ALBA 40 UNIVERSAL

Three-valve, plus rectifier, superhet with built-in frame aerials for operation from AC or DC mains. Made by A. J. Balcombe, Ltd., 52, Tabernacle Street, London, EC2.

THE frame aerials, L1 (MW) and L2 (LW) are directly connected to the grid of the frequency changer valve, V1. They are tuned by the VC1 section of the double-gang condenser, the long wave winding having an additional capacity, C2, across it. C1 is the isolating condenser and HF return capacity for the grid circuit, which is connected to the AVC line.

V1 obtains standing bias from the cathode resistor, R1, which is decoupled by C3. The screening grid is fed from the HT line through R3, which is decoupled by C5. R3 is also the voltage dropper for the anode of the oscillator section of V1, the anode circuit being completed through the reaction windings, L4 (MW) and L6 (LW). The oscillator coil assembly has iron-dust cores, the tuned grid windings being L3 (MW) and L5 (LW). The grid leak and condenser are R2 and C4.

The IF signal is transferred from V1 anode circuit by the iron-dust core transformer, L7 and L8. V2 is the IF amplifier and has AVC applied to it as well as being biased by the cathode resistance, R4, decoupled by C7.

A second IF transformer, similar to the first, but with a tapping on the secondary winding, L10, couples the output of V2 to the diodes of the double diode pentode, V3. The signal diode load is R6, R5 and C8 being the IF filter. The LF signal developed across R6 is coupled by C10 to the volume control, R7, and thence to the control grid of the pentode section of V3.

The AVC diode is fed from the same tapping on L10, but through the condenser, C11, the load resistances being R9 and R10. A potential obtained from this network is fed to V1 via R11 decoupler and to V2 via R8 and C6 decoupling components.

Bias for V3 is derived from the cathode resistor, R12, which is decoupled by C12. The low impedance permanent magnet speaker is coupled to the output of V3 by the transformer L11 and L12. C13 is the tone correcting condenser.

The HT current is obtained from the half-wave rectifier, V4, and is smoothed by the choke, L14, and condensers, C14 and C15.

The heater circuit is controlled by the barreter, all the heaters being in series.

The mains are HF filtered by the chokes L15, L16 and the condenser C16.

GANGING

IF Circuits.—Inject a 370 kcs signal into the grid of V1, shorting out VC2. Adjust T1, T2, T3 and T4 for maximum output.

MW Band.—Inject a 250-metre signal into the aerial and earth sockets and tune receiver to this input. Adjust T5 and T6 for maximum output.

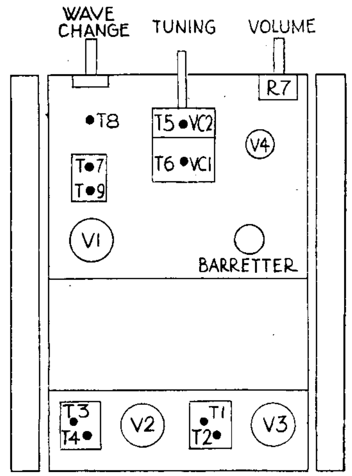
Inject and tune-in a 500 metre signal and adjust T7 for maximum output.

Repeat adjustments for best results.

LW Band.—Switch to LW, inject and tune-in a 1,200 metre signal. Adjust T8 for maximum output.

Inject and tune-in a 1,900 metre signal and adjust T9 for maximum output.

Repeat operations until no further improvement is effected.



Layout diagram identifying the valves and trimmers.

RESISTANCES

R	Ohms	R	Ohms
1	250	7	500,000
2	50,000	8	1 meg
3	20,000	9	500,000
4	200	10	500,000
5	50,000	11	1 meg
6	1 meg	12	170

Sparking in Field Coil

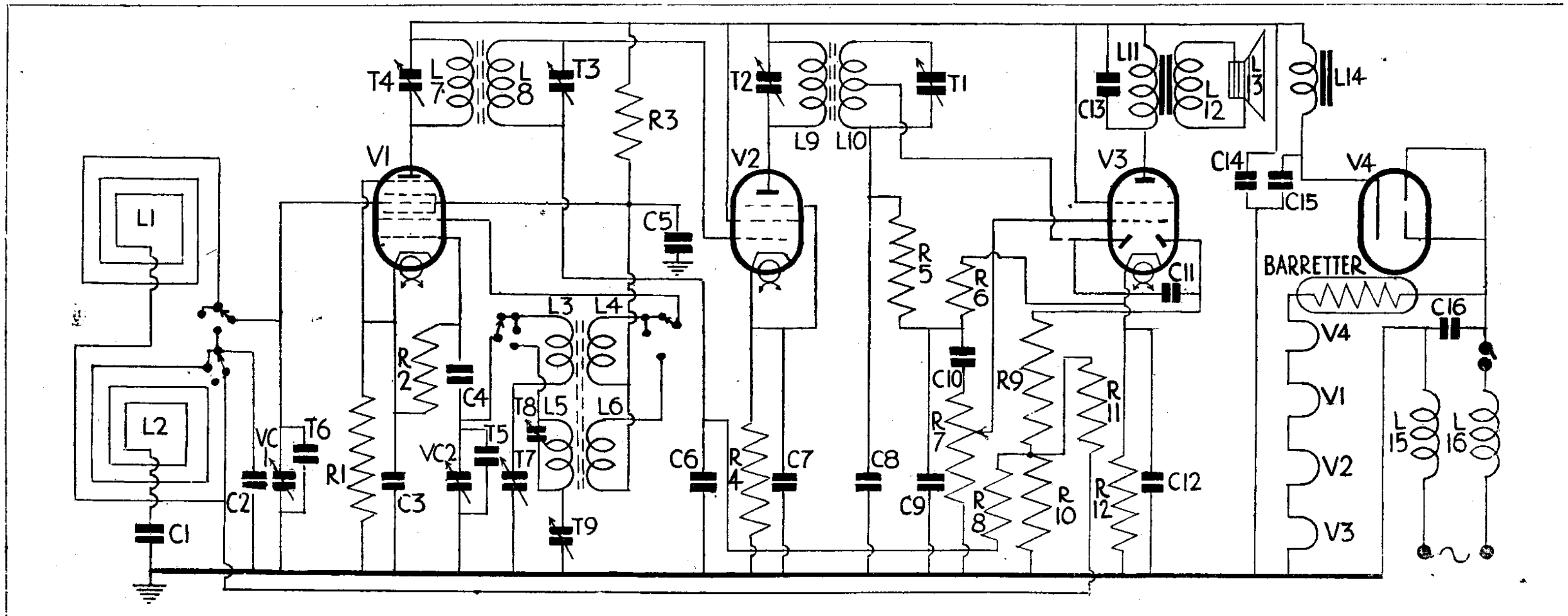
AN HMV 1120 receiver came in for noise resembling that caused by a short-circuit or partly open circuit. Removing the HF valves almost stopped the noise, but a voltmeter across the HT circuit indicated large changes of voltage, showing that the trouble, although not so audible, was still there.

The HF circuits were tested and found perfect. It was assumed that the fault was causing sparking which was radiating into the HF circuits and causing a miniature interference effect.

Further testing proved that removing a smoothing condenser on the load side of the mains choke (speaker field) would make the noise much worse, and apparently the condenser was therefore partly suppressing the noise voltages. Testing the field was the next logical step to take. This gave a considerable change of voltage on the set or load side of the winding, but a very small voltage change on the rectifier side.

The load side was disconnected, and the choke output voltage was again tested and still found to be fluctuating. The coil was ohmmeter-tested and gave no reading at all, showing an open circuit.

The application of HT, it seems, caused the open point to be temporarily bridged, but with a bad connection causing current changes and noise.—F. DAY-LEWIS.



The circuit is a three-valve superhet arrangement plus half-wave rectifier for AC or DC operation. The grid coils of V1 form a frame aerial, remaining coils having iron dust cores. V2 is the IF amplifier and V3 a combined double diode and output pentode.

CONDENSERS

C	Mfds	C	Mfds
1	.1	9	.0002
2	75 mmfd	10	.05
3	.1	11	10 mmfd
4	.0001	12	25
5	.1	13	.005
6	.1	14	24
7	.1	15	8
8	.0002	16	.1

WINDINGS

L	Ohms	L	Ohms
1	1	9	8.5
2	14	10	8.5
3	2	11	500
4	7.25	12	Very low
5	8	13	3
6	7.5	14	120
7	8.5	15	4
8	8.5	16	4

VALVE READINGS

V	Type	Electrode	Volts	Ma
1	FC13 (MET)	Anode	245	2.5
		Osc anode	50	3
		Screen	90	5.4
2	VP13C (MET)	Anode	245	12
		Screen	245	4
3	PEN40DD	Anode	225	4.8
		Screen	245	8.2
4	UR1C	Rectifier		
	Barretter	Philips C1		