

HANDBOOK OF
RADIO
CIRCUITS
NUMBER TWO

A FURTHER SELECTION
OF RECEIVERS, TRANSCEIVERS,
TRANSMITTERS, AMPLIFIERS,
POWER PACKS, ETC. FOR THE
AMATEUR CONSTRUCTOR

PUBLICATION No. 55

PRICE 2/6

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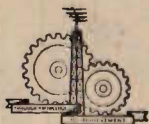
ZIFF DAVIS LIMITED,
GRAMPIANS BUILDING, WESTERN GATE, LONDON, W.6.
Telephones: SHEPHERDS BUSH 4794.

HANDBOOK
OF RADIO CIRCUITS
No. 2.

by

“RADIOTRICIAN”

FIRST PUBLISHED 1948



BERNARDS (PUBLISHERS) LTD.
LONDON

TELEVISION SOUND RECEIVER—Fig. 1.

COMPONENTS LIST.

L1, L2, L3,	6 turns 16 S.W.G. enam. $\frac{1}{2}$ " diam., $\frac{3}{4}$ " long.
L4,	2 turns 16 S.W.G. enam. on same former as L1, $\frac{1}{4}$ " from L1.
C1, C7, C11,	50 mmfds. Trimmers.
C2, C3, C4, C6, C8, C9,	0.01 mfd. 350 v.w. Non-inductive.
C5, C10,	0.001 mfd. Mica.
C12,	50 mmfd. Silver-Mica.
C13,	50 mfd. 12 v.w. Electrolytic.
C14, C15,	8 mfd. 500 v.w. „
R1, R5,	10,000 ohms, $\frac{1}{2}$ watt.
R2, R6,	68,000 „ $\frac{1}{2}$ „
R3, R7,	51,000 „ $\frac{1}{2}$ „
R4, R8,	220 „ $\frac{1}{2}$ „
R9,	100,000 „ Volume Control.
R10,	160 „ $\frac{1}{2}$ watt.
R.F.C.,	60 turns 30 S.W.G. enam. Use ceramic 1 meg. resistor as form.
L.F.C.,	20 Henrys, 100 mAs.
T1,	Output transformer, 5 watt, to match load of 5,200 ohms.
T2,	200-250 volt primary. 250-0-250 v. 80 mAs. 4 v. 2 a. 4 v. 4 a.
F,	150 mAs. fusebulb and holder.
V1, V2,	SP41.
V3,	DD41.
V4,	Pen, 45
V5,	UU6.
5 Mazda octal chassis mounting valveholders.	
S1,	D.P. On-Off, ganged to R9.
Chassis, aluminium, 10" x 8" x 2 $\frac{1}{2}$ ".	
Input sockets, A1, A2, A3.	
Output sockets, L.S.	
Use A1, A2, for dipole aerial.	
Use A3, tapped 2 turns from earthed end of L1, for single wire aerials.	
Screen each stage individually.	
Align circuit to 41.5 mcs.	

A.C. BROADCAST SUPERHET RECEIVER—Fig. 2.

COMPONENTS LIST.

L1,	Wearite PA4, 12-35 metres.
L2,	„ PA5, 34-100 „
L3,	„ PA2, 200-557 „
L4,	„ PA1, 700-2,000 metres.
L5,	„ PO4.
L6,	„ PO5.
L7,	„ PO2.
L8,	„ PO1.
C1,	0.001 mfd. Mica.
C2, C3, C4, C13, C15,	60 mmfds. Trimmer, adjustable.
C5, C17,	75 mmfds. Trimmer, „
C6, C10, C20, C21, C22,	0.1 mfd. 350 v.w. Non-inductive.
C7,	0.0002 mfd. Mica.
C8, C11,	0.0005 mfd. Ganged, tuning.
C9, C23, C24,	0.0001 mfd. Mica.
C12,	0.005 mfd. Fixed padder.
C14,	0.0024 mfd. „ „ (use 0.002 and 0.0004 mfd. in parallel).
C16,	500 mmfd. Padder, adjustable.
C18,	150 mmfd. Padder, adjustable.
C19,	100 mmfd. Trimmer, adjustable.
C25,	0.01 mfd. 350 v.w. Non-inductive.
C26, C29,	25 mfd. 12 v.w. Electrolytic.
C27, C31,	8 mfd. 500 v.w. „
C28,	0.05 mfd. 350 v.w. Non-inductive.
C30,	16 mfd. 500 v.w. Electrolytic.
R1, R11,	10,000 ohms, 1 watt.
R2,	1 meg. $\frac{1}{2}$ „
R3,	330 „ $\frac{1}{2}$ „
R4,	51,000 „ $\frac{1}{2}$ „
R5,	33,000 „ 1 „
R6,	470 „ $\frac{1}{2}$ „
R7,	2.2 meg. $\frac{1}{2}$ „
R8,	100,000 „ $\frac{1}{2}$ „
R9, R14,	470,000 „ $\frac{1}{2}$ „
R10,	1 meg. Volume control.
R12,	47,000 ohms, 1 watt
R13,	680 „ $\frac{1}{2}$ „
R15,	180 „ 1 „
I.F.T.1, 2,	465 kcs, iron core adjusted.
T1,	Output transformer, 5 watt, to match load of 5,200 ohms.
T2,	200-250 volt primary. 300-0-300 v. 100 mAs. 4 v. 2 a. 4 v. 5 a.
S1, 2, 3, 4,	S.P. 5 way 4 bank wavechange switch.

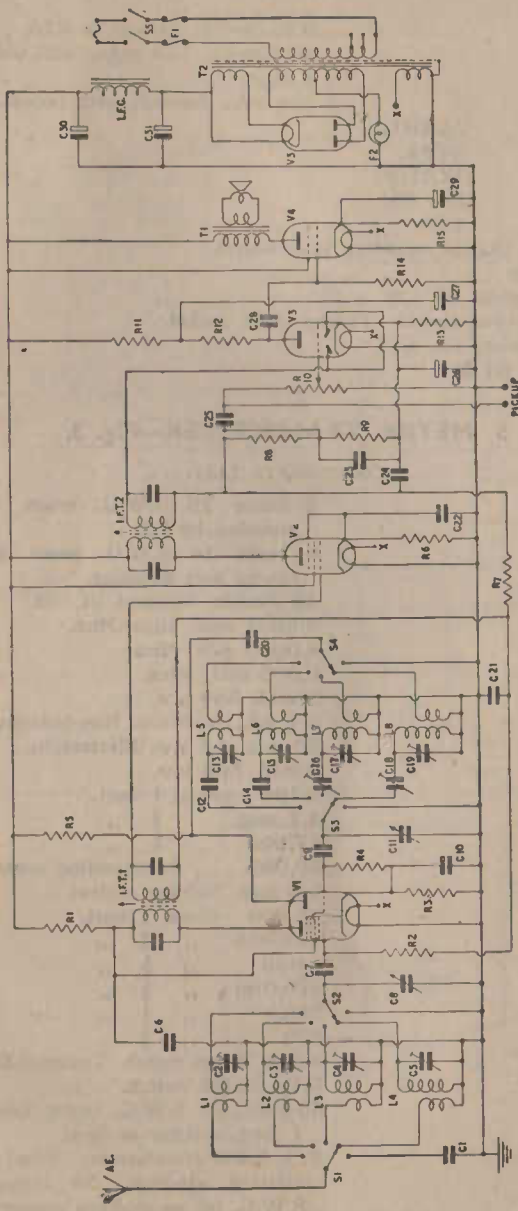


FIG. 2. A.C. Broadcast Superhet Receiver.

S5, D.P. On-Off, ganged to R10.
 L.F.C. 20 Henrys. 100 mAs. 425 ohms.
 F1, 2 amps.
 F2, 200 mAs. fusebulb with holder.
 V1, ACTH1.
 V2, VP41.
 V3, HL41DD.
 V4, Pen 45.
 V5, UU6.
 4 Mazda octal chassis mounting valveholders.
 1 British 7 pin " " " " "
 Chassis, aluminium, 14"x 9" x 2½".
 Aerial, Earth input socket. Pickup input socket.
 Slow motion drive, C8, C11.
 2 Knobs, R10, S1-4.

5 METRE TRANSCEIVER—Fig. 3.

COMPONENTS LIST.

L1,	2 turns 16 S.W.G. enam. ½" diam. mounted by L2.
L2,	6 turns 16 S.W.G. enam. ½" diam., spaced own diameter.
C1,	40 mmfds. Raymart VC40X.
C2,	0.0001 mfd. Silver-Mica.
C3,	0.0003 mfd. Mica.
C4,	0.003 mfd. Mica.
C5,	8 mfd. 350 v.w.
C6,	0.1 mfd. 350 v.w. Non-inductive.
C7, C8,	50 mfd. 25 v.w. Electrolytic.
C9, C10,	8 mfd. 500 v.w. " "
R1,	5,100 ohms, 1 watt.
R2,	4.7 meg. ½ " "
R3,	47,000 " 1 " "
R4,	50,000 " Regeneration control.
R5,	0.5 meg. Volume control.
R6,	22,000 ohms, 1 watt.
R7,	100,000 " 1 " "
R8,	1,000 " ½ " "
R9,	470,000 " ½ " "
R10,	200 " ½ " "
R11,	220 " ½ " "
S1, 2, 3, 4,	4 pole 2 way switch, Transmit-Receive.
S5,	D.P. On-Off switch.
R.F.C. 1, 2,	60 turns 30 S.W.G. enam. Use ceramic 1 meg. resistor as form.
T1,	3:1 Audio transformer. Wind on, over existing windings, 50 turns of 30 S.W.G. for microphone primary.

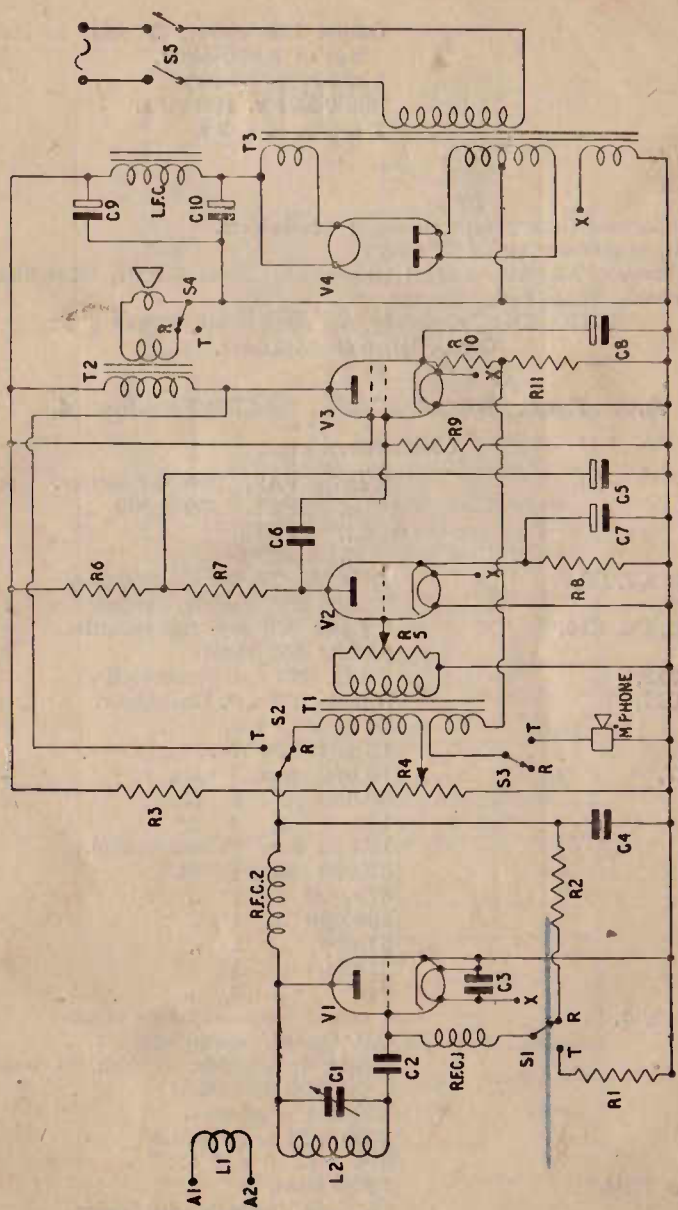


FIG. 3. 5 Metre Transceiver.

T2, Output transformer, 5 watt, to match load of 7,000 ohms.
 T3, 200-250 v. primary.
 350-0-350 v. 100 mAs.
 5 v. 2 a. 6 v. 2 a.

V1, V2, 6J5.
 V3, 6F6.
 V4, 5Y3.

4 International Octal chassis mounting valveholders.

Chassis, aluminium, 10" x 8" x 2½".

Input sockets, A1, A2. Output sockets, LS. Input sockets, Microphone.
 Microphone, Single button Carbon.

NOTE.—This Transceiver may not be used without a G.P.O. transmitting licence.

A.C. T.R.F. BROADCAST RECEIVER—Fig. 4.

COMPONENTS LIST.

L1,	Wearite, PA2. 200-557 metres.
L2,	,, PA1. 700-2,000 ,,
L3,	,, PHF2.
L4,	,, PHF1.
C1, C2, C7, C8,	75 mmfd. Trimmers, adjustable.
C3, C9,	0.0005 mfd. Tuning, ganged.
C4, C5, C6, C14,	0.1 mfd. 350 v.w. Non-inductive.
C10,	0.0002 mfd. Mica.
C11, C12,	1 mfd. 350 v.w. Non-inductive.
C13, C17,	8 mfd. 500 v.w. Electrolytic.
C15,	50 mfd. 25 v.w. ,,
C16,	16 mfd. 350 v.w. ,,
R1, R7,	10,000 ohms, 1 watt.
R2,	68,000 ,, ½ ,,
R3,	150 ,, ½ ,,
R4,	10,000 ohms Volume control.
R5,	33,000 ohms, ½ watt.
R6,	470,000 ,, ½ ,,
R8,	100,000 ,, 1 ,,
R9,	51,000 ,, 1 ,,
R10,	220,000 ,, ½ ,,
R11,	240 ,, 1 ,,
S1, 2, 3, 4,	4 pole 2 way wavechange switch.
S5,	D.P. On-Off, ganged with R4.
T1,	Output transformer, 5 watt, to match load of 5,000 ohms.
T2,	200-250 v. primary. 350-0-350 v. 80 mAs. 5 v. 2 a. 6 v. 2 a.
Speaker Field,	1,000 ohms.
F,	150 mAs. fusebulb, with holder.

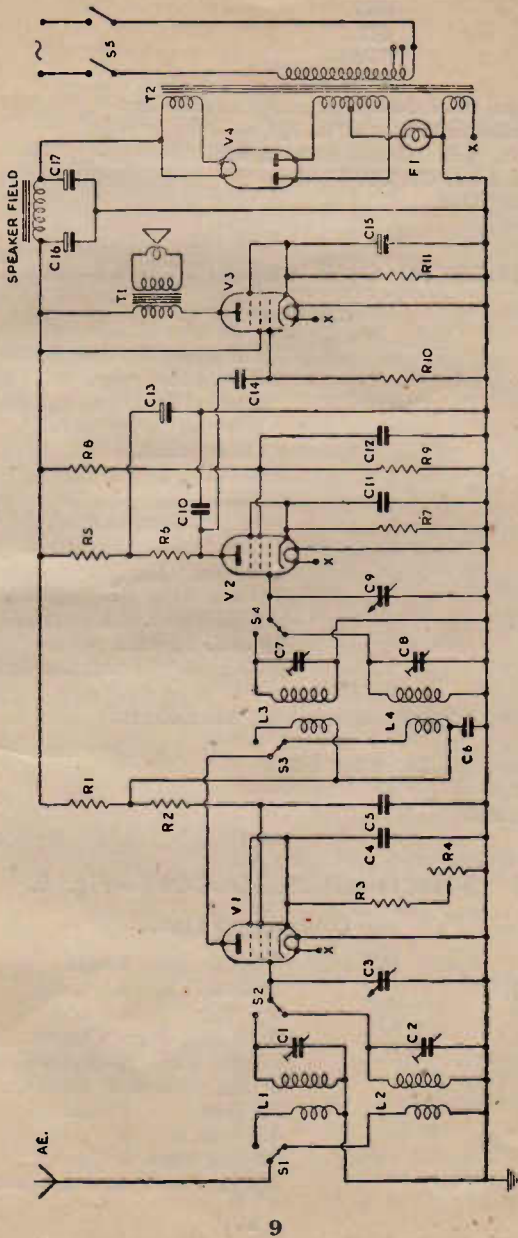


Fig. 4. A.C. T.R.F. Broadcast Receiver.

V1, 6K7.
 V2, 6J7.
 V3, 6V6.
 V4, 5Y3.

4 International octal chassis mounting valveholders.

Chassis, aluminium, 10" x 8" x 2½".

Input sockets, A.E. Output sockets, L.S.

Slow motion drive, C3, C9.

2 Knobs, R4, S1-4.

MICROPHONE PRE-AMPLIFIER—Fig. 5.

COMPONENTS LIST.

R1,	2.2 meg. for Crystal microphone.
	0.1 meg. for M/C microphone, or as specified by microphone instructions.
R2, R9,	1.2 meg. ½ watt.
R3, R7,	33,000 ohms, 1 "
R4, R8,	220,000 " 1 "
R5, R10,	1,200 " 1 "
R6,	1 meg. Volume control.
R11,	1 meg. 1 watt.
R12,	100 ohms, Humdinger, adjustable.
C1, C7,	0.5 mfd. 350 v.w. Non-inductive.
C2, C3,	8 mfd. 500 v.w. Electrolytic.
C4, C6,	50 mfd. 12 v.w. "
C5, C8,	0.02 mfd. 350 v.w. Non-inductive.
V1, V2.	6J7.

2 International octal chassis mounting valveholders.

2 Grid shield caps.

Chassis, aluminium, 7½" x 3½" x 2".

1 Knob, R6.

Shield all cables.

3-INCH OSCILLOSCOPE—Fig. 6.

COMPONENTS LIST.

R1,	68,000 ohms, 1 watt.
R2, R3, R6,	100,000 " 1 "
R4,	0.5 meg. 1 "
R5,	0.25 meg. Focus Control.
R7,	50,000 ohms, Brilliancy Control.
R8, R9,	2 meg. Zero Shift Controls.
R10, R11,	2.2 meg. ½ watt.
R12, R13,	4.7 meg. ½ "
R14, R20,	62,000 ohms, 2 "
R15,	1 meg. Fine Frequency Control.

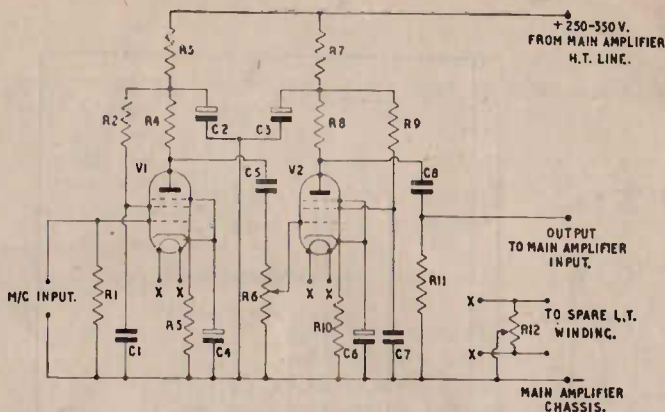


FIG. 5. Microphone Pre-amplifier.

R16,	330,000 ohms, 1 watt.
R17,	510 " 1 "
R18,	0.25 meg. Synchronisation Control.
R19,	22,000 ohms, $\frac{1}{2}$ watt.
R21,	22,000 " 2 "
R22,	2,200 " 2 "
R23,	1 meg. $\frac{1}{2}$ "
R24, R30,	33,000 " 1 "
R25, R31,	100,000 " 1 "
R26,	0.25 meg. Horizontal Gain Control.
R27, R33,	1,000 ohms, $\frac{1}{2}$ watt.
R28, R29,	470,000 " $\frac{1}{2}$ "
R32,	0.25 meg. Vertical Gain Control.
C1, C2,	2 mfd. 1,000 v.w. Oilfilled.
C3, C4, C6, C16, C22,	8 mfd. 500 v.w.
C5, C15, C17, C21, C23,	0.5 mfd. 500 v.w. Non-inductive.
C7,	50 mfd. 50 v.w. Electrolytic.
C8,	0.00075 mfd. Mica.
C9,	0.002 mfd. Mica.
C10,	0.005 mfd. Mica.
C11,	0.015 mfd. 750 v.w. Non-inductive
C12,	0.04 " 750 v.w. "
C13,	0.1 " 750 v.w. "
C14,	0.25 " 750 v.w. "
C18, C24,	50 mfd. 12 v.w. Electrolytic.
C19, C20,	1 mfd. 350 v.w. Non-inductive.
S1, S2,	D.P. On-Off Switches.
S3,	S.P.D.T. SYNC. EXT. or 50 Cycles.
S4,	S.P. 7 way. Coarse Frequency Control.
S5,	S.P.D.T. HOR. to SWEEP or EXT.

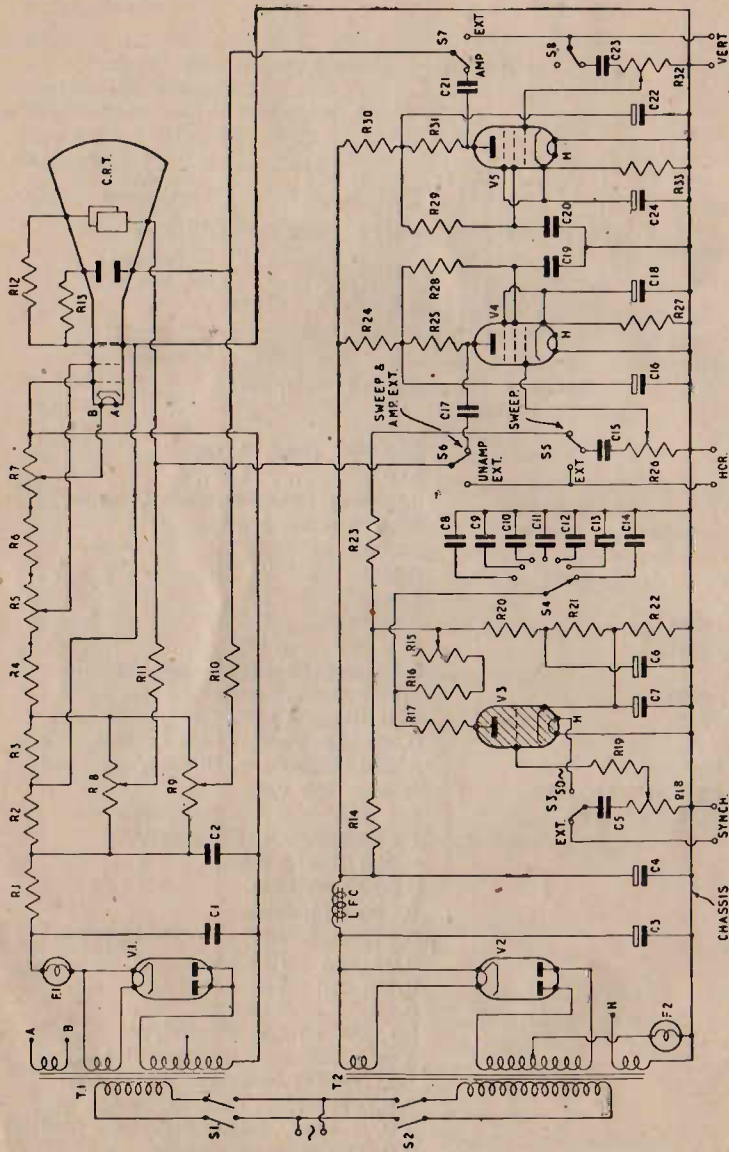


Fig. 6. 3-inch Oscilloscope.

- S6, S.P.D.T. HOR. to SWEEP and AMP.
EXT. or UNAMP. EXT.
- S7 with S8, D.P.D.T. VERT. to AMP. or EXT.
- V1, UU5.
V2, UU6.
V3, T41.
V4, V5, SP41.
C.R.T. Mullard E40-G3 or similar.
- 1 C.R.T. holder.
4, Mazda octal chassis mounting valveholders.
1 British 4 pin " " "
- T1, 200-250 v. primary.
250-0-250 v. 50 mAs.
4 v. 3 a. 4 v. 1 a.
- T2, 200-250 v. primary.
350-0-350 v. 100 mAs.
4 v. 2 a. 4 v. 4a.
- F1, 60 mAs. fusebulb with holder.
F2, 150 mAs. fusebulb with holder.
L.F.C. 20 Henrys, 100 mAs.
- Chassis, steel, 14" x 9" x 2½".
Steel panel, case, C.R. Tube shield.
7 Control Knobs.
Input sockets for SYNC., HOR., VER.
- NOTE.—R12 and R13 may not be needed with some types of C.R. Tube, and may be short-circuited. In some cases the second deflecting plate of each pair is connected internally to the tube anode.

SIMPLE SIGNAL TRACER—Fig. 7.

COMPONENTS LIST.

- C1, 0.0001 mfd. Mica.
C2, 0.01 mfd. 500 v.w. Non-inductive.
R1, 1 meg. Volume Control.
R2, 4.7 meg. ¼ watt.
S1, D.P. On-Off switch.
V1, 1S5.
1, "Peanut" ceramic holder.
A, 1.5 volt cell.
B, 45 layer type battery.
Input sockets and Test prods.
Metal Case.
H, 4,000 ohm Headphones.

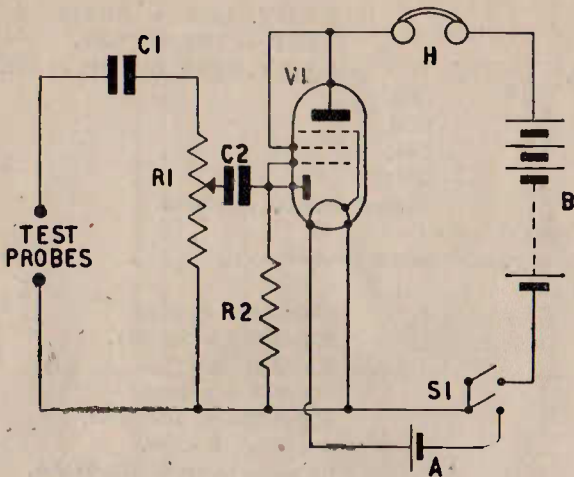
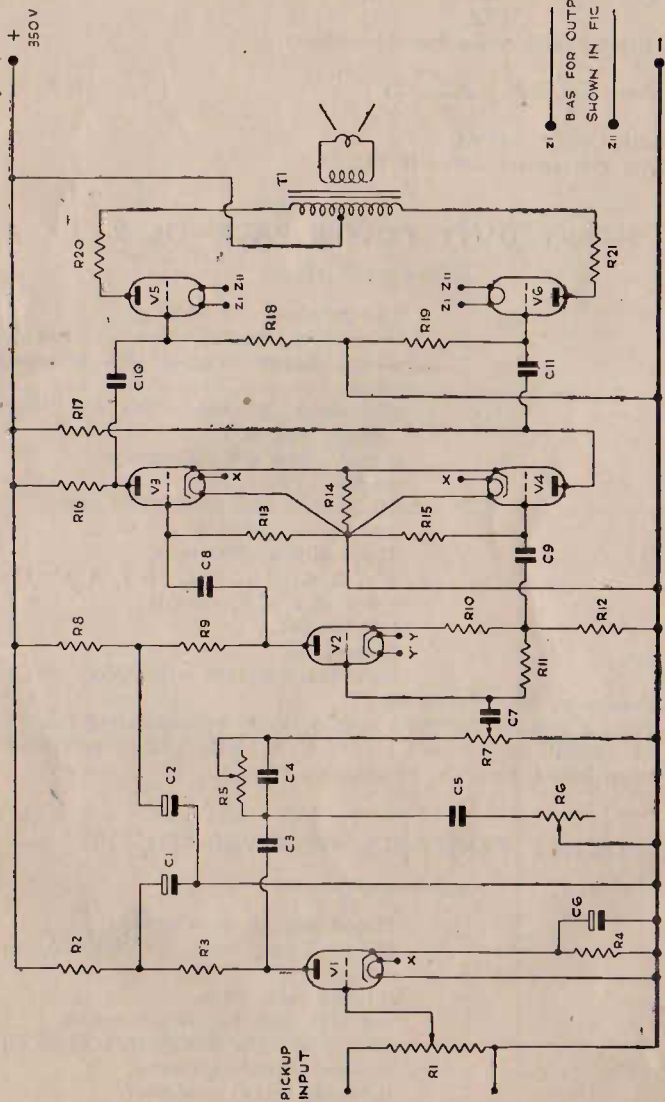


FIG. 7. Simple Signal Tracer.

HIGH QUALITY GRAMOPHONE AMPLIFIER—Fig. 8.

COMPONENTS LIST.

R1,	0.25 megohm input control, or as specified for Pickup.
R2, R8	33,000 ohms, 1 watt.
R3,	22,000 " 1 "
R4,	680 " 1 "
R5,	0.25 meg. Bass Control.
R6,	0.25 meg. Treble Control.
R7,	1 meg. Volume Control.
R9, R12, R16, R17,	47,000 ohms, $\frac{1}{2}$ watt.
R10,	1,500 " $\frac{1}{2}$ "
R11,	1 meg. $\frac{1}{2}$ "
R13, R15,	330,000 " $\frac{1}{2}$ "
R14,	360 " 1 "
R18, R19,	220,000 " $\frac{1}{2}$ "
R20, R21,	47 " 1 "
C1, C2,	8 mfd. 350 v.w. Electrolytic.
C3, C8, C9, C10, C11,	0.1 mfd. 500 v.w. Non-inductive.
C4,	0.001 mfd. Mica.
C5,	0.005 mfd. 500 v.w. Non-inductive
C6,	25 mfd. 25 v.w.
C7,	0.02 mfd. 500 v.w. Non-inductive.



Z' ———— BAS FOR OUTPUT STAGE
 Z'' ———— SHOWN IN FIG 9.

Fig. 8. High Quality Gramophone Amplifier

T1, Output transformer, 10 watts, to match anode to anode load of 6,000 ohms.

V1, 164V
 V2, V3, V4, 354V
 V5, V6 PX4

4 British 5 pin chassis mounting valveholders.
 2 " 4 " " " "
 Chassis, aluminium, 10" x 8" x 2½".
 4 Knobs.
 Input sockets. Output sockets.
 Output stage bias circuit shown in Fig. 9.

HEAVY DUTY POWER PACK—Fig. 9.

COMPONENTS LIST.

R1, 18,000 ohms, 10 watt.
 R2, Heavy duty adjustable resistor. Use 0.2 amp. heater dropper with adjustable tap.
 R3, 450 ohms, 5 watt. Bias for Output Stage, Fig. 8.
 C1, C2, 8 mfd. 500 v.w. Electrolytic.
 C3, 8 mfd. 750 v.w. "
 L.F.C. 20 Henrys, 200 mAs. 150 ohms.
 T1, 200-250 v. primary.
 400-0-400 v. 200 mAs.
 4 v. 3 a. 4 v. 2 a. 4 v. 1 a. C.T.
 4 v. 2 a. C.T. (Zi-Zii).
 S1, D.P. On-Off.
 F1, 5 amps.
 F2, 250 mAs. fusebulb with holder.
 Chassis, aluminium, 9" x 4½" x 2½".

NOTE.—Prevent hum in the phase splitter circuit by connecting 0.5 mfd. or 22,000 ohms from CT of Y Y to earth. Adjust output line, when loaded, to 350v. by adjusting R2.

POCKET PORTABLE RECEIVER—Fig. 10.

COMPONENTS LIST.

L1, L2, Midget medium wave coils.
 C1, C2, Midget 2-gang tuner, 0.0005 mfd., with trimmers.
 C3, C7, 0.0002 mfd. Mica.
 C4, C5, 0.1 mfd. 100 v.w. Non-inductive.
 C6, Midget reaction condenser, 0.0005 mfd.
 C8, 0.5 mfd. Fixed condenser.
 C9, 0.01 mfd. Fixed condenser.

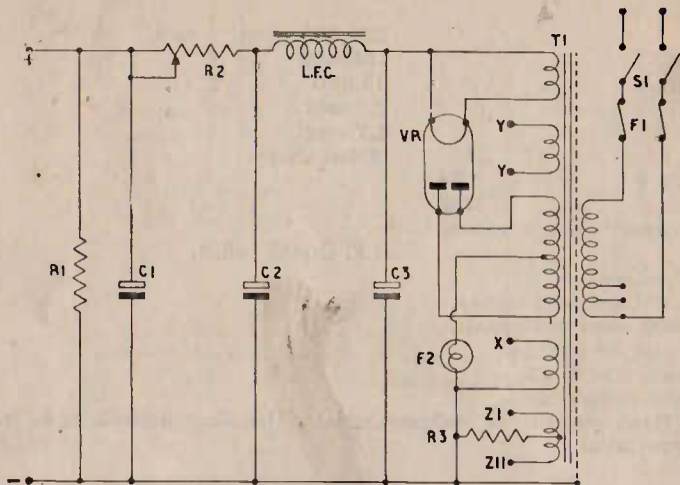


FIG. 9. Heavy Duty Power Pack.

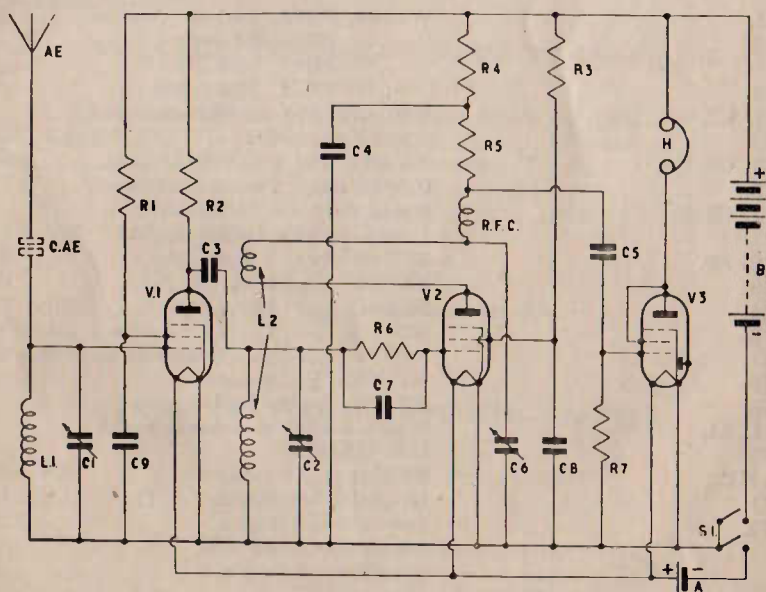


FIG. 10. Pocket Portable Receiver.

R1,		220,000 ohms,	$\frac{1}{4}$	watt.
R2, R3,		100,000	"	$\frac{1}{4}$ "
R4, R5,		33,000	"	$\frac{1}{4}$ "
R6,		2.2 meg.	$\frac{1}{4}$	"
R7,		4.7 meg.	$\frac{1}{4}$	"
R.F.C.		Midget choke.		
V1, V2,	1T4.			
V3,	1S5.			
3 "Peanut" ceramic holders.				
S1,		D.P. On-Off switch.		
A, 1.5 v. cell.				
B, 45 v. Layer built battery.				
H, 4,000 ohms headphones.				
Metal case for receiver.				
2 Knobs, C1-C2, C6.				
Insulated battery box.				
Ae:—Throw-out-wire, or ordinary aerial.		Use Cae, 0.0003 mfd., with large aerial.		

ALL-WAVE SIGNAL GENERATOR—Fig. 11.

COMPONENTS LIST.

L1,		Wearite, PHF5, 34-100	metres.
L2,		" PHF6, 91-260	"
L3,		" PHF7, 250-750	"
L4,		" PHF1, 700-2,000	"
C1, C2,		0.01 mfd. 350 v.w. Non-inductive.	
C3,		0.0001 mfd. Mica.	
C4, C6, C9,		0.1 mfd. 350 v.w. Non-inductive.	
C5,		0.0005 mfd. Tuning condenser.	
C7, C8,		8 mfd. 500 v.w. Electrolytic.	
R1,		1 meg. variable Output control.	
R2, R5,		47,000 ohms, 1 watt.	
R3,		33,000 " 1 "	
R4,		82,000 " 1 "	
R6,		330 " 1 "	
R7,		1,000 " $\frac{1}{2}$ " (Choose by test).	
S1,		S.P.D.T. R.F.—Audio.	
S2,		S.P.D.T. Audio, On-Off.	
S3, S4,		2 pole 4 way, wavechange switch.	
S5,		D.P. On-Off.	
L.F.C.		20 Henrys, 50 mAs.	
T1,		Intervalve transformer, 3:1.	
T2,		200-250 v. primary.	
		250-0-250 v. 50 mAs.	
		4 v. 2 a. 4 v. 1 a.	
V1,	ACTH1.		
V2,	UU6.		

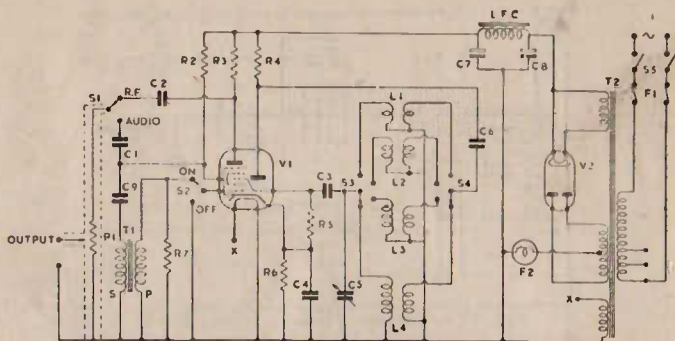


FIG. 11. All-Wave Signal Generator.

- 1 British 7 pin chassis mounting valveholder.
 1 Mazda octal " " "
 F1, 2 amp.
 F2, 100 mAs. fusebulb with holder.
 Chassis, 9" x 4½" x 2½".
 Metal screening box. Chassis and box aluminium, copper or brass.
 Slow motion drive for C5.
 2 Knobs, R1, S3-4.

VOLTAGE TRIPLING POWER PACK—Fig. 12.

COMPONENTS LIST.

Components List for a Voltage Tripling Power Pack, Fig. 12.

- C1, C2, C3, C4, 1 mfd. 2,000 v.w. Oil filled.
 R1, 100,000 ohms, 1 watt.
 T1, 200-250 v. primary.
 4 v. 1.5 a. 4 v. 1.5 a. 4 v. 1.5 a.
 V1, V2, Mazda UD41.
 F, 1 amp fuse.
 S, D.P. On-Off switch.
 2 British 7 pin chassis mounting valveholders, ceramic.
 Chassis, aluminium, 9" x 4½" x 2½".
 Output sockets, ceramic mounted.

SMALL BATTERY AMPLIFIER—Fig. 13.

COMPONENTS LIST.

- R1, R5, 220,000 ohms, ¼ watt.
 R2, R6, 680,000 " ¼ "
 R3, 2.2 meg. " ¼ "
 R4, 2 meg. Volume control.
 R7, 6.8 meg ¼ watt.
 C1, C2, C3, C4, 0.1 mfd. 100 v.w. Non-inductive.

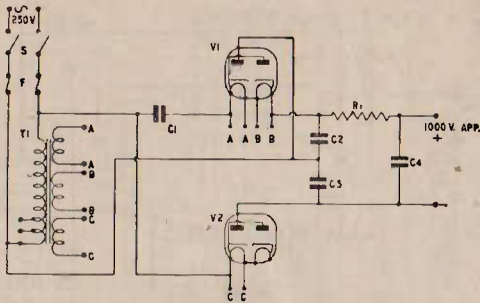


FIG. 12. Voltage Tripling Power Pack.

- S1, D.P. On-Off switch.
 V1, V2, 1T4.
 V3, 1S5.
 3 "Peanut" holders, ceramic.
 A, 1.5 v. cell.
 B, 45 v. Layer built battery.
 H, 4,000 ohms headphones.
 Metal case.
 1 Knob, R4.

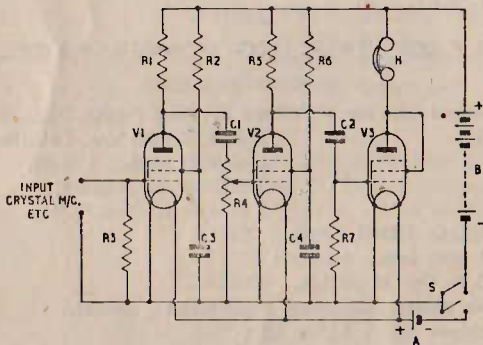


FIG. 13. Small Battery Amplifier.

SIMPLE SHORTWAVE RECEIVER—Fig. 14.

COMPONENTS LIST.

- | | |
|---------|------------------------------------|
| L1, L2, | Eddystone Coil set, |
| | 6BB, 6LB, 6Y, 6R, 6W. |
| C1, | 100 mmfd. Adjustable Trimmer. |
| C2, | 160 mmfd. Bandset, Raymart VC160X. |
| C3, | 15 mmfd. Bandsread, ,, MC15X. |
| C4, | 0.0001 mfd. Mica. |

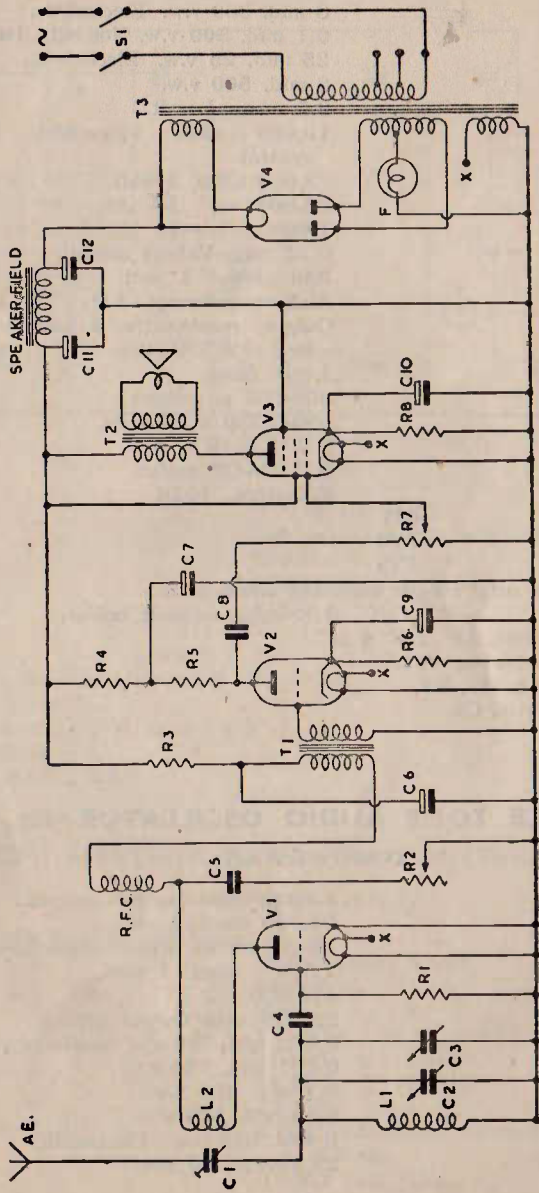


FIG. 14. Simple Shortwave Receiver.

C5,	0.0003 mfd. Mica.
C6, C7,	8 mfd. 350 v.w. Electrolytic.
C8,	0.1 mfd. 500 v.w. Non-inductive.
C9, C10,	25 mfd. 25 v.w. Electrolytic.
C11, C12,	8 mfd. 500 v.w. "
R1,	0.5 meg. $\frac{1}{2}$ watt.
R2,	10,000 ohms wirewound, Reaction control.
R3, R4,	22,000 ohms, 1 watt.
R5,	33,000 " 1 "
R6,	1,000 " $\frac{1}{2}$ "
R7,	0.25 meg. Volume control.
R8,	330 ohms. 1 watt.
T1,	Audio transformer, 3:1.
T2,	Output transformers, 5 watt, to match load of 8,500 ohms.
Speaker Field,	1,000 ohms.
T3,	200-250 v. primary.
	350-0-350 v. 80 mAs.
	5 v. 2 a. 6 v. 2 a.
S1,	D.P. On-Off switch.
R.F.C.	Eddystone, 1010.
V1, V2,	6J5
V3,	6V6
V4,	5Y3
4 International octal chassis mounting valveholders.	
F,	150 mAs. fusebulb holder.
Chassis, aluminium, 10" x 8" x 2 $\frac{1}{2}$ ".	
Coil holder, Eddystone 964.	
3 Knobs for C2, R2, R7.	
Slow Motion Drive, C3.	

VARIABLE TONE AUDIO OSCILLATOR—Fig. 15.

COMPONENTS LIST.

R1, R2,	1 meg. Note controls <i>ganged</i> .
R3, R7,	51,000 ohms, 1 watt.
R4,	100,000 ohm, Regeneration Control.
R5, R8,	1,500 ohms, 1 watt.
R6,	470,000 " $\frac{1}{2}$ "
R9,	25,000 ohm Output control.
C1,	0.002 mfd. 500 v.w. Non-inductive.
C2,	0.001 mfd. 500 v.w. "
C3,	0.1 mfd. 500 v.w. "
C4,	0.05 mfd. 500 v.w. "
C5, C6,	8 mfd. 500 v.w. Electrolytic.
L.F.C.,	20 Henrys, 50 mAs.

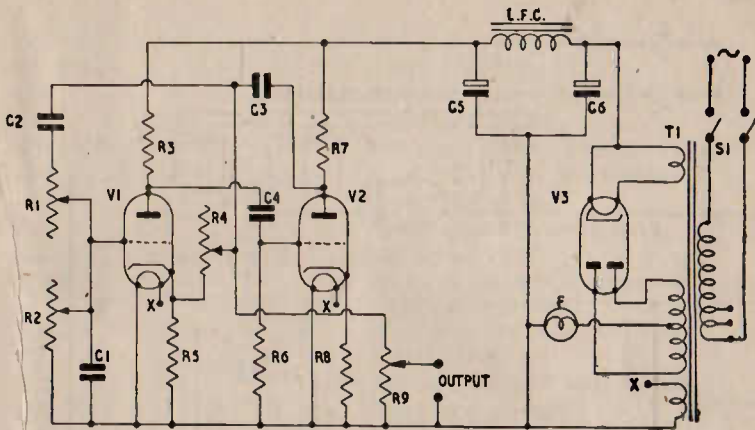


FIG. 15. Variable Tone Audio Oscillator.

- | | |
|---------|---|
| S1, | D.P. On-Off switch. |
| F, | 150 mAs. fusebulb with holder. |
| T1, | 200-250 v. primary. |
| | 250-0-250 v. 50 mAs. |
| | 4 v. 2 a. 4 v. 2 a. |
| V1, V2, | HL41. |
| V3, | UU6. |
| | 1 Mazda octal chassis mounting valveholder. |
| | 2 British 5 pin " " |
| | Chassis, aluminium, 9½" x 4½" x 2". |
| | Output sockets. |
| | 2 Knobs, R1-R2, R9. |

40-WATT AMATEUR BAND TRANSMITTER—Fig. 16.

COMPONENTS LIST.

3.5 or 7 mcs. Crystal, with holder.

- | | |
|---------|---|
| R1, | 39,000 ohms, 5 watt. |
| R2, | 51,000 " 1 " |
| R3, | 220 " 1 " |
| R4, | 12,000 " 12 " |
| R5, | 51,000 " 3 " |
| R6, | 51,000 " 10 " |
| R7, | 22,000 " 1 " |
| C1, | 0.0001 mfd. Mica. Connected across L1
for 3.5 mcs. |
| C2, C7, | 0.0001 mfd. Mica. |

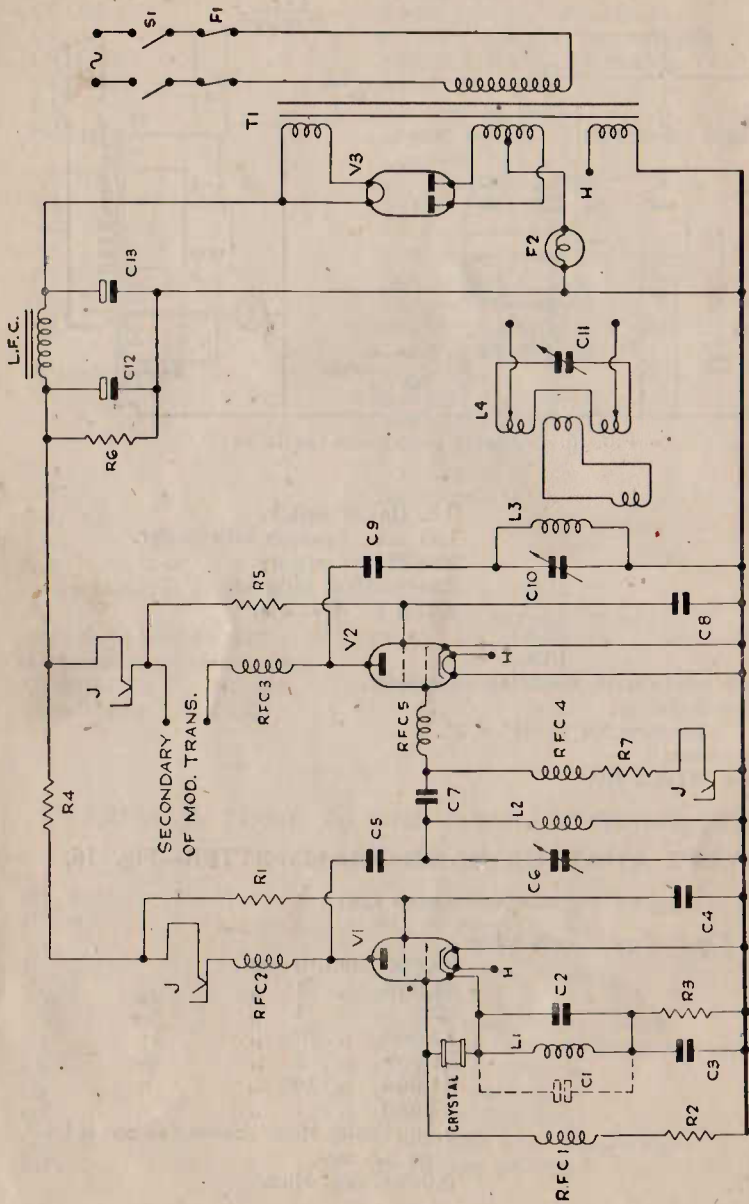


FIG. 16. 40-watt Amateur Band Transmitter.

C3, C4,	0.01 mfd. 500 v.w. Non-inductive.
C5, C9,	0.001 mfd. Mica.
C6,	60 mmfd. tuner. Raymart MC60X.
C8,	0.002 mfd. Mica.
C10, C11,	160 mmfd. tuner. Raymart VC160X.
C12,	8 mfd. 750 v.w. Electrolytic.
C13,	4 mfd. 1,000 v.w. „
J,	Closed circuit metering jacks.
R.F.C. 1, 2, 3, 4,	Eddystone, 1022.
R.F.C. 5,	10 turns 20 S.W.G. enam. on 1 meg. ceramic as former.
L.F.C.	20 Henrys 200 mAs. 150 ohms.
F1,	5 amp. fuses.
F2,	300 mAs fusebulb with holder.
T1,	200-250 v. primary.
	600-0-600 v. 200 mAs.
	5 v. 2 a. 6 v. 3 a.

V1,	6V6
V2,	807
V3,	5R4GY

2 International octal chassis mounting valveholders.

1 807 holder.

1 Insulated bracket, C11, Eddystone 1007.

2 Aerial feeder standoff insulators, Eddystone 916.

2 Coil holders, Eddystone 964.

2 Coil holders, Eddystone 1092.

3 Knobs, C6, C10, C11.

Coils:—

L1, 3.5 mcs. 12 turns 20 S.W.G. enam. wound to $\frac{3}{8}$ " long.

C1 connected across winding.

7 mcs. 6 turns 20 S.W.G. enam. wound to $\frac{3}{8}$ " long.

Both coils on Eddystone 537 Coil Forms.

L2, 3.5 mcs. 40 turns 26 S.W.G. d.s.c. close wound.

7 mcs. 20 turns 24 S.W.G. d.s.c. spaced own diameter.

14 mcs. 12 turns 20 S.W.G. enam. wound to 1" long.

All coils wound on Eddystone 537 Coil Forms.

L3, 3.5 mcs. 22 turns 16 S.W.G. enam. 3 turn link coil.

14 mcs. 8 turns 16 S.W.G. enam. in alternate slots. 2 trim link

7 mcs. 12 turns 16 S.W.G. enam. 3 turn link coil.

All coils wound on Eddystone 1090 ceramic coil form with sub base.

Link coils at earthed end of main coils.

L4, as L3, with link coils in centre of main coils.

Load presented to Modulation transformer 6,000 ohms approx.

Components Lists for a 20 Watt Modulating or P.A. Amplifier, Fig. 17

20-WATT MODULATING OR P.A. AMPLIFIER—Fig. 17.

COMPONENTS LIST.

R1,	2 meg. 1 watt for crystal microphone, or as specified.
R2, R7, R8,	33,000 ohms, 1 watt.
R3, R10,	1.2 meg. $\frac{1}{2}$ "
R4, R15, R17,	220,000 " $\frac{1}{2}$ "
R5,	1,200 " $\frac{1}{2}$ "
R6,	1 meg. Volume Control.
R9, R12,	1,500 ohms, $\frac{1}{2}$ watt.
R11, R13, R22, R23,	47,000 " $\frac{1}{2}$ watt.
R14,	2,200 " 10 "
R16,	250 " 10 "
R18,	22,000 " 25 "
R19,	10,000 " $\frac{1}{2}$ "
R20, R21,	100 ohm 1 watt resistors.
C1,	0.5 mfd. 350 v.w. Non-inductive.
C2, C3, C10,	8 mfd. 350 v.w. Electrolytic.
C4, C6, C8, C9,	0.1 mfd. 500 v.w. Non-inductive.
C5, C7,	50 mfd. 12 v.w. Electrolytic.
C11,	16 mfd. 500 v.w. "
C12,	8 mfd. 600 v.w. "
L.F.C.	20 Henrys, 200 mAs, 150 ohms.
T1,	Output or Modulation transformer, 20 watts, to match anode to anode load of 9,000 ohms.
T2,	200-250 v. primary. 350-0-350 v. 200 mAs. 5 v. 3 a. 6 v. 3 a. 6 v. 1 a. C.T.
F1,	3 amp. fuses.
F2,	250 mAs. fusebulb, with holder.
S1,	D.P. On-Off switch.
V1,	6J7,
V2,	6J5.
V3,	6C5.
V4, V5,	6L6
V6,	5U4.
6 International octal chassis mounting valveholders.	
Chassis, aluminium, 14" x 9" x 2 $\frac{1}{2}$ ".	
Input sockets, Microphone. Output sockets, L.S.	
1 Knob, R.6.	

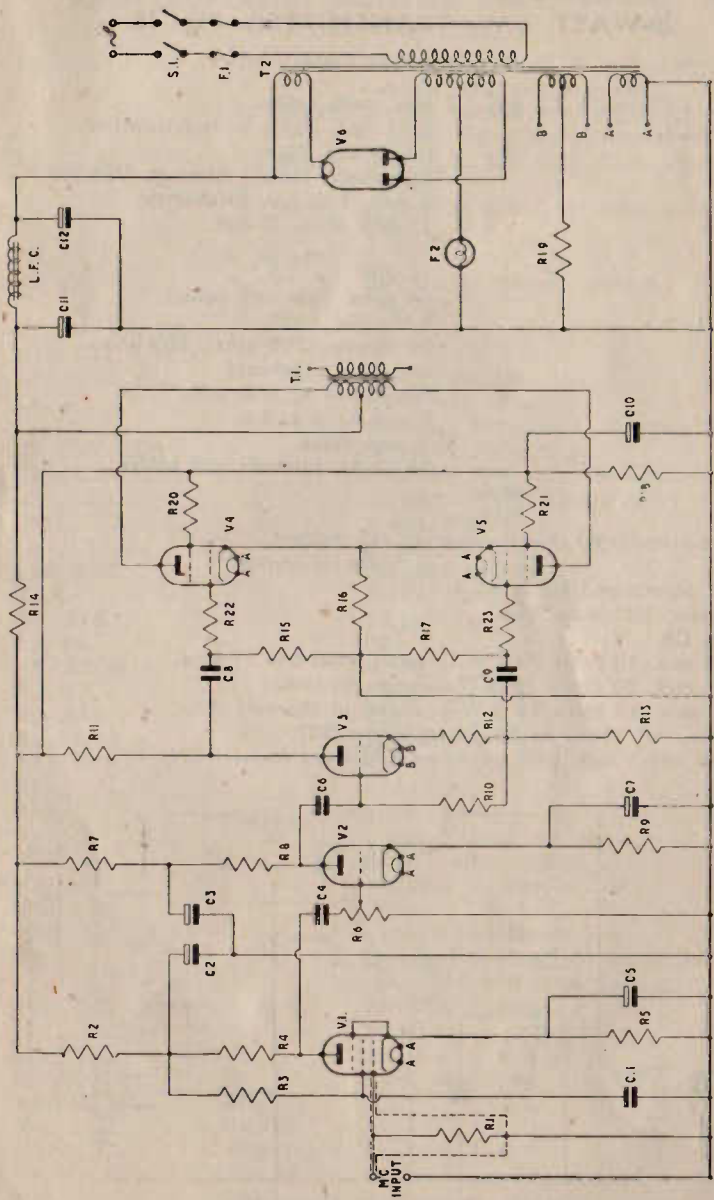


FIG. 17. 20-watt Modulating or P.A. Amplifier.

20-WATT C.W. TRANSMITTER—Fig. 18.

COMPONENTS LIST.

Crystal, 1.75 mcs., 3.5 mcs., 7 mcs., with holder.	
C1, C2, C7,	0.01 mfd. 750 v.w. Non-inductive.
C3,	0.001 mfd. Mica.
C4,	250 mmfd. tuner. Raymart, VC250X.
C5, C6,	8 mfd. 750 v.w. Electrolytic.
R1,	15,000 ohms, 2 watt.
R2,	220 " 2 "
R3	15,000 " 25 "
B,	60 mAs. bulb with holder.
R.F.C. 1, 2,	Eddystone 1022.
L.F.C.,	20 Henrys, 200 mAs., 150 ohms.
T1,	200-250 v. primary. 400-0-400 v. 200 mAs. 5 v. 3 a. 6 v. 2 a.
F1,	3 amp. fuses.
F2,	300 mAs. fusebulb with holder.
V1,	6L6.
V2,	5U4.
2 International octal chassis mounting valveholders.	
S1,	D.P. On-Off switch.
Chassis, aluminium, 10" x 8" x 2½".	
Coil holder, Eddystone 964.	
1 Knob, C4.	
L. 1.75 mcs. 42 turns 20 S.W.G. enam. wound to 2" long.	
3.5 mcs. 20 turns 18 S.W.G. enam. in slots.	
7 mcs. 15 turns 18 S.W.G. enam. in alternate slots.	
1.75 mcs. coil wound on Eddystone former 537.	
3.5 mcs. and 7 mcs. coils wound on Eddystone formers 538.	

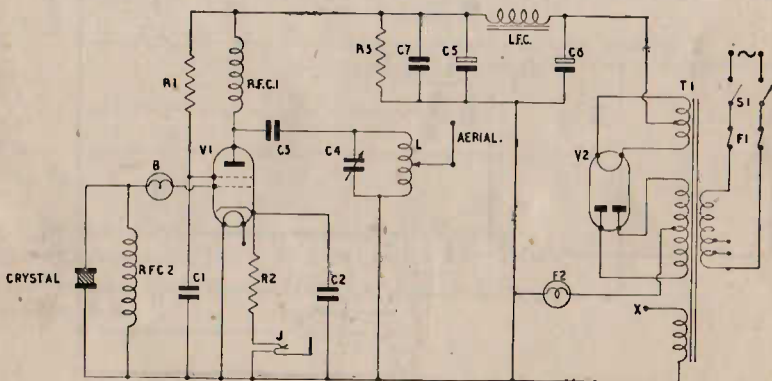


FIG. 18. 20-watt C.W. Transmitter.

V.H.F. SUPERHETERODYNE RECEIVER—Fig. 19.

COMPONENTS LIST.

L1,	2½ metres,	4 turns 16 S.W.G. ½", spaced own diam.
		Aerial tap ½ turn from earth.
	5 metres,	8 turns 16 S.W.G. ½" diam., spaced own diam. Aerial tap 1½ turns from earth.
L2,	2½ metres,	3 turns 16 S.W.G. ½" diam., spaced own diam.
	5 metres,	6 turns 16 S.W.G. ½" diam., spaced own diam.
L3,	As L2.	
C1, C5,		40 mmfd. tuners, ganged. Raymart VC40X.
C2, C4, C6, C9,		0.002 mfd. Mica.
C10, C11, C12,		0.001 mfd. Mica.
C13, C14, C15,		40 mmfd. Main tuner. Raymart VC40X.
C3,		50 mmfd. Silver-Mica.
C7,		0.05 mfd. 350 v.w. Non-inductive.
C8, C17, C18,		25 mfd. 12 v.w. Electrolytic.
C16, C19, C22,		8 mfd. 350 v.w. "
C20, C23,		8 mfd. 500 v.w. "
C21,		.01 mfd. condenser.
C24, C25,		4,700 ohms, 1 watt.
C26, C27,		10,000 " 1 "
R1,		220 " ½ "
R2, R18,		1,000 " 1 "
R3, R6,		51,000 " 1 "
R4, R8, R11,		150 " ½ "
R5, R7,		100,000 " ½ "
R9, R13,		47,000 " ½ "
R10, R12,		470,000 " ½ "
R14, R19,		2.2 meg. " ½ "
R15,		1 meg. Volume control.
R16,		680 ohms, ½ watt
R17,		330,000 " ½ "
R20,		180 " 1 "
R21,		15 mcs. I.F. Transformers.
R22,		Output transformer, 5 watts, to match load of 5,200 ohms.
I.F.T. 1, 2, 3,		200-250 v. primary.
T1,		350-0-350 v. 100 mAs.
		4 v. 2 a. 4 v. 8 a.
T2,		1,000 ohms.
Speaker Field,		
V1, V3, V4,	SP41.	
V2,	ACTH1.	
V5,	HL41DD.	
V6,	Pen 45.	
V7,	UU6.	

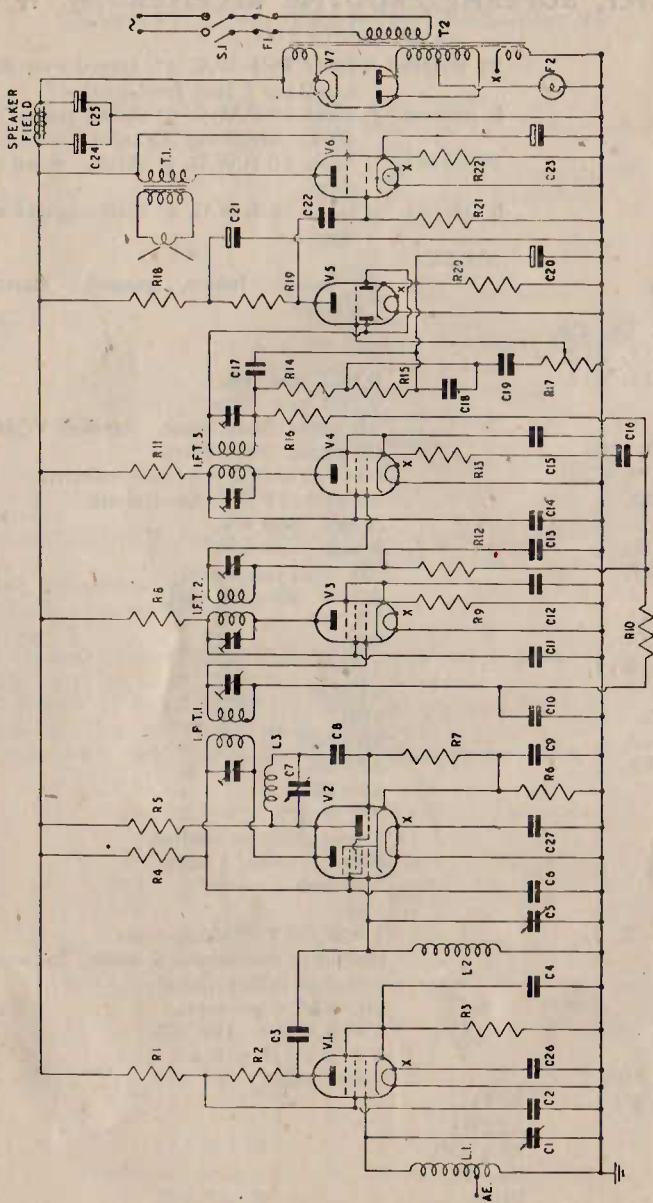


FIG. 19. V.H.F. Superhetrodyne Receiver.

- 6 Mazda octal chassis mounting valveholders.
- 1 British 7 pin " " "
- 1 Insulating bracket for C7, Eddystone 1007.
- 1 Extension spindle for C7, Eddystone 1008.
- 1 Coupler for C1, C5, Eddystone 529.
- Chassis, aluminium, 14" x 9" x 2½".
- Slow motion drive for C7.
- 2 Knobs, C1-C5, R17.
- Input sockets, Aerial. Output sockets, L.S.

As in all V.H.F. apparatus, each stage should have its own earth point as near the valve holder as possible, and to this point all the earth connections of that particular stage should be taken.

If instability is experienced a .01 mfd. condenser should be connected between the live heater pin and earth of the valves in the early stages.

A.C. AND AUDIO FREQUENCIES VALVE VOLTMETER—Fig. 20.

COMPONENTS LIST.

R1,	9 meg. precision carbon, 1 watt.
R2,	900,000 ohms, precision carbon.
R3,	90,000 ohms, wirewound or precision carbon.
R4,	10,000 ohms, wirewound or precision carbon.
R5,	1,000 ohms, 1 watt.
R6,	10,000 " 1 "
R7,	500 " 1 "
R8,	3,300 " 1 "
R9,	3,000 ohms, wirewound rheostat, Zero Set.
C1, C2,	50 mfd. 50 v.w. Electrolytic.
R.S.	S.P. 4 way Range switch (high quality, preferably ceramic).
S1, S2,	D.P. On-Off switch.
V1,	6P5.
1	International octal chassis mounting valveholder.
M,	0.— 1 mA. moving coil instrument.
B,	12 volt battery.

Small chassis or metal case.

Input sockets and test prods.

2 knobs, R.S., R9.

X-X, 6.3 volts, .3 amp. Mains or battery.

Switch ranges:—

1. 0-4 volts.
2. 0-40 "
3. 0-400 "
4. 0-4,000 "

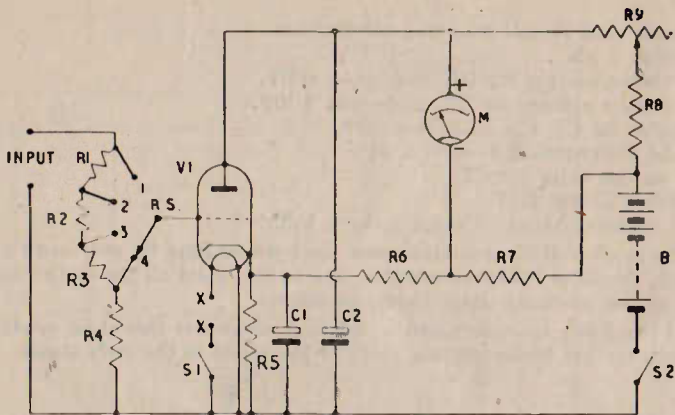


FIG. 20. A.C. and Audio Frequencies Valve Voltmeter.

VOLUME EXPANDING-COMPRESSING AMPLIFIER—Fig. 21.

COMPONENTS LIST.

R1,	0.25 meg. Volume control, or as specified for pickup used.
R2, R7,	33,000 ohms, 1 watt
R3, R8,	47,000 " 1 "
R4,	0.25 meg. Tone control.
R5,	680 ohms, 1 watt.
R6, R10,	330,000 " $\frac{1}{2}$ "
R9,	1,800 " 1 "
R11, R12,	33 " $\frac{1}{2}$ "
R13,	910 " 2 "
R14,	22,000 " $\frac{1}{2}$ "
R15, R16,	10,000 " $\frac{1}{2}$ "
R17,	20 ohms wire wound rheostat. Ex-Com. set.
C1,	0.005 mfd. 350 v.w. Non-inductive.
C2, C9,	50 mfd. 50 v.w. Electrolytic.
C3, C6, C7, C8,	0.1 mfd. 500 v.w. Non-inductive.
C4, C5, C11,	8 mfd. 500 v.w. Electrolytic.
C10,	16 mfd. 500 v.w. "
S1,	D.P.D.T. Up for Expansion. Down for Compression.
S2,	D.P. On-Off switch.
L.F.C.	20 Henrys, 100 mAs. 425 ohms.
T1,	Output transformer, 5 watts, to match load of 4,000 ohms.

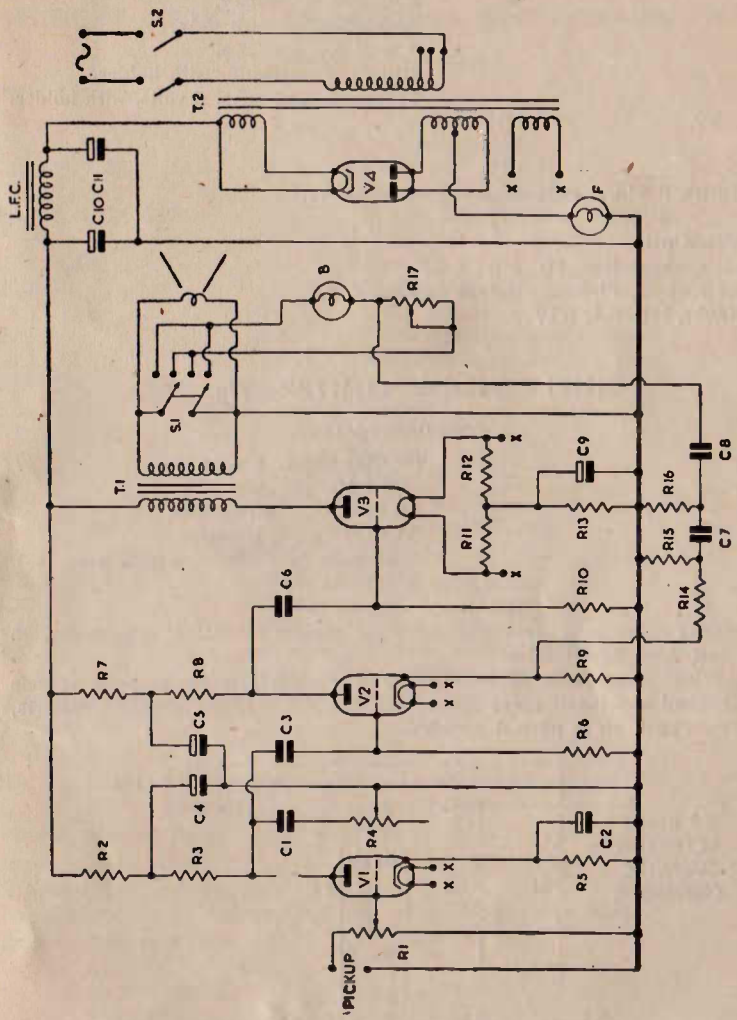


FIG. 21. Volume Expanding-Compressing Amplifier.

- T2, 200-250 v. primary.
 300-0-300 v. 100 mAs.
 4 v. 2 a. 4 v. 3 a.
 F, 200 mAs. fusebulb, with holder.
 B, Torchbulb 150 mAs. 6 volts, with holder.
 V1, V2, 354V.
 V3, PX4.
 V4, UU6.
 2 British 5 pin chassis mounting valveholders.
 1 " 4 " " " "
 1 Mazda octal " " " "
 Chassis, aluminium, 10" x 8" x 2½".
 Input sockets, Pickup. Output sockets, L.S.
 3 Knobs, R1, R4, R17.

SIMPLE NOISE LIMITER—Fig. 22.

COMPONENTS LIST.

- R1, 82,000 ohms, 1 watt.
 R2, 220,000 " ½ "
 R3, 10,000 " wirewound.
 R4, 51,000 " 1 watt.
 C1, 0.01 mfd. 500 v.w. Non-inductive.
 V1, DD41 for 4 volts to H-H.
 6H6 for 6 volts to H-H.

1 Mazda octal or 1 International octal chassis mounting valveholder, to suit 4 or 6 volt valve.

Break lead from diode detector coupling condenser to the receiver volume control and insert noise limiter. Adjust R3 until audio output distorts, then back off to normal working.

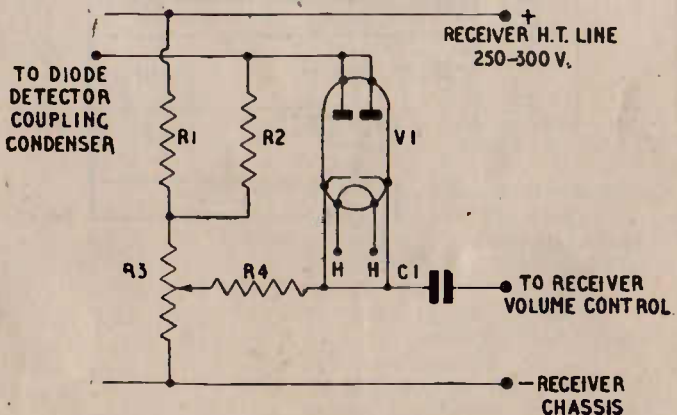


FIG. 22. Simple Noise Limiter.

MIDGET A.C./D.C. BROADCAST RECEIVER—Fig. 23.

COMPONENTS LIST.

L1,	Wearite PA2.
L2,	„ PHF2.
C1,	0.001 mfd. Mica.
C2, C6, C9,	0.0001 mfd. Mica.
C3, C7,	2 gang 0.0005 mfd. tuner, with trimmers.
C4, C5, C10, C12,	0.1 mfd. 350 v.w. Non-inductive.
C8,	8 mfd. 350 v.w. Electrolytic.
C11, C13,	25 mfd. 12 v.w. „
C14,	32 mfd. 350 v.w.
C15,	8 mfd. 500 v.w.
R1,	10,000 ohms Volume control.
R2,	33,000 ohms, $\frac{1}{2}$ watt.
R3,	510,000 „ $\frac{1}{2}$ „
R4,	750,000 „ $\frac{1}{2}$ „
R5,	10,000 „ $\frac{1}{2}$ „
R6,	330,000 „ $\frac{1}{2}$ „
R7,	1,000 „ 1 „
T1,	Output transformer, 5 watts, to match load of 3,000 ohms.
V1,	6D6.
V2,	6C6.
V3,	12A5.
V4,	25Y5.
V5,	Barretter, 0.3 amp. 138-221 volts or similar.
	Osram 301 or Phillips 1941.
2	International octal chassis mounting valveholders.
1 UX6	„ „ „
1 UX7	„ „ „
S1,	D.P. On-Off switch, ganged with R1.
F,	2 amp. fuses.
Chassis, aluminium, $9\frac{1}{2}$ ” x $4\frac{1}{2}$ ” x 2”.	
Input socket, Aerial.	
2 Knobs, C3-C7, R1.	
Use small 5” or 6” speaker, with field of 1,000 ohms or lower.	
Do not earth receiver.	

V.H.F. CONVERTER—Fig. 24.

COMPONENTS LIST.

L1, L2,	5 metres, 9 turns 18 S.W.G. enam., $\frac{1}{2}$ ” diam., spaced own diam. Tap L1 3 turns up.
	10 metres, 20 turns 18 S.W.G. enam., $\frac{1}{2}$ ” diam., spaced own diam. Tap L1 6 turns up.

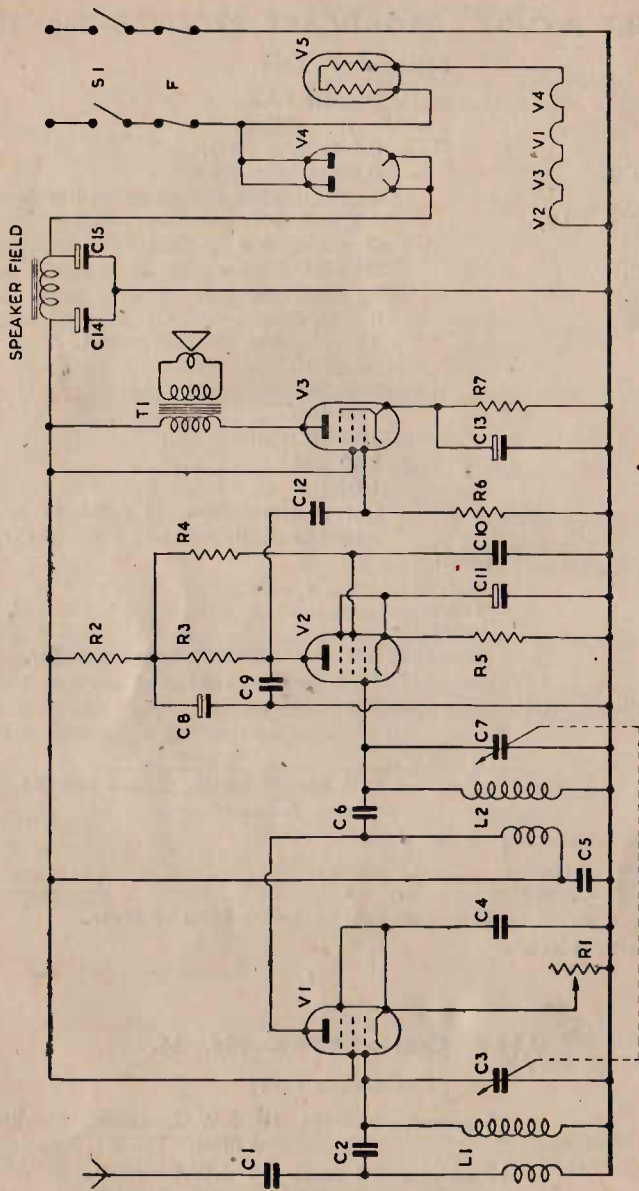


FIG. 23. Midget A.C./D.C. Broadcast Receiver.

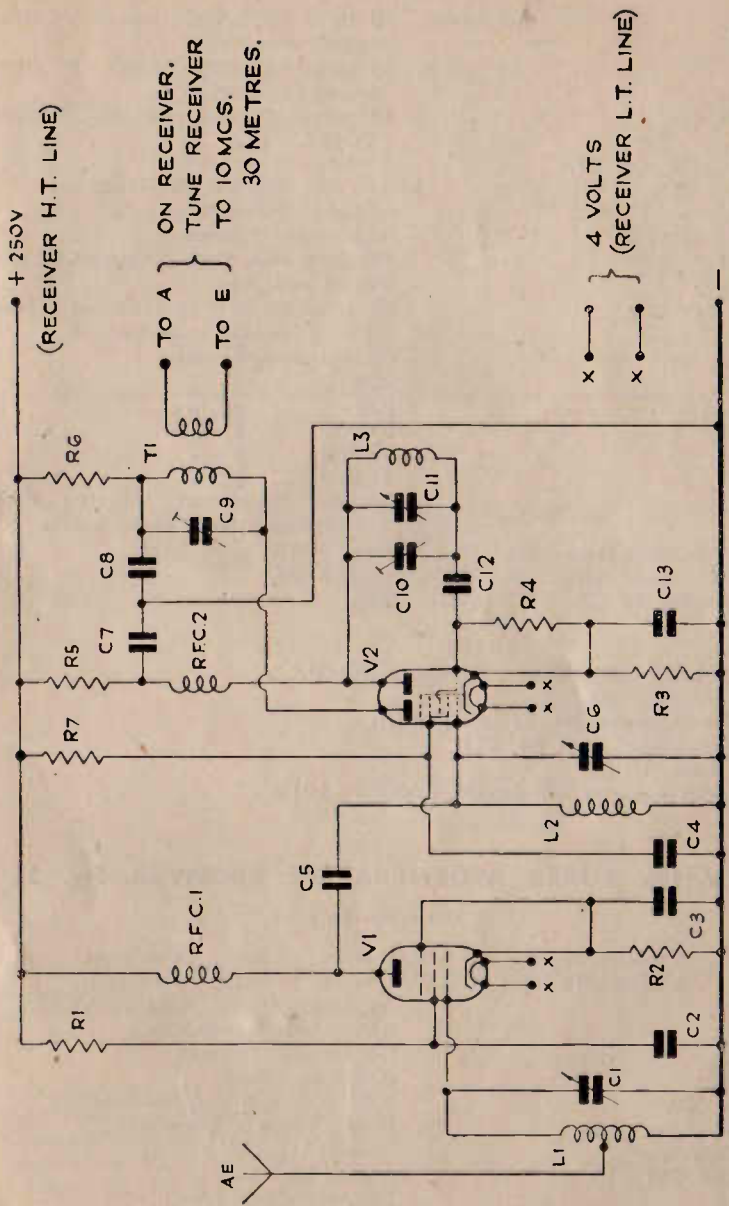


Fig. 24. V.H.F. Converter

- L3, 5 metres, 10 turns 18 S.W.G. enam., $\frac{1}{2}$ " diam., spaced own diam.
 10 metres, 21 turns 18 S.W.G. enam., $\frac{1}{2}$ " diam., spaced own diam.
- C1, C6, 40 mmfd. tuners, ganged. Raymart VC40X.
- C2, C3, C4, C7, 0.01 mfd. 350 v.w. Non-inductive.
 C8, C13, 50 mmfd. Silver-Mica.
 C5, 3-30 mmfd. Trimmers.
 C9, C10, 15 mmfd. Main tuner. Raymart VC15X.
 C11, 0.0001 mfd. Mica.
 C12, 60 turns 30 S.W.G. enam. on ceramic
 R.F.C. 1, 2, 1 meg. resistor as former.
- R1, R6, 33,000 ohms, 1 watt.
 R2, 220 " $\frac{1}{2}$ "
 R3, 330 " $\frac{1}{2}$ "
 R4, 51,000 " $\frac{1}{2}$ "
 R5, 68,000 " 1 "
 R7, 47,000 " $\frac{1}{2}$ "
 T1, Coupling transformer. Wearite PHF5 with primary tuned to 30 metres
- 1 Insulating bracket for C11, Eddystone 1007.
 1 Extension spindle for C11, Eddystone 1008.
 Coupling for C1, C6, Eddystone, 529.
 V1, SP41.
 V2, ACTH1.
 1 Mazda octal chassis mounting valveholder.
 1 British 7 pin " " " "
 Chassis, aluminium, $7\frac{1}{2}$ " x $3\frac{1}{2}$ " x 2". "
 Slow motion drive for C11.
 1 Knob, C1-C6.
 Aerial connector and standoff, Eddystone 1019.

V.H.F. SUPER REGENERATIVE RECEIVER—Fig. 25.

COMPONENTS LIST.

- L1, 5 metres, 8 turns 16 S.W.G. enam., $\frac{1}{2}$ " diam., closewound.
 10 metres, 18 turns 16 S.W.G. enam., $\frac{1}{2}$ " diam., closewound.
- C1, 40 mmfd. Tuner. Raymart, VC40X.
 C2, 0.0001 mfd. Silver-Mica.
 C3, 3-30 mmfd. Trimmer.
 C4, 0.005 mfd. Mica.
 C5, C8, 0.05 mfd. 350 v.w. Non-inductive.
 C6, 8 mfd. 350 v.w. Electrolytic.
 C7, C9, 25 mfd. 12 v.w. "
 C10, C11, 8 mfd. 500 v.w. "
 R1, 220,000 ohms, $\frac{1}{2}$ watt.

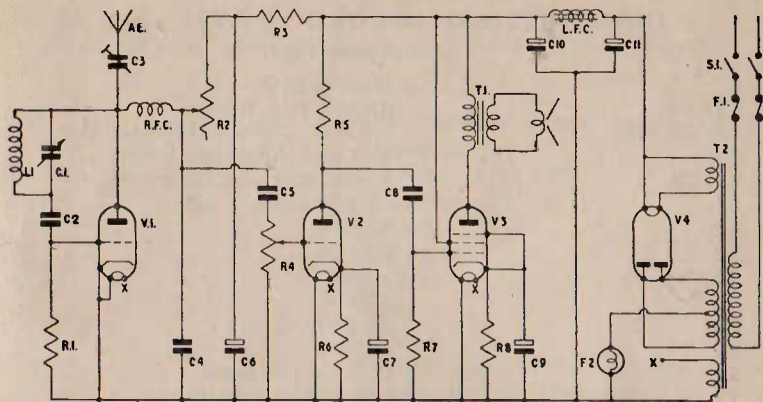


FIG. 25. V.H.F. Super Regenerative Receiver.

- | | | |
|---|--------------------------------|--|
| R2, R4, | 0.5 meg. | Regeneration and Volume controls. |
| R3, | 33,000 ohms, | $\frac{1}{2}$ watt. |
| R5, | 47,000 " | 1 " |
| R6, | 1,000 " | $\frac{1}{2}$ " |
| R7, | 470,000 " | $\frac{1}{2}$ " |
| R8, | 220 " | 1 " |
| R.F.C. | 60 turns | 30 S.W.G. enam. on ceramic
1 meg. resistor as former. |
| L.F.C. | 20 Henrys, | 100 mAs, 425 ohms. |
| T1, | Output transformer, | 5 watts, to match
load of 5,000 ohms. |
| T2, | 200-250 v. primary. | 250-0-250 v. 80 mAs.
5 v. 2 a. 6 v. 2 a. |
| V1, | 955 Acorn or 6J5. | |
| V2, | 6C5. | |
| V3, | 6V6. | |
| V4, | 5Y3. | |
| 1 Acorn holder and 3 International octal chassis mounting valveholders, or 4 International octal holders. | | |
| S1, | D.P. On-Off switch. | |
| F1, | 2 amp. fuses. | |
| F2, | 150 mAs. fusebulb with holder. | |
| 1 Insulating bracket for C1, Eddystone 1007. | | |
| 1 Extension spindle for C1, Eddystone 1008. | | |
| Chassis, aluminium, 10" x 8" x 2 $\frac{1}{2}$ ". | | |
| Aerial standoff and connector, mount for C3, Eddystone 1019. | | |
| 3 Knobs, C1, R2, R4. | | |

TRANSMITTING RECORD PLAYER—Fig. 26.

COMPONENTS LIST.

L,	Wearite PO2.
C1, C4,	0.0001 mfd. Mica.
C2, C3, C6,	0.1 mfd. 350 v.w. Non-inductive.
C5,	500 mfd. Adjustable trimmer.
C7, C8,	8 mfd. 350 v.w. Electrolytic.
R1,	47,000 ohms, 1 watt.
R2,	33,000 " 1 "
R3,	68,000 " 1 "
R4,	1 meg. " ½ "
R5,	330 " ½ "
R6,	51,000 " ½ "
R7,	10,000 " 1 "
S1,	D.P. On-Off switch.
T1,	200-250 v. primary.
	250-0-250 v. 50 mAs.
	4 v. 2 a. 4 v. 1 a.
	150 mAs. fusebulb with holder.
F,	
V1,	ACTH1.
V2,	UU6.
	1 British 7 pin chassis mounting valveholder.
	1 Mazda octal " " " " " "
	Chassis, aluminium, 9½" x 4½" x 2". "
	input sockets. Pickup. Output socket, Aerial.

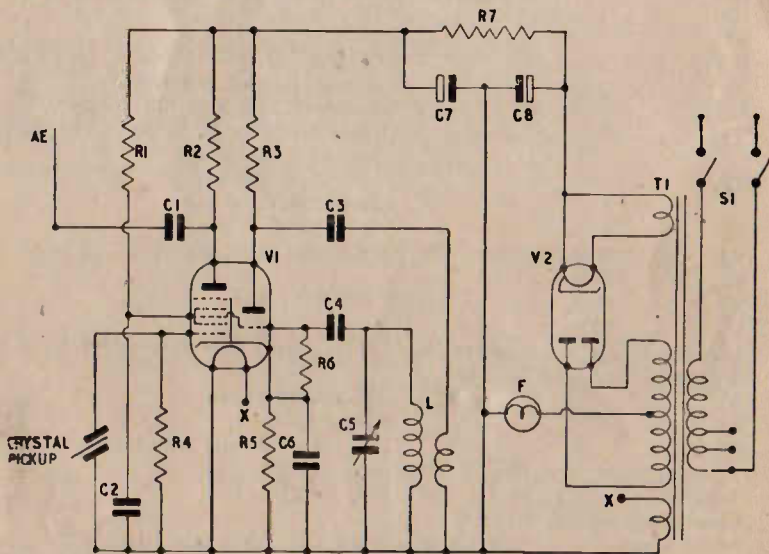


FIG. 26. Transmitting Record Player.

BASS BOOSTING PICKUP PRE-AMPLIFIER—Fig. 27.

COMPONENTS LIST.

R1,	0.25 megohms	Volume control. or as specified.
R2,	1.2 meg	$\frac{1}{2}$ watt.
R3,	33,000 ohms,	$\frac{1}{2}$ "
R4,	220,000 "	$\frac{1}{2}$ "
R5,	330,000 "	$\frac{1}{2}$ "
R6,	100,000 "	$\frac{1}{2}$ "
R7,	1,200 "	$\frac{1}{2}$ "
R8,	1 meg.	$\frac{1}{2}$ "
C1,	0.5 mfd. 350 v.w.	Non-inductive.
C2,	50 mfd. 12 v.w.	Electrolytic.
C3,	8 mfd. 350 v.w.	"
C4,	0.01 mfd. 350 v.w.	Non-inductive.
C5,	0.1 mfd. 350 v.w.	"
V1,	6J7,	

1 International octal chassis mounting valveholder.

Small metal box, with chassis.

1 Knob for R1.

1 Screened grid connector.

Screen all cabling.

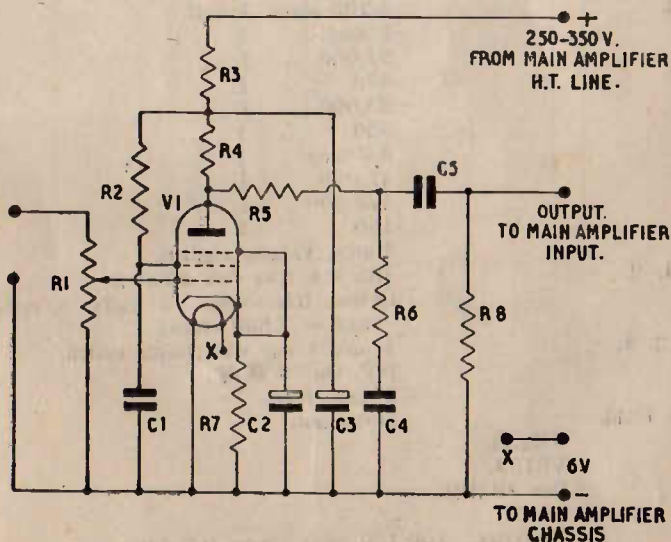


FIG. 27. Bass Boosting Pickup Pre-amplifier.

A.C./D.C. SUPERHET RECEIVER—Fig. 28.

COMPONENTS LIST.

L1,	Wearite, PA3.	16-50 metres.
L2,	„ PA2.	200-560 „
L3,	„ PA1.	700-2,000 „
L4,	„ PO4.	
L5,	„ PO2.	
L6,	„ PO1.	
C1, C27,	0.01 mfd.	500 v.w. Non-inductive.
C2, C8, C11, C18, C19,	0.1 mfd.	350 v.w. „
C3, C13,	60 mmfd.	Adjustable trimmer.
C4, C5, C15,	75 mmfd.	Adjustable trimmer.
C6, C10,	0.0005 mfd.	2 gang tuner.
C7,	0.0002 mfd.	Mica.
C9, C21, C22,	0.0001 mfd.	Mica.
C12,	0.005 mfd.	Fixed padder.
C14,	500 mmfd.	Adjustable padder.
C16,	150 mmfd.	Adjustable padder.
C17,	100 mmfd.	Adjustable trimmer.
C20, C24,	0.05 mfd.	350 v.w. Non-inductive.
C23,	50 mfd.	25 v.w. Electrolytic.
C25,	24 mfd.	350 v.w. „
C26,	8 mfd.	500 v.w. „
R1, R6,	4,700 ohms,	1 watt.
R2,	1 meg.	$\frac{1}{2}$ „
R3,	51,000 „	$\frac{1}{2}$ „
R4,	470 „	$\frac{1}{2}$ „
R5,	33,000 „	1 „
R7,	330 „	1 „
R8,	2.2 meg	$\frac{1}{2}$ „
R9,	47,000 „	$\frac{1}{2}$ „
R10,	470,000 „	$\frac{1}{2}$ „
R11,	150 „	1 „
R12,	1 meg.	Volume control.
I.F.T. 1, 2,	465 kcs.	Iron core adjusted.
T1,	Output transformer,	5 watts to match load of 2,500 ohms.
S1, 2, 3, 4,	4 pole 3 way	wavechange switch.
S5,	D.P.	On-Off switch.
F,	2 amp.	fuses.
Speaker Field,	500 ohms.	
V1,	TH233.	
V2,	VP133.	
V3,	Pen 453DD.	
V4,	U403.	
B,	Barretter.	100-150 volts range, 0.2 amp. Phillips Miniwatt C3 or similar.

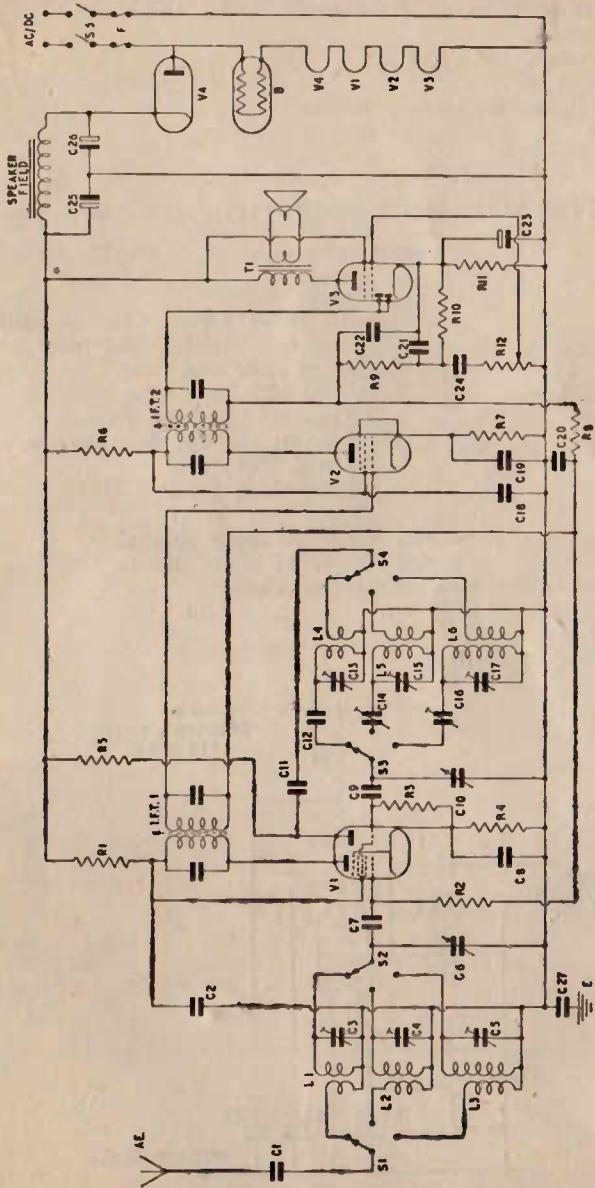


FIG. 28. A.C./D.C. Superhet Receiver.

- 4 Mazda octal chassis mounting valveholders.
- 1 Barretter holder.
- Chassis, aluminium, 10" x 8" x 2½".
- Input sockets, A, E.
- Slow motion drive. C6-C10.
- 1 Knob, R12.

A B.F.O. FOR SUPERHET RECEPTION OF C.W.—Fig. 29.

COMPONENTS LIST.

- | | |
|---------|--|
| L1, | Wearite, B-F.O. |
| C1, | 5-10 mmfds. approx. May be made by wrapping insulated lead from B.F.O. round diode anode lead. |
| C2, C3, | 0.0001 mfd. Silver-Mica. |
| C4, | 30 mmfds. Adjustable trimmer. |
| C5, | 0.01 mfd. 350 v.w. Non-inductive. |
| C6, | 0.1 mfd. 350 v.w. " " |
| R1, | 33,000 ohms, ½ watt. |
| R2, R3, | 51,000 " ½ " " |
| V1, | AC2HL for 4 volt heater circuits.
or 6J5 for 6 volt heater circuits. |

1 International Octal chassis mounting valveholder

or 1 British 5 pin " " " to
suit valve used.

Build on to receiver chassis.

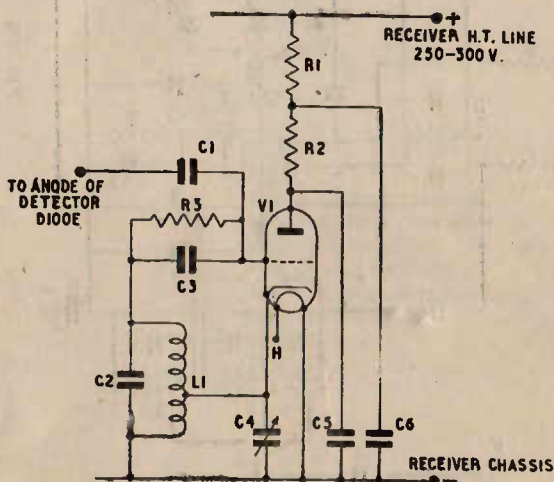


FIG. 29. B.F.O. for Superhet Reception of C.W.

SIMPLE TWO STAGE TRANSMITTER—Fig. 30.

COMPONENTS LIST.

Crystal, 3.5 or 7 mcs. with holder.

R1,	47,000	ohms,	1 watt.
R2, R5,	15,000	"	3 "
R3,	22,000	"	1 "
R4,	330	"	1 "
R6,	100,000	"	2 "
R7,	22,000	"	10 "
C1, C3, C4, C6, C8,	0.002 mfd. Mica.		
C2,	0.0001 mfd. Mica.		
C5, C7,	0.0002 mfd. Mica.		
C9,	0.001 mfd. Mica.		
C10, C11,	250 mmfd. variable. Raymart VC250X.		
R.F.C. 1, 2,	Eddystone, 1022.		
L.F.C.,	20 Henrys, 200 mAs. 150 ohms.		
T1,	200-250 v. primary.		
	350-0-350 v. 100 mAs.		
	5 v. 2 a. - 6 v. 3 a.		
S1,	D.P. On-Off switch.		
M,	100 mAs. Meter.		
V1,	6C5.		

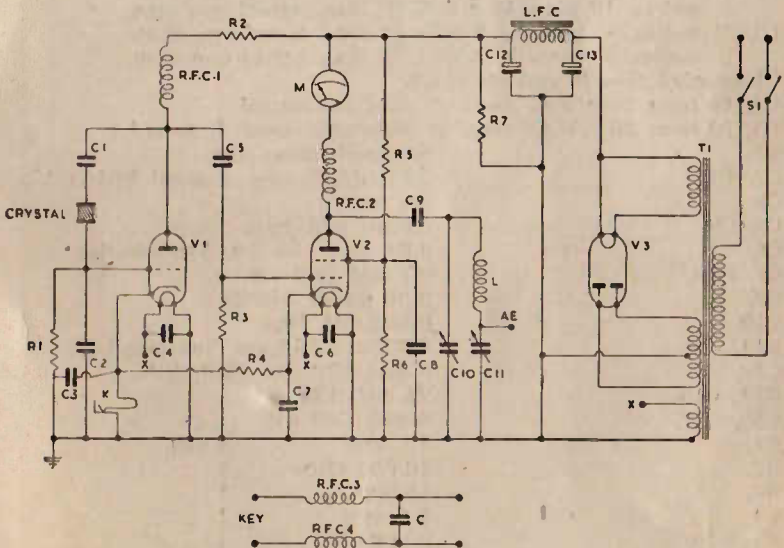


FIG. 30. Simple Two Stage Transmitter.

- V2, 6V6.
 V3, 5Y3.
 3 International octal chassis mounting valveholders.
 K, Key Jack.
 Coilholder, Eddystone, 964.
 Chassis, aluminium, 10" x 8" x 2½".
 1 Aerial standoff insulator, Eddystone 916.
 2 Knobs, C10, C11.
 Key Filter :—
 R.F.C. 3, 4, Eddystone 1022.
 C, 0.1 mfd. 350 v.w. Non-inductive.
 L, 3.5 mcs, 30 turns 20 S.W.G. d.s.c. close wound on Eddystone former No. 537.
 7 mcs. 12 turns 18 S.W.G. enam., wound in slots on Eddystone former No. 538.

V.H.F. SUPER REGENERATIVE SUPERHET RECEIVER—Fig. 31.

COMPONENTS LIST.

- L1, 2½ metres, 1 turn 18 S.W.G. ½" diam. spaced own diam.
 5 metres, 3 turns 18 S.W.G. ½" diam. spaced own diam.
 L2, 2½ metres, 5 turns 18 S.W.G. ½" diam. spaced own diam.
 5 metres, 10 turns 18 S.W.G. ½" diam. spaced own diam.
 L3, 2½ metres, 4 turns 18 S.W.G. ½" diam. spaced own diam.
 5 metres, 8 turns 18 S.W.G. ½" diam. spaced own diam.
 L1 mounted close to grid end of L2.
 L4, 16 turns 20 S.W.G. enam. ½" diam. closewound.
 L5, 10 turns 20 S.W.G. enam. ½" diam. closewound, ¼" from L4.
 C1, 50 mmfd. Silver-Mica.
 C2, C4, 40 mmfd. Tuners. Raymart VC40X.
 C3, See Note.
 C5, C9, 0.0001 mfd. Mica.
 C6, 0.01 mfd. 350 v.w. Non-inductive.
 C7, C13, 0.1 mfd. 350 v.w. "
 C8, 3-30 mmfd. Trimmer.
 C10, 0.002 mfd. Mica.
 C11, 0.02 mfd. 350 v.w. Non-inductive.
 C12, 8 mfd. 350 v.w. Electrolytic.
 C14, C15, 25 mfd. 12 v.w. "
 C16, C17, 8 mfd. 500 v.w. "
 R1, 1.5 meg. ½ watt.
 R2, 10,000 ohms 1 "
 R3, 15,000 " 1 "
 R4, 4.7 meg. ½ "
 R5, R10, 33,000 " ½ "
 R6, 50,000 " Regeneration control.
 R7, 4,700 " 2 watt.

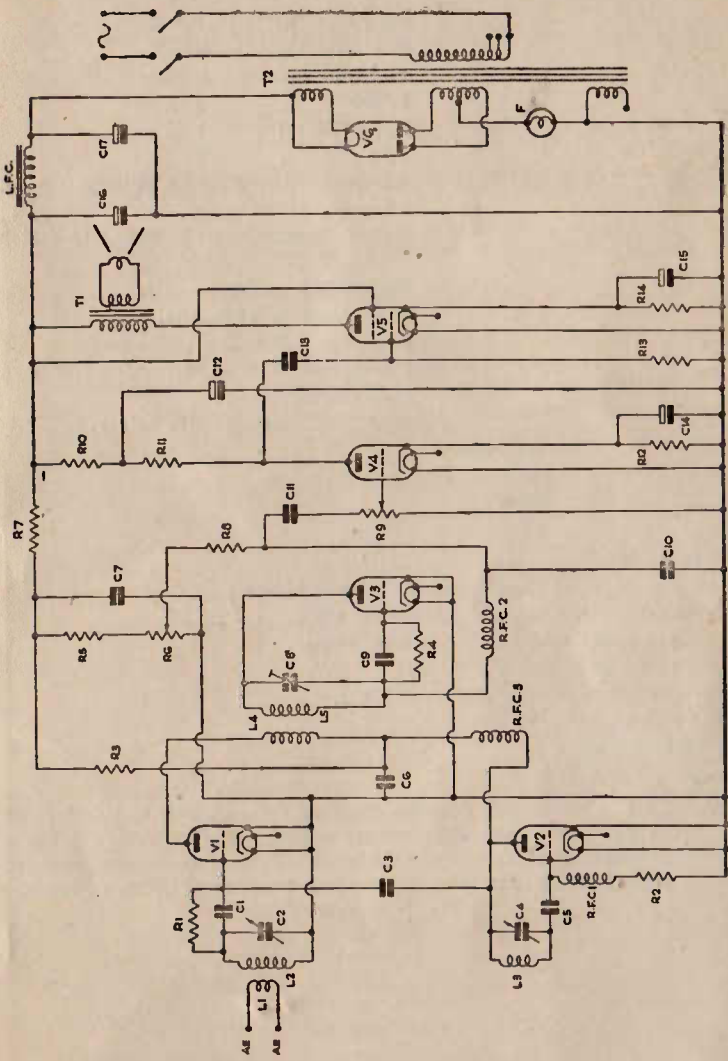


Fig. 31. V.H.F. Super Regenerative Superhet Receiver.

R8,	68,000 ohms	1 watt.
R9,	0.5 meg.	Volume control.
R11,	100,000 ohms,	$\frac{1}{2}$ watt.
R12,	1,000	" $\frac{1}{2}$ "
R13,	220,000	" $\frac{1}{2}$ "
R14,	470	" 1 "
R.F.C. 1, 2, 3,	60 turns 30 S.W.G. on ceramic	1 meg. resistor as former.
T1,	Output transformer, 5 watts,	to match load of 7,000 ohms.
T2,	200-250 v. primary.	
	250-0-250 v. 100 mAs.	
	5 v. 2 a. 6 v. 2 a.	
L.F.C.,	20 Henrys,	100 mAs.
S1,	D.P. On-Off switch.	
F,	150 mAs. fusebulb	with holder.
V1, V2,	955 Acorn	
V3, V4,	6J5	
V5,	6F6	
V6,	5Y3	

2 Acorn holders.

4 International octal chassis mounting valveholders.

1 Insulating bracket for C4, Eddystone 1007.

1 Extension spindle for C4, Eddystone 1008.

Chassis, aluminium, 10" x 8" x 2 $\frac{1}{2}$ ".

Aerial standoff supports, Eddystone 1019.

Output sockets, L.S.

Slow motion drive, C4.

3 Knobs, C2, R6, R9.

NOTE.—C3 is a very small capacity coupling the oscillator and first input stages. Stray capacities are sometimes sufficient coupling, but a 5 mmfd. condenser might be used, or the two circuits mounted sufficiently close to give coupling and injection of oscillator voltage.

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