

FERGUSON

104

Five-valve, plus rectifier, three waveband table model superhet for operation on 200-250 volt, 50-100 cycle A.C. supplies. Made by Ferguson Radio, 109, Judd Street, London, W.C.1.

Circuit.—V1 is a radio-frequency amplifier preceded by single-tuned aerial circuits. On L.W., the grid coil consists of L3 plus L5 and L4 forms a primary. On M.W., L5 is disconnected and the upper end of L3 earthed. L3 then acts as a primary coupled to L2. The coupling to V2, the frequency-changer, is tuned grid. L6 in V1 anode circuit is a primary, shunted by C8.

On S.W., L6 acts as a choke and C10 transfers the signal.

The oscillator section of V2 is tuned anode with conventional coupled circuits on S. and M.W., there being additional capacitive coupling by means of the tracking condensers C16 and T7. On L.W. the coupling is solely by capacity (T11).

V3 is the I.F. amplifier. It will be seen that the cathodes of V1, V2 and V3 have individual minimum bias resistors and also a common resistor R7. On S.W. R7 is shorted out thereby reducing the bias on these stages and increasing gain.

The I.F. transformers are usual trimmer-tuned types, the second one leading to V4, a double-diode triode. The A.V.C. diode is fed from V3 anode, full control being applied to V3 and a tapping on the load (R20, 21) controlling V1 and V2.

The demodulation circuit is straightforward, energising the triode section via the volume control, R17. Resistance-capacity coupling feeds V5, the output pentode. This has an anode stabiliser, R25, a shunt tone circuit, and high-impedance external speaker sockets.

A full-wave rectifier circuit, V6, is perfectly straightforward.

PILOT LAMPS, 6.2 v., .3 amp. M.E.S. EXTENSION SPEAKER IMPEDANCE, 5,000 ohms. PICK-UP, this should be approximately 2,000 ohms impedance and can be left connected.

GANGING

I.F. CIRCUITS. Inject 470 kc. to V2 grid and adjust I.F. trimmers for maximum using throughout lowest possible input.

S.W. BAND. Check that pointer is horizontal with gang at maximum. Tune to 15m, inject 20 mc. to aerial and adjust T1, T2 and T3. Set T1 to peak first obtained from full out position. There is no adjustable paddler.

M.W. BAND. Tune to 214 m., inject 1,400 kc., and adjust T4, T5, T6.

Tune to 500 m., inject 600 kc. and adjust T7.

L.W. BAND. Tune to 1,250 m., inject 240 kc., and adjust T8, T9, T10.

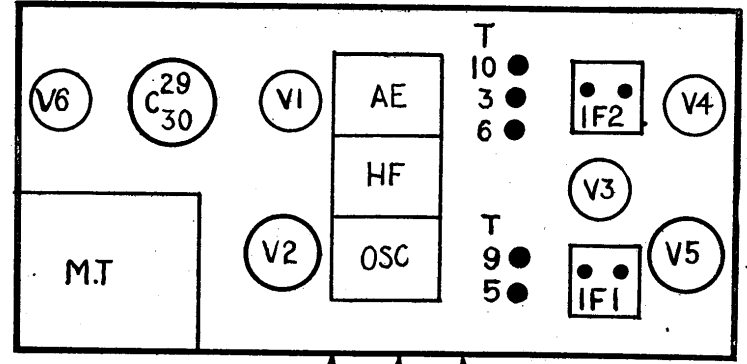
Tune to 2,000 m., inject 150 kc. and adjust T11.

RESISTANCES

R	Ohms.	R	Ohms.
1	100,000	14	300
2	250,000	15	500,000
3	400	16	100,000
4	250,000	17	2 meg.
5	100,000	18	2,500
6	200	19	250,000
7	200	20	500,000
8	50,000	21	500,000
9	25	22	100,000
10	10,000	23	500,000
11	500,000	24	150
12	25,000	25	100
13	100,000	26	100,000

CONDENSERS

C	Mfds.	C	Mfds.
.1	.0005	16	.005
2	.00001	17	.0001
3	.002	18	.1
4	.1	19	.1
5	.1	20	.0001
6	.1	21	.00025
7	.1	22	.00025
8	.0004	23	.02
9	.1	24	.25
10	.000005	25	.02
11	.000005	26	.02
12	.1	27	.005
13	.1	28	.05
14	.0001	29	.16
15	.1	30	.16



The diagram above identifies the valves and other main components on the top of the chassis and locates the trimmers, some of which are on the rear side.

This set is a straightforward example of a superhet with a pre-amplifier, or R.F. stage. An interesting point is a sensitivity control (R7 and switch) in the cathode leads of V1, V2 and V3.

VALVE READINGS

V.	Type.	Electrode.	Volts.	Ma.
1	EF30	Anode	290	3.5
			115	1.2
2	ECH33	Anode	290	1.5
		Screen	120	1.8
		Osc. Anode	145	5
3	EF30	Anode	290	4.5
		Screen	125	1.5
4	6Q7G	Anode	95	7
5	EL33	Anode	275	40
		Screen	290	5
6	5Y3G	Anodes	350 A.C.	—

WINDINGS

L	Ohms.	L	Ohms.
2	3	14	6
3	25	15-18	8.5
4	350	19	400
5	20	20	15
6	40	21	1.5
8	3	22	1,500
9	12	23	15
10	.1	24	480
12	1	25	1
13	2	26	32

Intermittent Fade

A "STRAIGHT" mains set developed a fade which could be brought back by clicking the mains switch. The fade did not occur during injection from an oscillator to the detector anode. When the fade did occur the detector and screen-grid currents did not alter.

The fault appeared, therefore, to be in a coupling component which did not affect the D.C. circuits and in front of the detector. This at once suggested the detector grid condenser and replacement gave a complete cure.—C. N.

