweep 45kHz ± 10kHz up to 180MHz. Modulation frequency 1000Hz ± 10%.

PHASE CONTROL
An output at supply frequency, with variable phase, is available for use with internal frequency modulation.

POWER SUPPLY REQUIREMENTS
100 to 120V, 200 to 240V, 40 to 60Hz, 25W approx.

ACCESSORIES SUPPLIED
One 75Ω RF lead type PL5B (PL43 for 50Ω version).
One 75Ω Termination Unit Type TP2A (TP2D for 50Ω version).
One Jack plug, Part No. 10806.
One Tuning knob with handle, Part No. 13568.
One Instruction Manual, Part No. 18506.

WEIGHT
27lb (12.2kg)

FINISH
Dark blue metal case complete with leather carrying handle. Light grey front panel with medium grey surround. Knobs medium grey.

3.1 SUPPLY VOLTAGE CHECK

Before using the instrument, ensure that it is correctly adjusted to operate from the local supply voltage. In the case of the SG63E the voltage tapping panel should be removed and the position of the tapping plug checked: in the SG63F the case must be removed from the instrument to check the supply tappings on the printed circuit board. Check that the supply lead is connected to the supply plug with the black lead to NEUTRAL, the red lead to LIVE and the green lead to GROUND.

3.2 FREQUENCY COVERAGE

An RF signal between 4 and 230 MHz can be selected by use of the range switch and slow-motion tuning control. A linear scale is provided with 180 subdivisions. This enables the instrument to be reset, and to be adjusted to frequencies that fall between the principal sub-divisions on the main scale.

3.3 CRYSTAL CHECK

A built-in crystal calibrator operates on a fundamental of 5 MHz and, using harmonics, provides calibration checks at 5MHz intervals, over the entire frequency range. The accuracy is $\pm$ 0.03% compared with the normal calibration accuracy of $\pm$ 1% To check any frequency which is a multiple of 5 MHz, proceed as follows.

(1) Connect a pair of high resistance headphones to the jack plug, Part No. 10806.
(2) Set FUNCTION switch to XTAL CHECK.
(3) Insert the jack plug firmly into the PHONES socket. Tune the instrument dial to the appropriate multiple frequency. When the oscillator frequency is almost an exact multiple of 5 MHz, a beat note will be heard.
(4) Use the FREQUENCY control to obtain a zero beat condition.

3.4 CALIBRATION ACCURACY

To obtain a signal of high accuracy follow the procedure detailed in para. 4.4. Any calibration error, shown by inspection of the main scale, can be corrected by using the cursor adjuster situated at the base of the pointer. Insert a screwdriver into the aperture at the base of the pointer and make adjustments until the curcor line and the required scale reading coincide. If the curcor is not adjusted note the logging scale setting to facilitate resetting the instrument to the same frequency.

3.5 SPURIOUS MODULATION

Incidental AM modulation of a FM signal is typically no greater than 30%. Incidental FM modulation with an AM signal is typically no greater than 30 kHz.

3 6 FUNCTION SWITCH

This five position switch provides the following facilities:

(1) 30% AM - the output signal is amplitude modulated at 1000 Hz to a nominal depth of 30%, up to 180 MHz.
(2) 1000 Hz INT. FM 45 kHz - this position provides an FM signal using a 1000 Hz modulation frequency with a total deviation of 45 kHz $\pm$ 10 kHz, up to 180 MHz RF.
(3) 1000 Hz INT. FM 150 kHz - this position also provides an FM signal using a 1000 Hz modulation frequency but with a total deviation of 150 kHz $\pm$ 30 kHz, up to 180 MHz RF.
(4) LINE FM, EXT. FM or CW
 i) With LINE FM switch OFF, and with no signal injected into the EXT. FM IN socket, the output is unmodulated (continuous wave) at the selected carrier frequency.
 ii) With the LINE FM control on, the carrier is frequency modulated at the supply frequency with deviation as indicated. The LINE FM scale is calibrated to 300 kHz. A total deviation of 400 kHz can be obtained at the maximum setting of the control up to 180 MHz RF. When using modulation at the supply frequency the X-SWEEP OUT socket and the SWEEP PHASING control can be used to obtain IF or discriminator characteristics on an oscilloscope. The X-SWEEP signal is used as the timebase for the oscilloscope. It consists of a 30V to 50V signal from an approximate 100 kΩ source at the supply frequency with variable phase control.
 iii) With the LINE FM control OFF an external signal can be injected into the EXT FM socket for external frequency modulation. Acceptable modulating frequencies are in the range 20 Hz to 20 kHz and deviation is approximately 6kHz per volt. Maximum total deviation is 400 kHz up to 180 MHz RF.
(5) XTAL CHECK - The 5 MHz crystal oscillator is switched into circuit for frequency checking.

3.7 RF OUTPUT TERMINATION

The output signal can be fed directly from the RF OUTPUT socket into a 75Ω load.

When feeding into a high impedance load, the output should be terminated with the TP2A termination unit supplied with the instrument. The leads from the TP2A, or from the RF OUTPUT socket, must be kept as short as possible.

The open circuit voltage at the RF OUTPUT socket is nominally twice the level indicated by the fine and coarse attenuators.

3.8 OUTPUT ISOLATING CAPACITORS

There is a risk of a large potential difference existing between the signal generator and a receiver under test if the receiver is of the AC/DC type. It is essential to fit isolating capacitors to both output and ground leads. Suitable capacitors will be 0.1μF, 500V working, providing that the high potential points do not exceed 500V peak.

It is recommended that the output of the signal generator is always fed to the equipment under test via a suitable capacitor. This will avoid damage to the instruments output attenuators from high DC voltage points, such as valve anode circuits.

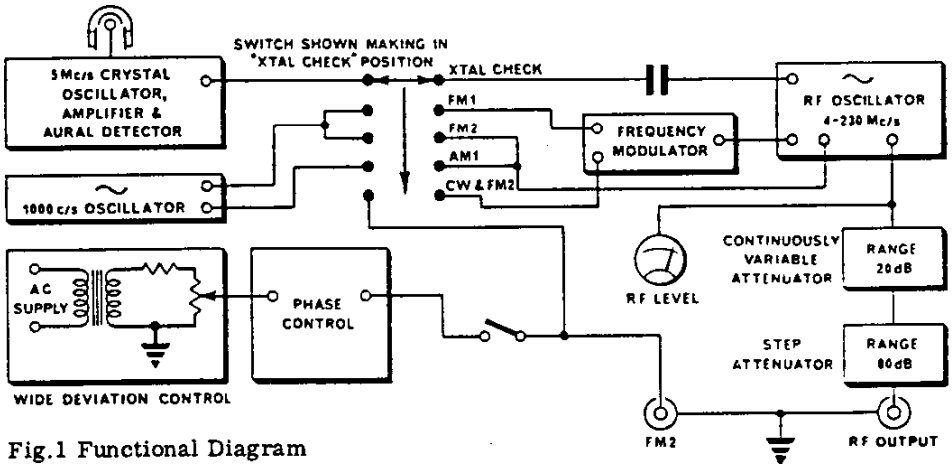



Fig.1 Functional Diagram

4 1 GENERAL

The block diagram of the instruments is shown in Fig. 1, and the circuit diagram is illustrated in Fig. 3, Section 6. As shown in Fig. 1 the RF signal is generated by a variable frequency Colpitts type oscillator. The signal is then used directly as a CW output, amplitude or frequency modulated, or fed to a crystal oscillator circuit for calibration purposes.

4.2 FREQUENCY MODULATION

Frequency modulation is provided via a circuit consisting of two diodes MR2 and MR3, in series with a capacitive circuit which is associated with the RF oscillator V1A. Voltage applied to the diodes will cause a change in their admittance and capacitance characteristics and, therefore, cause a change in the resonant frequency of the network. Since the effect of this circuit will vary widely with frequency of the oscillator the variable resistor networks comprising RV3 to RV8 and RV11 to RV14 are used to provide a constant deviation for a given input.

With the FUNCTION switch set to position 'b' (Fig 3), no external input and the LINE FM control set to OFF, an unmodulated CW output is available. When the LINE FM control is set to any position other than OFF a signal at the supply frequency is fed to the modulation circuit and by selecting the amplitude of this signal the modulating frequency can be set as indicated by the calibration marks associated with the control . With the LINE FM control set of OFF an external signal in the range 20Hz to 20kHz may be applied to the modulation circuit via the EXT FM IN Socket. The sensitivity of this input is approximately 6kHz per volt.

When the FUNCTION switch is set to position 'c' and 'd' (Fig. 3), the modulation frequency is controlled by the output of V4B. In this condition V1B is operating as a Hartley type oscillator at a frequency of 1000 Hz and is coupled to the RF circuit via the modulating transformer T1. Since the amplitude of the AF waveform again determines the modulating frequency, different loads are provided for V4B to enable the calibrated frequencies to be obtained.

4.3 AMPLITUDE MODULATION

This mode of operation is similar to the fixed internal frequency modulation described above. However, in this case, the full output from T1 is applied to the grid of V1A. The amplitude of this signal is sufficient to control the grid bias conditions of V1B and thus control the amplitude of the RF signal.

4.4 CRYSTAL CHECK

When the FUNCTION switch is set to position 'a' (Fig. 3) the output from V1A is fed to the cathode circuit of V1B. The switch position causes V1B to operate again as a Hartley type oscillator but this time at the crystal controlled frequency of 5 MHz. Thus the RF output signal is heterodyned with the 5 MHz oscillator signal and the output is amplified by VT1 which provides an AF output at the PHONES socket. The RF output can, therefore, be calibrated to the nearest 5 MHz using earphones and a zero beat technique.

4.5 POWER SUPPLY

The H.T and heater supplies for the instrument are derived from the supply via the power transformer T2 and conventional rectifying and supression circuits. A further secondary winding on the transformer provides the necessary supplies for the X SWEEP OUTPUT and the LINE FM circuits.

(3) Tune the instrument to 230MHz CW and adjust C12 until the indicated output is 230MHz.
(4) Repeat the operations detailed in para. 5.3 (d) (1) to (3) until optimum settings are obtained, then check the calibration at each main point in this frequency band.
(5) Carry out the procedures detailed in para. 5.3 (d) (1) to (4) in the other frequency bands of the instrument as detailed in Table 5.2.

Table 5.2 RF Calibration Adjustments

| Band | Tuned Frequency | Adjust |
|---|---|---|
| A | 100MHz | L6 |
| | 230MHz | C12 |
| B | 50MHz | L1 |
| | 100MHz | C2 |
| C | 25MHz | L2 |
| | 50MHz | C6 |
| D | 13MHz | L3 |
| | 25MHz | C7 |
| E | 7.5MHz | L4 |
| | 13MHz | C8 |
| F | 4MHz | L5 |
| | 7.5MHz | C9 |

(6) Carry out the RF output level check procedure detailed in para. 5.3 (c).

(e) 5MHz Oscillator accuracy
(1) Set the FUNCTION switch to XTAL CHECK and using a timer counter (e.g. Advance TC4A) terminated with a loop, examine the frequency at coil L7.
(2) If the frequency is not within the range 4.999 MHz to 5.001MHz replace the crystal XL1.

(f) Amplitude modulation
(1) Set the FUNCTION switch to 30% AM and connect a timer counter across C24.
(2) The output indicated on the counter should be 1000Hz ± 80Hz. If necessary adjust the setting of C24 to obtain this frequency.
(3) Disconnect the counter and connect a modulation depth meter to the output.
(4) Tune the instrument to a suitable frequency and check that the modulation depth is between 20% and 50%. If necessary adjust the setting of RV20 to obtain this level.

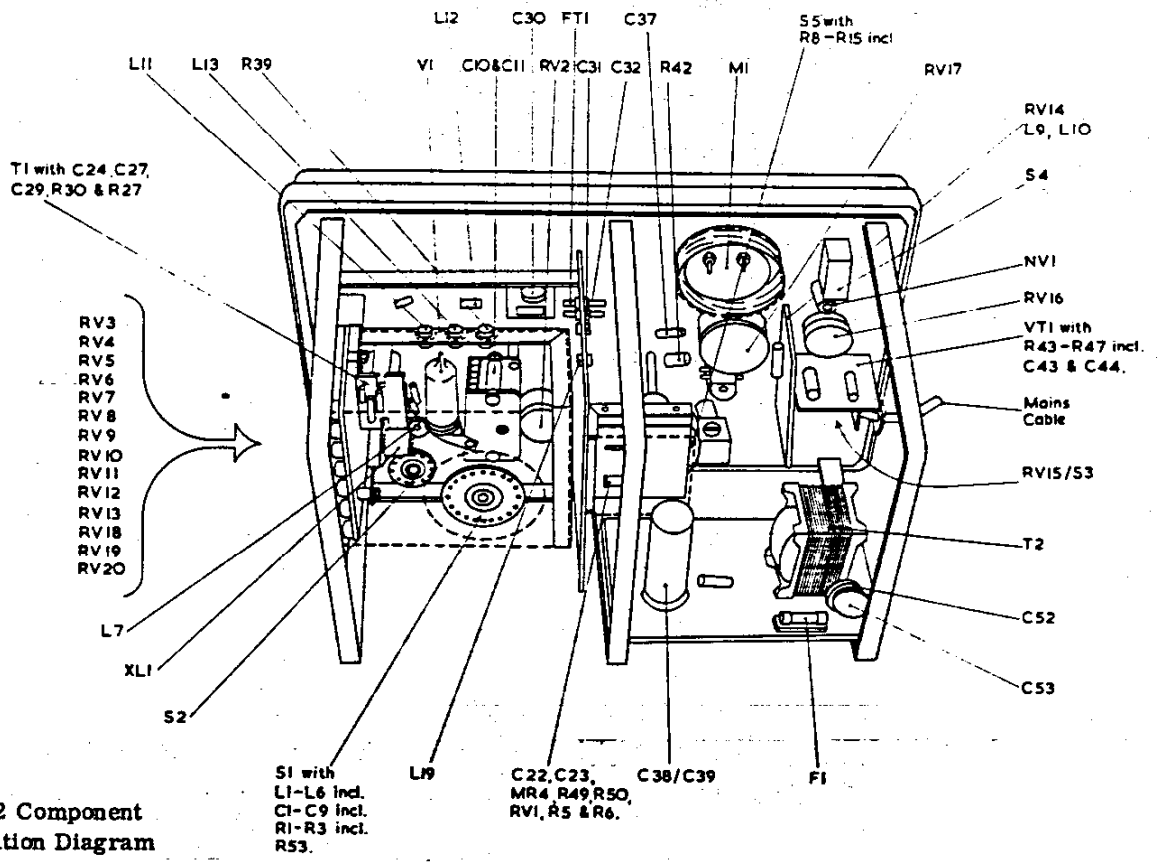



Fig.2 Component Location Diagram

5 1 ACCESS TO COMPONENTS

(a) Removal of Case (Fig. 2)
Access to the internal components is obtained by placing the instrument face downwards and by removing the four securing screws at the rear and removing the case rearwards. Replacing the case is the reverse of the procedure detailed above.

(b) Removal of RF Screening Cans (Fig. 2)
To gain access to the components associated with the RF oscillatory circuits two screening cans must be removed. Extract the self-tapping screws and detach the appropriate plates.

NOTE: When the oscillator screens are removed a shift in frequency calibration of the order of 1% will occur. To ensure efficient screening, ALL screws must be used to refit the screening cans in place.

5 2 INTRODUCTION OF RECALIBRATION PROCEDURE

After a considerable period of service the instrument may require recalibration to meet the requirements of the specification detailed in Section 2. The recalibration procedure is detailed in para. 5.3.

5.3 RECALIBRATION PROCEDURE

(a) Preliminary procedure
Before proceeding with the recalibration procedure the instrument should be checked to ensure that it is suitable for operating from the AC supply available. The instrument should then be removed from its case (para. 5.1(a) ) and connected to the AC supply ready for operation Switch the instrument on and check that the power ON indicator is illuminated.

(b) DC Voltage checks

(1) Set the FREQUENCY RANGE switch to position C, the FREQUENCY control for 35 MHz and the LINE FM control to 200 kHz.

(2) Adjust the setting of the SET OUTPUT control until the meter indicates 'SET'.

(3) Using an Avometer model 8, or similar instrument, check that the voltages at the test points indicated on the circuit diagram, Fig. 3, for the various settings of the FUNCTION switch, are within ± 7% of the readings detailed in Table 1.

Table 5.1 DC Voltage Levels

| | FUNCTION Switch Position | | | | |
|---|---|---|---|---|---|
| Test Point | XTAL CHECK | FM/CW | 150kHz | 45MHz | 30%AM |
| A | 300V under all conditions | | | | |
| B | 230V under all conditions | | | | |
| C | 5.2V | 5.2V | 5.2V | 5.4V | 5.0V |
| D | 4.5V | 4.5V | 12.5V | 7.0V | 13.0V |
| E | 3.0V | 3.0V | 2.1V | 2.7V | 2.1V |
| F | 125.0V | 115.0V | 117.0V | 46.0V | 130.0V |
| K | 140V to 145V as set by SET OUTPUT control | | | | |
| L | 145V ± 2V under all conditions | | | | |
| M | 115V ± 2V under all conditions | | | | |

(c) RF Output level

(1) Set the FUNCTION switch to CW, the frequency controls to 40MHz and the attenuators to 0dB.

(2) Connect the RF OUTPUT socket to an RF millivoltmeter (e.g. Advance Type VM79) via the appropriate termination unit. (TP2A for 75Ω model).

(3) Adjust the SET OUTPUT control to obtain a reading of 100mV on the millivoltmeter. Adjust the preset potentiometer RV14 until the internal meter indication is 'SET'.

(4) Check that the outputs corresponding to +1dB and -1dB internal meter indications are 112mV and 89mV respectively.

(5) With the SET OUTPUT control set fully clockwise, sweep through the entire frequency range of the instrument. If necessary, adjust the coupling of the appropriate oscillator coils so that the minimum output on each range is not greater than 130mV.

(6) Tune the instrument to 180MHz CW i.e. set frequency controls to 180MHz, set the FUNCTION switch to CW, and adjust the SET OUTPUT control until the internal meter indication is 'SET'.

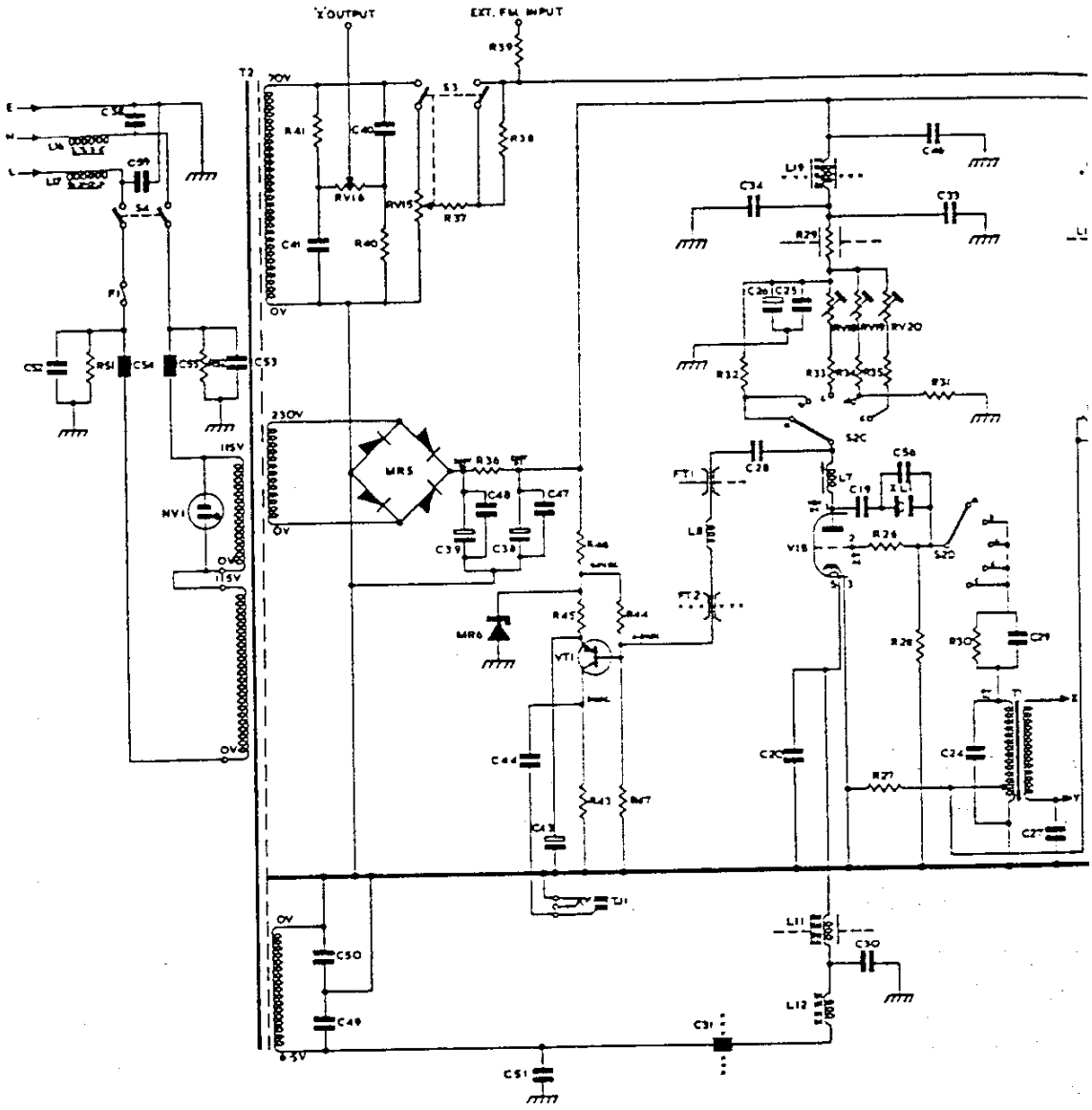
(7) Check that the millivoltmeter indication is within the range 89mV to 112mV. If necessary, readjust the setting of RV14 to obtain this reading.

NOTE: In the following procedures the RF OUTPUT socket must remain correctly terminated. The instruction 'Tune' shall be interpreted as defined in para. 5.3 (c) (6).

(d) RF Calibration

(1) Tune the instrument to 100MHz CW and connect the output to a suitable frequency calibrator.

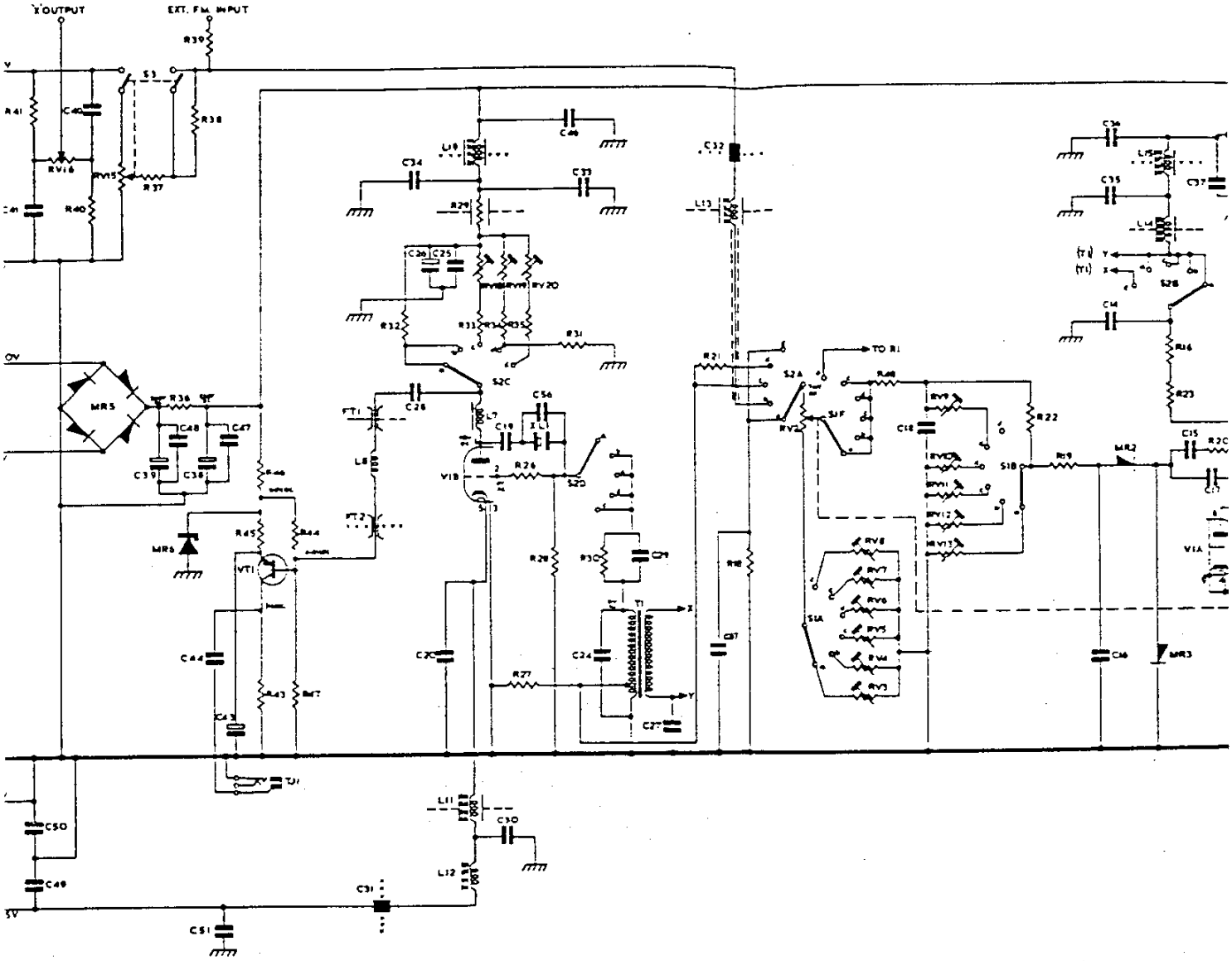
(2) Adjust the core of L6A until the indicated output is 100MHz.




NOTES
S2 FUNCTION SWITCH SHOWN IN CRYSTAL CHECK POSITION.
S1 RANGE SWITCH SHOWN IN RANGE 'A' POSITION
— — — DENOTES INNER SCREEN
. . . . DENOTES OUTER SCREEN
VOLTAGES SHOWN ARE WITH 'S3' WIPER IN POSITION 'A', WHICH IS THE LINE FINDER POSITION
VOLTAGE FIGURES SHOWN ON 'C' BAND POINTER AT 88 MHz
'LINE 230' BATT TO 9000 MHz
OFF METER AT 'REST' LEVEL
D.C. VOLTMETER READ ON AVO 8
A.C. VOLTMETER READ ON YM77
R.F. VOLTMETER READ ON YM79 WITH 75Ω LOAD



Fig.3 Circuit Diagram

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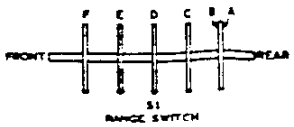
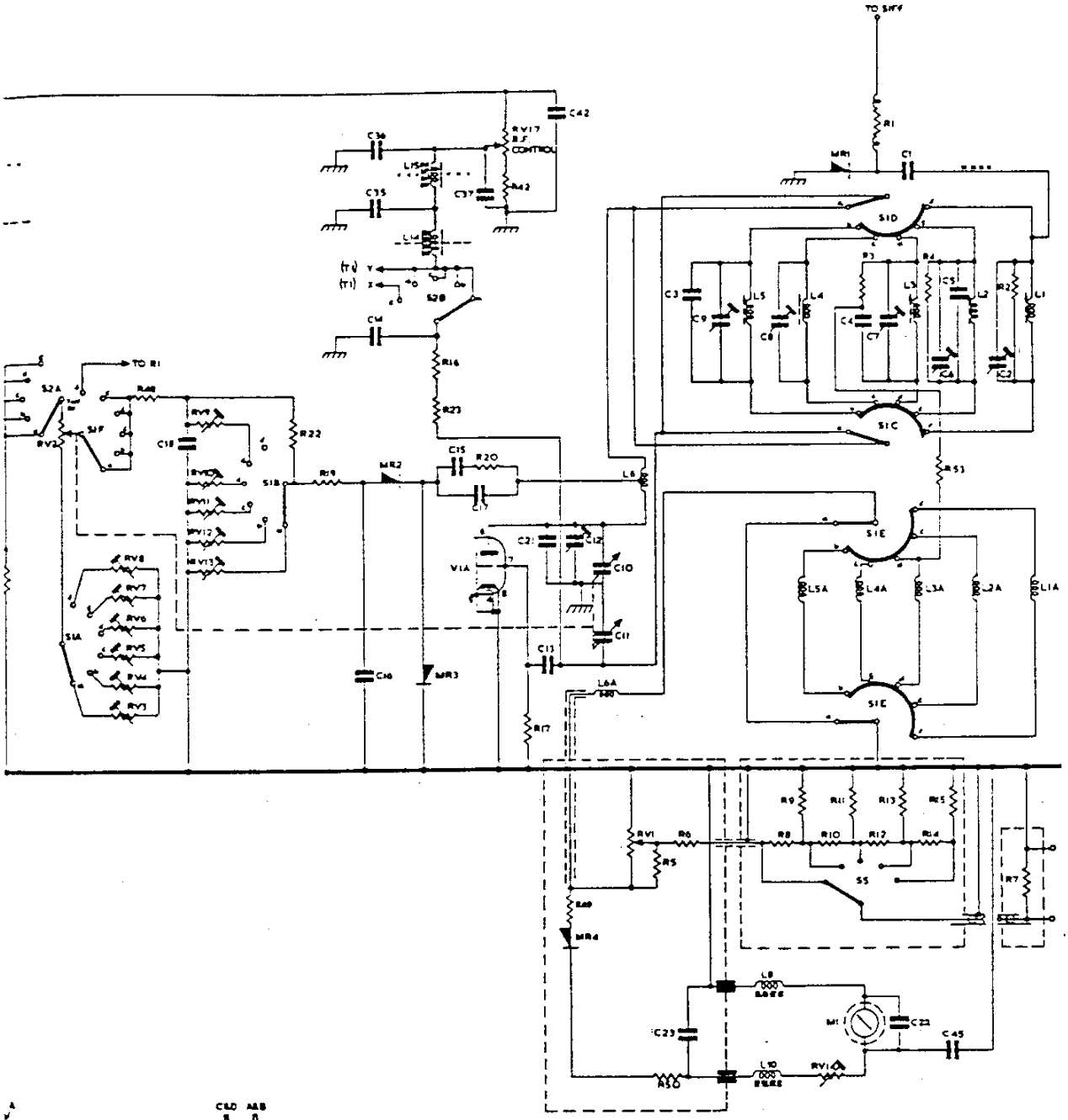
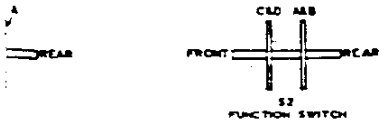
WITH 75Ω LOAD





| Ref | Value | Description | Part No |
|---|---|---|---|
| RESISTORS (RC7K 10% unless specified) | | | |
| R1 | 22KΩ | | 3433 |
| R2 | 22K | | 3433 |
| R3 | 12K | | 3429 |
| R4 | 10K | | 1069 |
| R5 | 220 | | 3418 |
| R6 | 82 | | 3414 |
| R7 | 75 | | 3439 |
| R8 | 743 | 1% | 6249 |
| R9 | 92 | 1% | 6250 |
| R10 | 743 | 1% | 6249 |
| R11 | 92 | 1% | 6250 |
| R12 | 743 | 1% | 6249 |
| R13 | 92 | 1% | 6250 |
| R14 | 743 | 1% | 6249 |
| R15 | 82.5 | 1% | 6251 |
| R16 | 1.5K | 10% | 591 |
| R17 | 10K | | 1069 |
| R18 | 3.3K | | 3425 |
| R19 | 120 | | 3417 |
| R20 | 68 | | 3415 |
| R21 | 1.8K | | 3420 |
| R22 | 5.6K | | 3428 |
| R23 | 1.5K | 10% | 591 |
| R24,R25 | Not used | | |
| R26 | 100 | | 3416 |
| R27 | 220 | | 1272 |
| R28 | 207K | | 3437 |
| R29 | 1K | | 3424 |
| R30,R31 | 56K | | 3435 |
| R32 | 18K | | 3432 |
| R33,R34 | | | |
| R35 | 10K | | 1069 |
| R36 | 2.2K | 5% | 599 |
| R37, R38 | 3.3K | 10% | 7704 |
| R39 | 2.2K | 10% | 6781 |
| R40,R41 | 12K | | 3429 |
| R42 | 1.8K | 5% | 3394 |
| R43 | 3.3K | | 3425 |
| R44 | 4.7K | | 3427 |
| R45 | 470 | | 3419 |
| R46 | 150K | | 3436 |
| R47 | 33K | | 3434 |
| R48 | 3.9K | | 3426 |
| R49 | 120 | 5% | 735 |
| R50 | 820 | 5% | 1637 |
| R51,R52 | 1M | 10% | 1171 |
| R53 | 270K | | 3437 |

| POTENTIOMETERS (Welwyn P345, unless specified) | | | |
|---|---|---|---|
| RV1 | 100 | | 10374 |
| RV2 | 16.5K | | A15680 |
| RV3 | | | |
| RV4 | 10K | Preset | 3447 |
| RV5 | | | |
| RV6 | | | |
| RV7 | 25K | Preset | 3446 |
| RV8 | | | |
| RV9 | 5K | Preset | 3444 |
| RV10 | 10K | Preset | 3447 |
| RV11 | | | |
| RV12 | 5K | Preset | 3444 |
| RV13 | | | |
| RV14 | 10K | Preset | 3447 |
| RV15 | 5K | | 10766 |
| RV16 | 250K | | 11078 |
| RV17 | 10K | | 1213 |
| RV18 | 100K | Preset | 3445 |
| RV19 | 250K | Preset | 3443 |
| RV20 | 100K | Preset | 3445 |

| Ref. | Value | Description | Part No |
|---|---|---|---|
| CAPACITORS (Wima M 400V unless specified) | | | |
| C1 | 27pF | | 18454 |
| C2 | 1-5p | | 8770 |
| C3 | 2.2p | | 815 |
| C4 | 10p | | 4504 |
| C5 | 2.2p | | 815 |
| C6/C9 | 1-5p | | 8770 |
| C10,C11 | 70 x 70p | | 8807 |
| C12 | 1-5p | | 8770 |
| C13 | 30p | | 3448 |
| C14 | .0047μ | | 3778 |
| C15/C17 | 10p | | 4504 |
| C18 | 40p | | 3395 |
| C19 | 1000p | | 3397 |
| C20,C21 | 50p | | 3699 |
| C22 | 0.05μF | 20% 12V | 19657 |
| C23 | .05μ | | 2793 |
| C24 | .047μ | | 3779 |
| C25 | 3300p | | 3396 |
| C26 | 8μ | | 10760 |
| C27 | 0.1μ | | 2385 |
| C28 | 0.022μ | | 4243 |
| C29 | 0.047μ | | 3398 |
| C30 | 0.01μ | | 3399 |
| C31,C32 | 300p | | 7099 |
| C33,C34 | 4700p | | 4212 |
| C35,C36 | 0.01μ | | 3399 |
| C37 | 0.1μ | | 2385 |
| C38 | 100μ | (60-100μ 350V. | 2072 |
| C39 | 60μ | Elect. Plessey) | 2072 |
| C40,C41 | 0.22μ | | 2601 |
| C42 | 4700p | | 4212 |
| C43 | 50μ | | 1746 |
| C44 | 0.1μ | | 2385 |
| C45 | 0.05μF | 20% 12V | 19657 |
| C46/C50 | 4700p | | 4212 |
| C51 | 0.01μ | | 3399 |
| C52,C53 | 5000p | | 1514 |
| C54,C55 | | | 18146 |
| C56 | 10p | | 4504 |
| C57 | 0.047μ | | 3779 |
| C58 | 5000pF | | 1514 |
| C59 | 5000pF | | 1514 |

| MISCELLANEOUS | | |
|---|---|---|
| FS1 | Fuse 1A | 4732 |
| FT1, FT2 | Feed thro' Cambion | 3412 |
| L1 | Osc coil 4-7.5MHz | RF641 |
| L2 | Osc coil 7.5-13MHz | RF633 |
| L3 | Osc coil 13-25MHz | RF632 |
| L4 | Osc coil 25-50MHz | RF631 |
| L5 | Osc coil 50-100MHz | RF630 |
| L6 | Osc coil 100-230MHz | 10377 |
| L7 | Xtal Calibration Coil | RF619 |
| L8 | 1mH choke Cambion 3635/37 | 3404 |
| L9 to L15, L19 | Choke Ferroxcube | C 173 |
| L16, L17 | Choke | 11212 |
| L18 | Not used | |
| M1 | Meter 20μA | 18182 |
| MR1 | Diode MS4H | 20422 |
| MR2, MR3 | | 5871 |
| MR4 | | 7110 |
| MR5 | | 12783 |
| MR6 | | 4225 |
| NV1 | Neon Indicator | 1165 |
| S1 | Frequency Range switch | A12349 |
| S2 | Function Switch | |
| S3 | DPST switch (part of RV15) | A10606 |
| S4 | Supply ON/OFF switch | 539 |
| S5 | | |
| T1 | Modulation transformer | MT356 |
| T2 | Supply transformer | MT415 |
| TJ1 | Jack Igranic P72 | 10805 |
| V1 | Tube 6BQ7A | 12339 |
| VT1 | OC71 | 340 |
| XL1 | Crystal Quartz 5MHz | 12343 |

# 12 Guarantee and Service Facilities

Section 7

This instrument is guaranteed for a period of one year from its delivery to the purchaser, covering the replacement of defective parts other than tubes semiconductors and fuses. Tubes and semiconductors are subject to the manufacturers' guarantee.

We maintain comprehensive after sales facilities and the instrument can, if necessary, be returned to our factory for servicing. The Type and Serial Number of the instrument should always be quoted, together with full details of any fault and the service required. The Service Department can also provide maintenance and repair information by telephone or letter.

Equipment returned to us for servicing must be adequately packed, preferably in the special box supplied, and shipped with transportation charges prepaid. We can accept no responsibility for instruments arriving damaged. Should the cause of failure during the guarantee period be due to misuse or abuse of the instrument, or if the guarantee has expired, the repair will be put in hand without delay and charged unless other instructions are received.

OUR SALES, SERVICE AND ENGINEERING DEPARTMENTS ARE READY TO ASSIST YOU AT ALL TIMES.

# ADVANCE INFORMATION



AMENDMENT SHEET

FOR

INSTRUCTION MANUAL SG63F

(Part No. 18506)

Page 12, Components List

R1 now 22kΩ, Part No. 3433.
C1 now 27pF, Part No.18454.
C22, C45 now 0.05μF Murata 20% 12V, Part No. 19657.

Add the following:

C58, C59 5000pF Erie K35011/CD8, Part No. 1514.

Page 13, Components List

L16, L17 choke, Part No. 11212.
M1 meter now 20μA, Part No. 18182.
MR1 now Diode MEI MS4H, Part No. 20422.

Page 13, Circuit Diagram

In series with the Neutral path to S4 insert L16.
In series with the Line path to S4 insert L17.
Add C58 between Earth and the S4 end of L16.
Add C59 between Earth and the S4 end of L17.
R40 and R41 are now interchanged (12kΩ each).
C40 and C41 are now interchanged (0.22μF each).

Delete the connection from the bottom of MR5 to C39.
Insert an h.t. connection from the junction of R36 and R46 (point B) to the top of L19 (junction of L19 and C46).
Add C57 across R18.

The junction of R23 and C13 should be joined to the bottom plate of C11 (at the junction of the two lines that cross).

R49 is now positioned on the opposite side of MR4 adjacent to RV1 and R5.

Insert C45 between RV14 side of meter M1 and chassis.

Insert C22 directly across meter M1.

KHT/DL/22. 11. 67.

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