INVICTA UP2

Three valve, plus rectifier, two waveband superhet portable with frame aerial and for 200-250 volt A.C. or D.C. supplies. Made by Invicta Radio, Ltd., Cambridge.

Circuit.—The frame winding forms the medium wave grid coil of V1, the frequency-changer. For long waves a "loading coil" is switched in, the frame remaining in circuit for signal pick-up. An external aerial connection goes straight to V1 grid via C1.

C8 decouples the A.V.C. to V1 and C8 and C9 together isolate both aerial and earth connections from the mains.

The oscillator section is parallel-fed tuned anode with grid coupling coils. There are no padding condensers as the oscillator section of the gang is specially shaped.

Permeability-adjusted I.F. transformers link up V2, the I.F. amplifier, and V3, the combined double diode and output pentode.

Demodulation diode arrangements are straightforward with R5, C21, C22 forming an H.F. filter, and R6, the load, feeding L.F. to R8, the volume control, via a D.C.-isolating capacity, C19.

The A.V.C. diode is fed from the same point as the signal diode being isolated for D.C. purposes by C20.

The pentode section has a shunt tone corrector, C30, and a variable tone circuit in C26, R12.

Smoothing is by choke and two electrolytics, C23 being a paper tubular forming an efficient H.F. by-pass. As usual with A.C./D.C. sets, the rectifier, V4, is a half-wave type and all the heaters are series run from an adjustment resistance, C28 and C29, with two chokes to filter out mains noise.

The speaker is a P.M. type with 2-ohm speech coil.

GANGING

I.F. Circuits.—Tune to M.W. maximum. Inject 467 kc. to V1 grid and adjust I.F. cores for maximum, reducing input as circuits come into line.

M.W. Band.—Tune to 200 metres and inject this wavelength by means of a loop of wire brought near to the frame aerial. Adjust T1 and T2 for maximum.

Check at 550 metres and compromise a little if necessary.

L.W. Band.—Tune to 1,300 metres and inject this signal as on M.W. Adjust T3 and T4 for maximum.

RESISTANCES

R		Ohms	R		Ohms
1	..	20,000	9	..	50,000
2	..	50,000	10	..	250
3	..	50,000	11	..	1 meg.
4	..	200	12	..	20,000
5	..	110,000	13	..	1 meg.
6	..	510,000	14	..	100
7	..	200	15	..	100
8	..	1 meg.	16	..	780

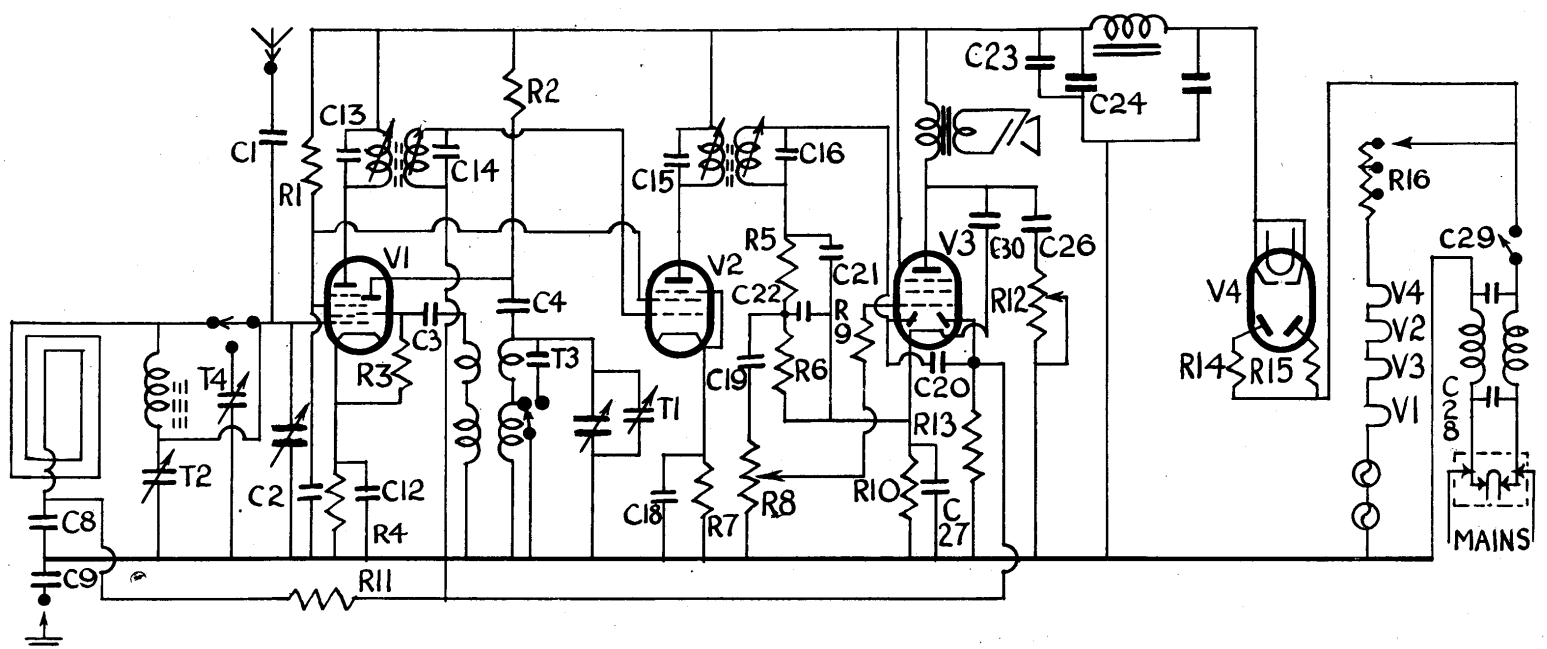
VALVE READINGS

V	Type	Electrode	Volts	Ma.
1	ECH3	Anode	242	2.8
		Screen	95	4
		Osc. anode	90	2.3
		Cathode	1.8	9.1
2	EF9	Anode	242	7
		Screen	95	2.2
		Cathode	1.8	9.2
3	CBL1	Anode	230	37.5
		Screen	242	6
		Cathode	11	43.5
4	UR3C	Anode	230 A.C.	

Dial lamps, 6.2 v., .3 amp.

CONDENSERS

C		Mfds.	C		Mfds.
1	..	5 mmfds.	19	..	.005
2	..	.1	20	..	20 mmfds.
3	..	150 mmfds.	21	..	100 mmfds.
4	..	100 mmfds.	22	..	100 mmfds.
8	..	.1	23	..	.1
9	..	.05	24	..	8
12	..	.1	25	..	16+8
13	..	70 mmfds.	26	..	.025
14	..	70 mmfds.	27	..	20
15	..	60 mmfds.	28	..	.1
16	..	80 mmfds.	29	..	.1
18	..	.1	30	..	.003



The UP2 is a small A.C./D.C. superhet portable. The V1 grid coil for M.W. forms the frame aerial. There are no oscillator padding condensers because the gang vanes are specially shaped. There is a mains H.F. filter.

War-time Economies in the Service Shop

IN these times, service engineers often have difficulty in obtaining correct replacements, or supplies of materia run short. Here are recommendations, drawn from my own experience, on how these difficulties should be tackled.

When erecting new aerials, use an insulator on pole tops to act as a block for the sliding halyard wire instead of the usual pulley. This will not rust, and is much cheaper and simpler. If overhauling an existing system, the old aerial wire may be good enough when painted to do for the halyard or stand-off wire.

Often it is impossible to get an exact type of valve or equivalent in the same base, but there are others of American or British pattern with a different base. In the case of H.F., I.F. and detector types the valveholder in the set must be changed. With L.F., power and rectifier valves leave the old valve base, fit leads to this and wire up to a new type base to fit the substitute valve. This extra base may be screwed to inside the cabinet until the proper valve is obtainable.

If there is any interaction after these alterations it is usually due to the longer leads, and can be cured in most cases by using screened wires (or wrapping earthed tinfoil round them).

In the case of substitution of H.F. valves great care should be taken when comparing characteristics, as only slight variations will prevent correct working in some cases. L.F. types are not so troublesome in this respect.

Transformers and coils are all rewound by the specialist firms, and in all cases have been found as satisfactory as new components.

Condensers are usually easily obtainable, but in the case of very small values remember that two short lengths of insulated wire twisted will give sufficient capacity. This may be checked on a bridge meter. In the case of shorting trimmers, dismantling and cleaning will often effect a cure.

Variable resistances, such as volume controls, may be cleaned after dismantling, and more tension put on the spring rotary part. If the carbon track is in a bad way, it is sometimes possible to obtain these units from the manufacturers without getting the whole control. Wire resistances can usually be rewound by an engineer once he recognises the type of resistance wire.

Switches seldom actually break and

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