

Assembly and Operation of the Heathkit General Coverage Receiver

MODEL RG-1



SPECIFICATION

Frequency Coverage:	
Band A	0.6 to 1.5 Mc/s
Band B	1.7 to 4 Mc/s
Band C	3.9 to 8 Mc/s
Band D	7.9 to 14 Mc/s
Band E	13.9 to 22 Mc/s
Band F	21.9 to 32 Mc/s
Intermediate Frequency:.....	1621 kc/s ($\frac{1}{2}$ lattice filter)
Sensitivity:	3 microvolts for 10 dB S/N ratio or better (S.W. bands) 8 microvolts for 10 dB S/N ratio or better (M.W. band)
Image Rejection:.....	40 dB or better
Input Impedance:.....	600 Ω nominal
Audio Output Impedance:.....	3 Ω (speaker), 600 Ω (phones)
Audio Output:.....	2 watts
Panel Controls:.....	AF GAIN incorporating AC on-OFF RF GAIN MAIN tuning BAND switch BFO ON-off AVC on-OFF BFO ADJ CALibrate press-on switch NL MIN - max
Valve and Diode Complement:	EF183 RF amplifier, ECH81 Mixer oscillator, EF183 1st IF amplifier, ECF82 2nd IF amplifier - BFO, OA81 Detector, OA81 AVC, EB91 Noise limiter, ECL86 1st audio - audio output, EZ81 Rectifier, OA2 Stabiliser

Power Requirements:	110-240V a.c., 50-60 c/s, 50 watts
Cabinet Size:	13 $\frac{3}{4}$ " wide x 11 $\frac{1}{2}$ " deep x 6 $\frac{1}{2}$ " high
Net Weight:	18 lb.
Shipping Weight:	21 lb.
General:	Tuning meter zero adjust Standby via power transformer secondary centre tap return Phone jack on front panel
Optional Extras:	1 Mc/s crystal calibrator (Model CL-1M) Matching loudspeaker cabinet (Model SG-4) Speaker, Part No. 407-501

INTRODUCTION

The Heathkit Model RG-1 is a versatile high performance semi-communications receiver which has many refinements normally found only on receivers costing much more.

Frequency coverage of the Receiver is continuous from 600 kc/s to 1.5 Mc/s and from 1.7 Mc/s to 32 Mc/s. The break between 1.5 and 1.7 Mc/s is to permit use of a 1621 kc/s IF which gives a far superior image rejection than frequencies in the 450 kc/s region. Each band is separately calibrated on a large easy-to-read slide rule scale. The dial is illuminated and provides approximately 9" of band-spread for each band. A two-speed drive is incorporated, allowing a small section of the band to be tuned at a very slow rate.

The Receiver features a signal tuning meter, a tuned RF amplifier stage, a half lattice filter, adjustable noise limiter, plus many other features desirable on a communications type receiver. Provision has been made for 'Q' Multiplier connection.

The low-silhouette styling and the green-grey colour combination will prove an attractive addition to any surroundings.

RESISTOR AND CAPACITOR IDENTIFICATION CHART (see Circuit Diagram)

C41	.005 μ F	C56	75 μ F	R12	3.9 K Ω	R27	270 Ω	R42	47 K Ω
C42	.1 μ F	C57	20 μ F	R13	560 Ω	R28	1.5 K Ω	R43	47 K Ω
C43	.005 μ F	C58	20 μ F	R14	47 K Ω	R29	220 K Ω	R44	2.2 K Ω
C44	.005 μ F	C59	.01 μ F	R15	1 K Ω	R30	47 K Ω	R45	220 K Ω
C45	.005 μ F	C60	20.5 pF	R16	100 K Ω	R31	1 K Ω	R46	10 Ω
C46	.1 μ F	C61	.25 μ F	R17	10 Ω	R32	2 K Ω	R47	470Ω
C47	.005 μ F	C62	.005 μ F	R18	1 K Ω	R33	27 K Ω	PC1	2 K lin
C48	.005 μ F	C63	.005 μ F	R19	33 K Ω	R34	5 K Ω	VR1	5 K lin
C49	200 pF	C64	.005 μ F	R20	1 K Ω	R35	560 K Ω	VR2	10 K lin
C50	200 pF	C65	.005 μ F	R21	47 K Ω	R36	220 K Ω	VR3	500 K log
C51	15 pF	C66	.1 μ F	R22	22 K Ω	R37	100 K Ω	X1	1.6197 Mc/s crystal
C52	.01 μ F	C67	.005 μ F	R23	2.2 M Ω	R38	220 K Ω	X2	1.6214 Mc/s crystal
C53	25 μ F			R24	1 M Ω	R39	220 K Ω		
C54	.005 μ F			R25	330 K Ω	R40	100 K Ω		
C55	60 μ F	R11	1 K Ω	R26	560 K Ω	R41	47 K Ω		

CIRCUIT DESCRIPTION

There is no definite need for the constructor of this receiver to understand precisely how it operates, but many non-technical as well as technically minded constructors may find interest and derive some knowledge of the principle of operation of this receiver by reading this circuit description in conjunction with the Circuit Diagram (Page 2) and the Block Diagram (Page 32). As the BAND switch is quite complex, the circuit will be discussed with the switch in the 'A' position.

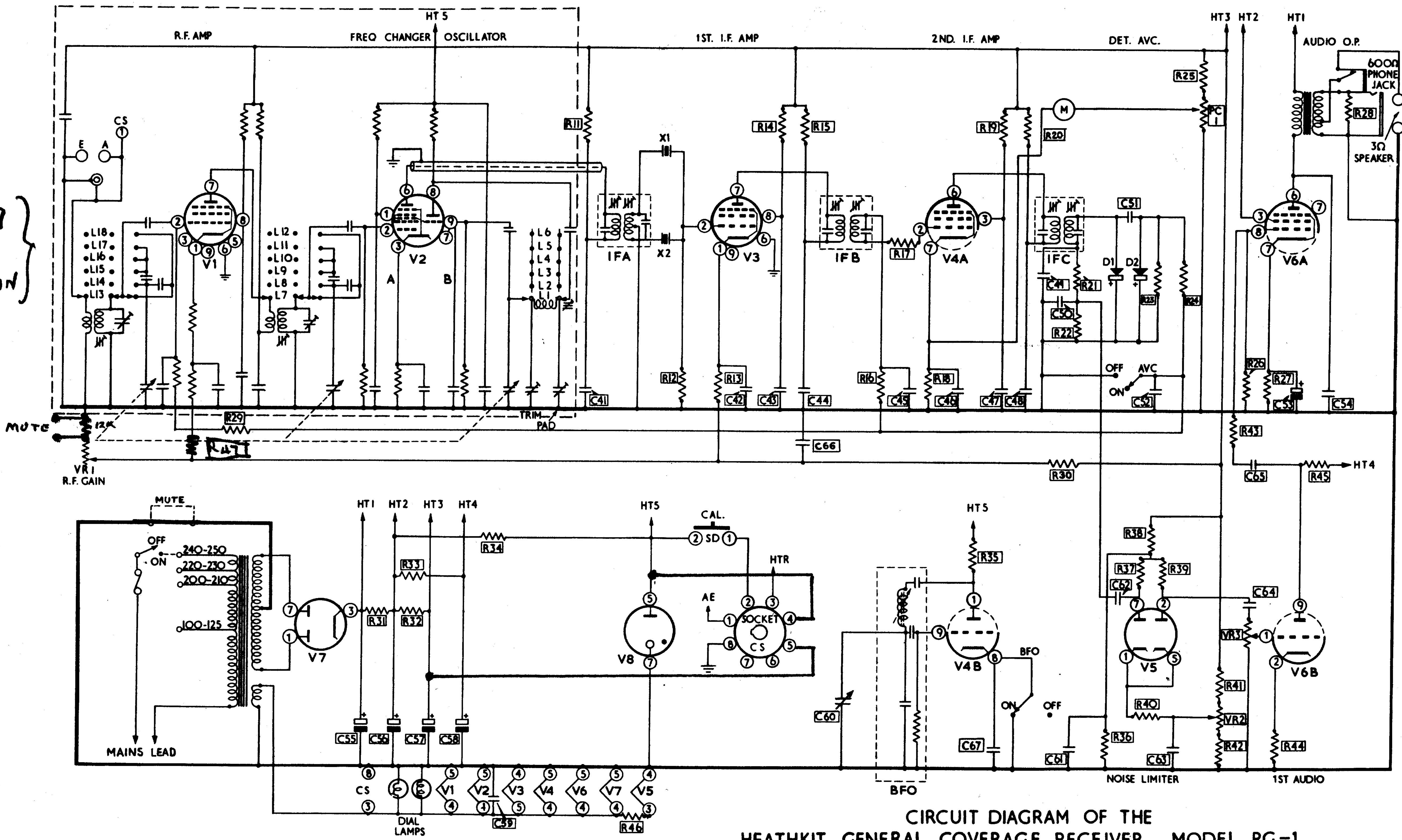
RF AMPLIFIER - MIXER OSCILLATOR

Assuming that the BAND switch is in the 'A' position, the signal from the antenna is applied through coil L13, through the BAND switch, to the grid of the RF amplifier valve V1.

V1 amplifies the RF signal which is induced through coil L7 to the grid in the heptode section of valve V2.

Valve V2 is a combination mixer and oscillator. This valve heterodynes or mixes the incoming signal frequency with the oscillator frequency to obtain a difference frequency of 1621 kc/s.

L.19
Not
Shown



CIRCUIT DIAGRAM OF THE
HEATHKIT GENERAL COVERAGE RECEIVER. MODEL RG-1