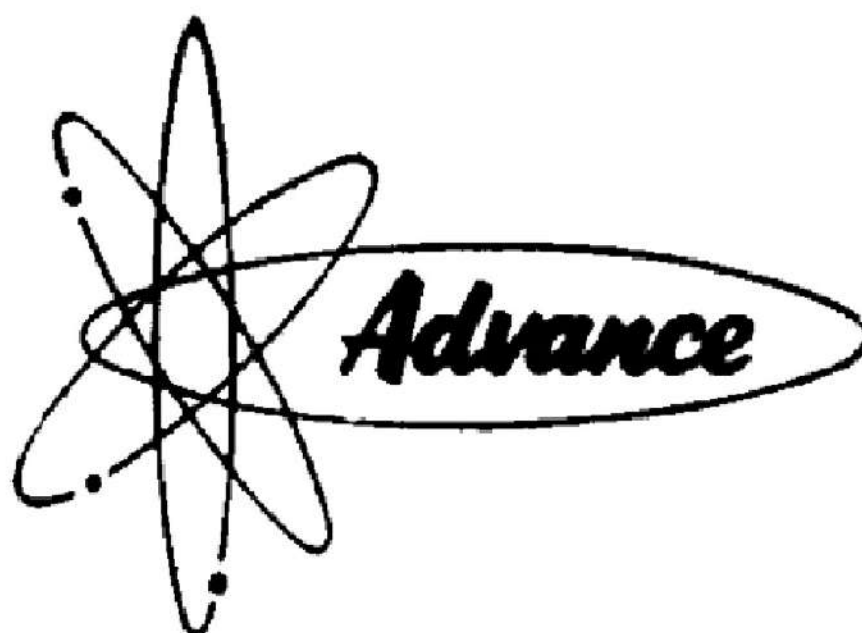


Signal Generator

SG63

Instruction Manual



ADVANCE COMPONENTS LIMITED

INSTRUMENT DIVISION

**ROEBUCK ROAD, HAINULT, ILFORD, ESSEX, ENGLAND
TELEPHONE: HAINULT 4444 TELEGRAMS: ATTENUATE ILFORD**

MAINTENANCE

SECTION 5

- (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) R.F. 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.
- (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.

BAND	TUNED FREQUENCY	ADJUST
A	100MHz 230MHz	L6 C12
B	50MHz 100MHz	L1 C2
C	25MHz 50MHz	L2 C6
D	13MHz 25MHz	L3 C7
E	7.5MHz 13MHz	L4 C8
F	4MHz 7.5MHz	L5 C9

Table 5.2 R.F. Calibration Adjustments

- (6) Carry out the R.F. 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 4.999MHz 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 $\pm$ 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
- (5) between 20% and 50%. If necessary adjust the setting of RV20 to obtain this level.

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 R.F. Screening Cans (Fig. 2)

To gain access to the components associated with the r.f. 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 a.c. supply available. The instrument should then be removed from its case (para 5.1(a)) and connected to the a.c. supply ready for operation. Switch the instrument on and check that the power ON indicator is illuminated.

(b) D.C. voltage checks

- (1) Set the FREQUENCY RANGE switch to position C, the FREQUENCY control for 35 MHz and the MAINS 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 $\pm 7\%$ of the readings detailed in Table 1.

Test Point	FUNCTION Switch Position				
	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 $\pm$ 2V under all conditions				
M	115V $\pm$ 2V under all conditions				

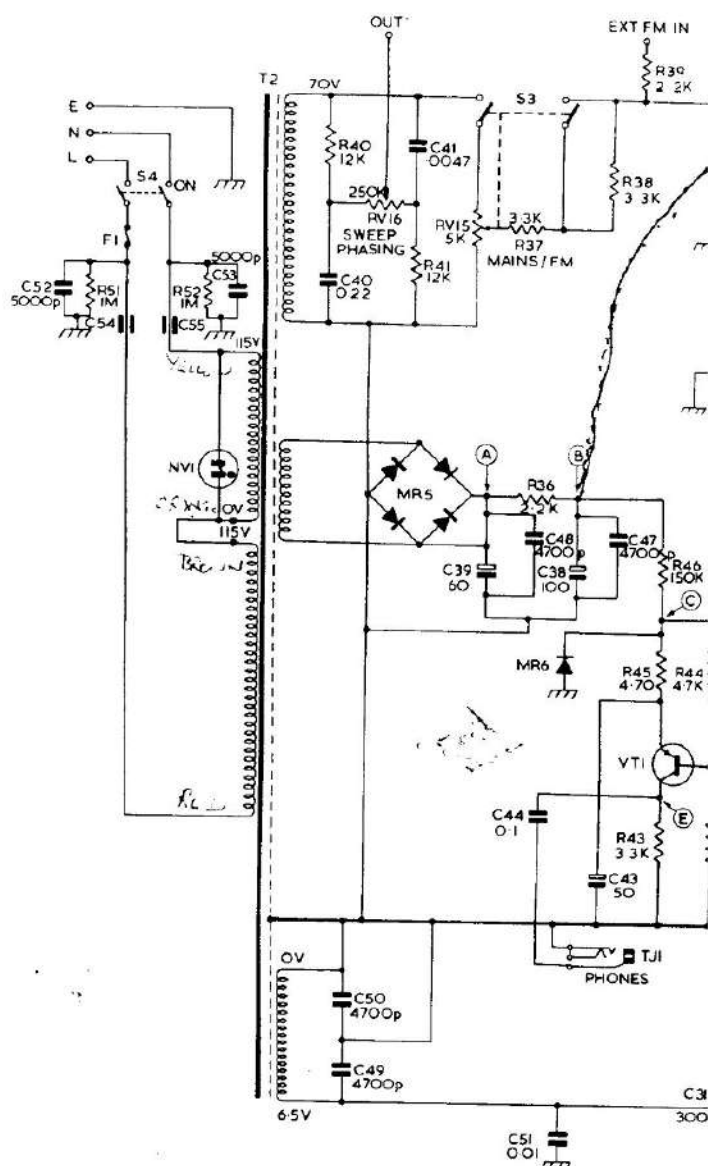
Table 5.1 D.C. Voltage Levels

(c) R.F. 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 r.f. millivoltmeter (e.g. Advance Type VM79) via the appropriate termination unit. (TP2A for 75 Ω 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'.

MISCELLANEOUS

Ref.	Description	Part No.
FS1	Fuse 1A	4732
FT1, FT2	Feed thro' Cambion	3412
L1	Osc. coil 4-7.5MHz	RF641
L2	" " 7.5-13MHz	RF633
L3	" " 13-25MHz	RF632
L4	" " 25-50MHz	RF631
L5	" " 50-100MHz	RF630
L6	" " 100-230MHz	10377
L7	Xtal Calibration coil	RF619
L8	1mH choke Cambion	3404
L9 to L15, L19	Choke Ferroxcube	
	Mullard FX1898	C173
L16 to L18	Not used	
M1	Meter 25μA	A16509
MR1	Diode Mullard OA91	2490
MR2, MR3	BTH C646/H	5871
MR4	BTH CS2A	7110
MR5	Siemens B250/C125	12783
MR6	Zener Brush ZB6-2	4225
NV1	Neon Indicator	1165
S1	Frequency Range switch	A12349
S2	Function switch	A10606
S3	DPST switch	
S4	Supply ON/OFF switch	539
S5		
T1	Modulation transformer	MT356
T2	Supply transformer	MT415
TJ1	Jack Igranic P72	10805
V1	Valve 6BQ7A	12339
VT1	Transistor Mullard OC71	340
XL1	Crystal Quartz 5MHz	12343



NOTES

S2 (FUNCTION SWITCH) SHOWN IN
CRYSTAL CHECK POSITION
S1 (FREQUENCY RANGE SWITCH) SHOWN IN
RANGE 'A' POSITION
--- DENOTES INNER SCREEN
... DENOTES OUTER SCREEN
RESISTOR VALUES IN OHMS
CAPACITOR VALUES IN μF

Set output Pot.

YES LOW

TO RI

ENCY

RV7 25K

RV8 25K

RV9 5K

RV10 10K

RV11 5K

RV12 5K

RV13 5K

RV14 10K

RV15 10K

RV16 10K

RV17 10K

RV18 10K

RV19 10K

RV20 10K

RV21 10K

RV22 10K

RV23 10K

RV24 10K

RV25 10K

RV26 10K

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RV316 10K

RV317 10K

RV318 10K

RV319 10K

RV320 10K

RV321 10K

RV322 10K

RV323 10K

RV324 10K

RV325 10K

RV326 10K

RV327

FRONT C&D A&B REAR
52
FUNCTION SWITCH

COMPONENTS LIST AND CIRCUIT DIAGRAM

SECTION 6

Ref.	Description	Part No.	Ref.	Description	Part No.
RESISTORS (RC7K 10% unless specified)					
R1	3.9K	3426	RV14	10K Preset	3447
R2	22K	3433	RV15	5K Lin Plessey	10766
R3	12K	3429		CR161002/S.	
R4	10K	1069	RV16	250K Lin Plessey	11078
R5	220	3418		003/SER QC.	
R6	82	3414	RV17	10K Colvern	1213
R7	75	3439		CLR4239/11	
R8	743	1% Welwyn C20	RV18	100K Preset	3445
R9	92	1% Welwyn C20	RV19	250K Preset	3443
R10	743	1% Welwyn C20	RV20	100K Preset	3445
R11	92	1% Welwyn C20			
R12	743	1% Welwyn C20	CAPACITORS		
R13	92	1% Welwyn C20	(Wima M 400V unless specified)		
R14	743	1% Welwyn C20	C1	40p Ceramicon	3395
R15	82.5	1% Welwyn C20	C2	1.5p Trimmer Erie	8770
R16	1.5K	10% 108		3116A	
R17	10K	1069	C3	2.2p Lemco S/M	815
R18	3.3K	3425		1106R	
R19	120	3417	C4	10p 5% Lemco S/M	4504
R20	68	3415		1106R INSUL.	
R21	1.8K	3420	C5	2.2p Lemco S/M	815
R22	5.6K	3428		1106R	
R23	1.5K	10% Erie 108	C6 to C9	1.5p Trimmer Erie	8770
R24, R25	Not used			3116A	
R26	100	3416	C10, C11	70 x 70p Tuning Capacitor	8807
R27	220	1272	C12	1.5p Trimmer Erie	8770
R28	207K	3437		3116A	
R29	1K	3424	C13	30p Ceramic Erie	3448
R30, R31	56K	3435	C14	.0047μ 400V. Wima 'F'	3778
R32	18K	3432	C15-C17	10p 5% Lemco S/M	4504
R33, R34,				1106R INSUL.	
R35	10K	1069	C18	40p Erie 'Y'	3395
R36	2.2K	5% LG75 RWV4-J	C19	1000p Wima 'F'	3397
R37, R38	3.3K	7704	C20, C21	50p Ceramic Erie 'A'	3699
R39	2.2K	10% RC7H	C22	Not used	
R40, R41	12K	3429	C23	.05μ Plessey cascap	2793
R42	1.8K	5% LG75 RWV4-J	C24	.047μ 125V. Wima 'M'	3779
R43	3.3K	3425	C25	3300p Wima 'F'	3396
R44	4.7K	3427	C26	8μ Electrolytic	10760
R45	470	3419		Hunts JE553/T	
R46	150K	3436	C27	0.1μ	2385
R47	33K	3434	C28	0.022μ	4243
R48	3.9K	3426	C29	0.047μ	3398
R49	120	5% RRC 5SWD18	C30	0.01μ	3399
R50	820	5% RRC 5SWD18	C31, C32	300p TCC LT3	7099
R51, R52	1M	10% Erie 16	C33, C34	4700p Erie K350081	4212
R53	270K	3437	C35, C36	0.01μ	3399
			C37	0.1μ	2385
			C38	100μ (60-100μ 350V.	2072
			C39	60μ Elect. Plessey)	
			C40, C41	0.22μ 125V Wima 'M'	2601
			C42	4700p Erie	4212
			C43	50μ 6V Wima elect.	1746
			C44	0.1μ	2385
			C45	Not used	
			C46-C50	4700p Erie K350081	4212
			C51	0.01μ	3399
			C52, C53	5000p Erie K3500/CD8	1514
			C54, C55	feed thro' ceramicon Erie	
				CFT 3000	18146
			C56	10p 5% Lemco S/M	
				1106R insul	4504
			C57	0.047μ 150V Wima 'M'	3779
POTENTIOMETERS					
(Welwyn P345, unless specified)					
RV1	100	Plessey Type 'E'	10374		
RV2	15.5K	Cont. pot. mod.	A15680		
RV3	10K	Preset	3447		
RV4					
RV5					
RV6					
RV7	25K	Preset	3446		
RV8					
RV9	5K	Preset	3444		
RV10	10K	Preset	3447		
RV11	5K	Preset	3444		
RV12					
RV13					

COMPONENTS LIST AND CIRCUIT DIAGRAM

SECTION 6

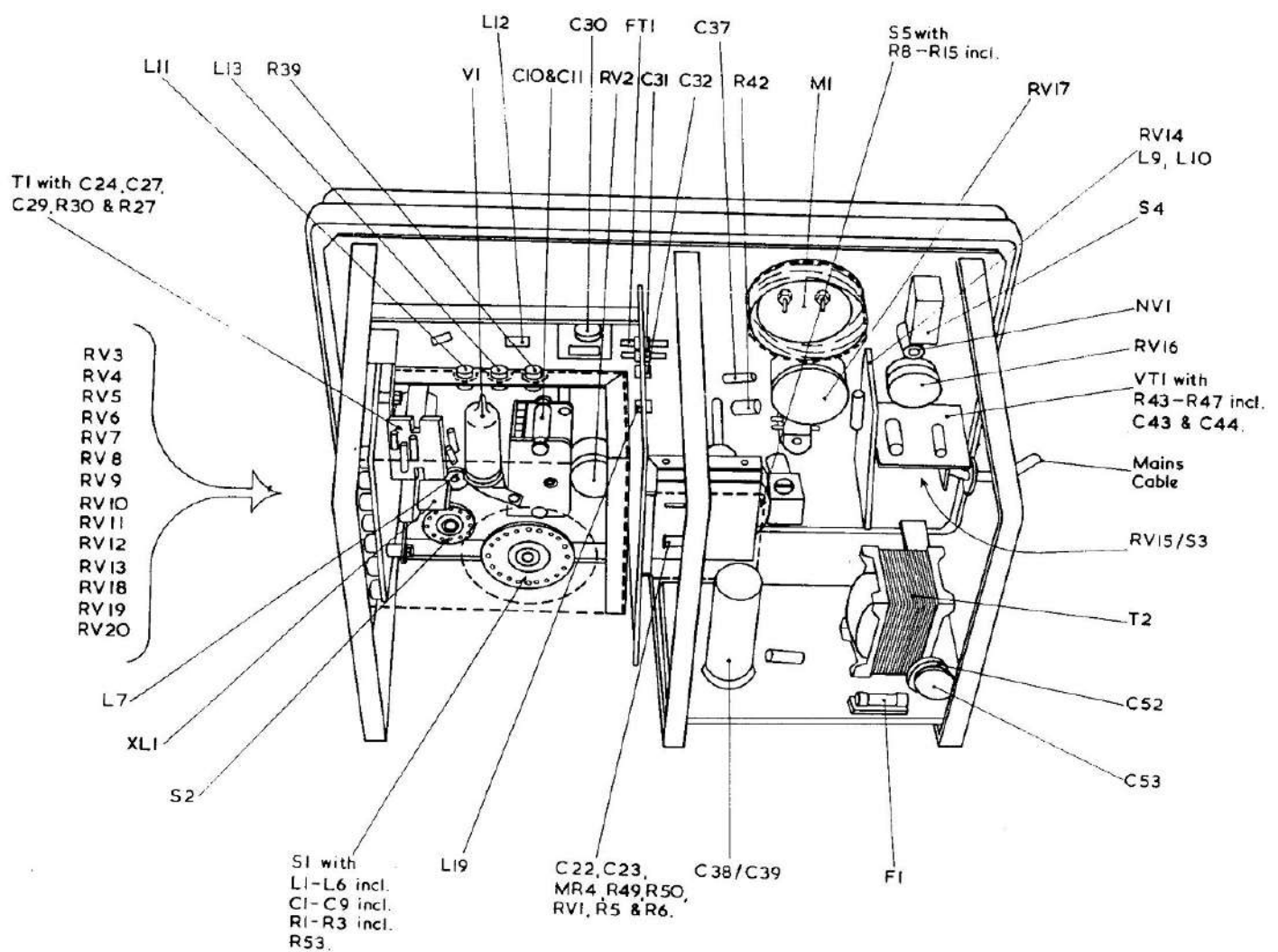


FIG 3. COMPONENT LOCATION DIAGRAM