INVICTA 570

Three valve, plus rectifier, three waveband table model superhet with pre-set push-buttons for three medium and two long-wave stations. Suitable for 200-250 v. 40-100 cycle A.C. supplies. Made by Invicta Radio, Ltd., Parkhurst Road, London, N.7.

Circuit. — Transformer coils with common primary on M. and L.W., couple the aerial to V1, the frequency-changer. Three push-buttons switch pre-set condensers across the M.W. coil and two others switch condensers across the L.W. coil.

The oscillator section is tuned anode with straightforward coupled coils. Permeability coils are switched in by the push-buttons.

The grid circuit is coupled back to the padder, C19, thereby introducing feed-back to the anode circuit. C12 is the tuning condenser for the P.B. coils.

V1 is coupled to V2, the I.F. amplifier, and V2 is coupled to V3 by fixed tuned I.F. transformers. V3 is a combined double-diode pentode.

This valve has R12 and R13 in the cathode path. The total drop across these is the A.V.C. delay, the A.V.C. diode load being R10. The pentode section, however, is biased only by the drop across R13, the bottom of which goes to R7, the volume control.

P.U. terminals are provided across R8, the demodulation diode load. R9 and C23 form a tone compensation arrangement across the V.C. There is also a switched tone control, R4, C24, across the pentode itself.

H.T. is smoothed by the speaker field and two electrolytics and drawn from a full-wave rectifier, V4.

Provision is made for the connection of an extension speaker of about 2 ohms impedance.

GANGING

I.F. Circuits.—The I.F. transformers are permanently adjusted at the factory and should not be altered. They should be checked, however, for peaking at 465 kc.

Dial.—See that the cross in middle is over the spindle centre and the bottom edge of the glass is horizontal.

M.W. Band.—Tune to 250 m., inject 250 m. and adjust T1. This is the oscillator trimmer and is below chassis at the top end of the coil immediately adjacent to the I.F. coil shield and push-button trimmer assembly.

Then adjust T2, the aerial trimmer, which is on top of the chassis nearer the edge. Always keep signal generator input as low as possible.

Padding is fixed.

L.W. Band.—Tune to 1,200 m., inject this wavelength and adjust T3. This is on the same former as T2. Padding is fixed.

S.W. Band.—Inject and tune to 14 m. If calibration is out, adjust turns at top end of S.W. oscillator coil (there is no trimmer). If calibration is high, slightly close the turns.

Adjust T4, on top of chassis nearest gang, for maximum.

Warning.—Any adjustment of M. and L.W. aerial circuits necessitates readjustment of P.B. trimmers.

PUSH-BUTTONS

Except with special models, the coverage of the push-buttons is :—

Button.	Models 570A, 570C.	Models 570B, 570D.
1	203–300 m.	203–300 m.
2	203–300	380–540
3	290–420	380–540
4	1,100–1,450	1,100–1,450
5	1.400–1,900	1.100–1,900

Remove inspection cover from base of cabinet, connect aerial and earth or signal generator, and switch on. Wait till set is thoroughly warm.

Press the button to be re-set and adjust first the oscillator coil trimmer and then the pre-set aerial trimmer. The coils are on the right and the trimmers are in pairs following the same order as the buttons. Turning the screws clockwise increases the wavelength.

A useful aid to accurately trimming the receiver is to unsolder the strip connected across the junction strip at the back of the I.F. screen and connect a milliameter (say, 0-20) across the two tags. Trim for minimum reading on the meter and then reconnect and resolder strip.

VALVE READINGS

V.	*Type.*	*Electrode.*	*Volts.*	*Ma.*
1	TH4A	Anode	220	2.5
		Screen	105	6
		Osc. anode	105	5
		Cathode	2.5	13.5
2	VP4B	Anode	220	7
		Screen	220	3
		Cathode	2	10
3	Pen 4DD	Anode	210	24
		Screen	220	3.5
		Cathode	12	—
4	DW4/350	Cathode	400	—

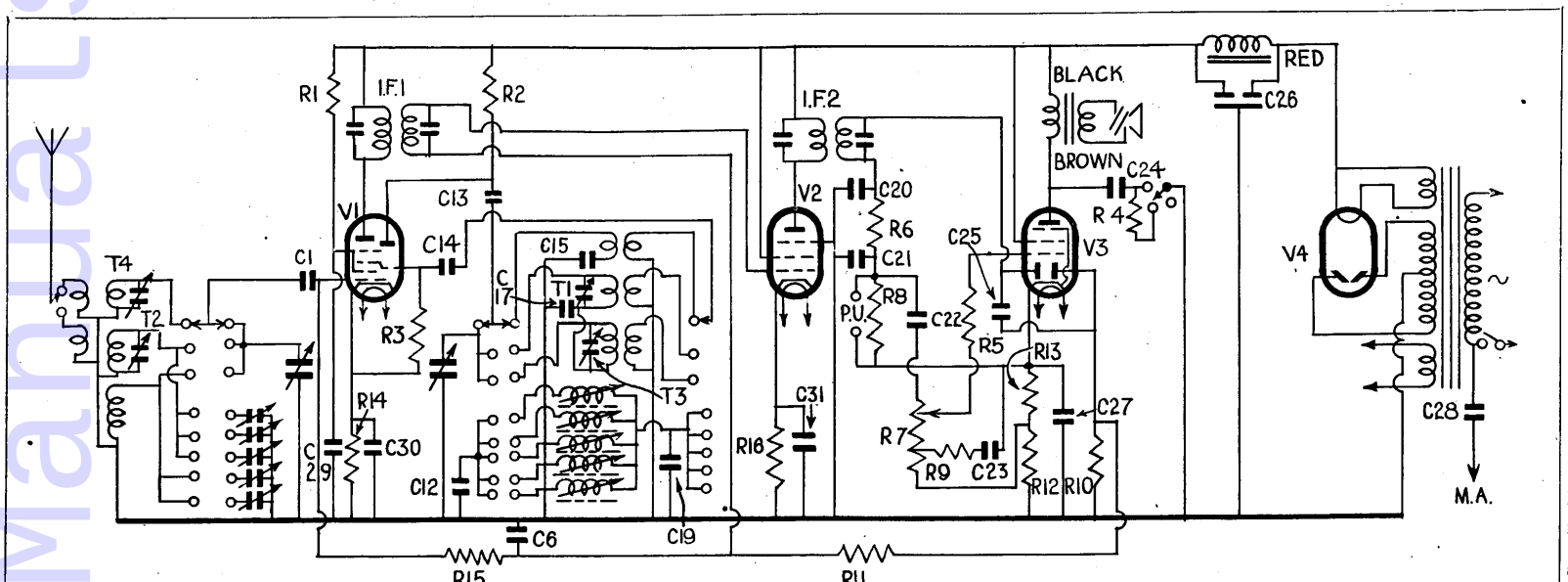
Dial lamps : 6.2 v., .3 *amp.*, 15 *mm. Round, M.E.S.*

CONDENSERS

C	*Mfds.*	*C*	*Mfds.*
1	.00015	22	.05
6	.1	23	.005
12	.0003	24	.01
13	.00015	25	20 mmfds.
14	.00015	26	8+16
15	.005	27	20
17	657 mmfds.	28	.001
19	.0003	29	.1
20	.00015	30	.1
21	.00015	31	.1

RESISTANCES

R	*Ohms.*	*R*	*Ohms.*
1	20,000	10	1 meg.
2	20,000	11	1 meg.
3	20,000	12	300
4	60,000	13	200
5	100,000	14	200
6	50,000	15	250,000
7	1 meg.	16	150
8	500,000	Field	3,000
9	60,000		



Pre-set condensers are used for push-button stations in the aerial circuit and permeability-adjusted coils, tuned by C12, in the oscillator stage. In the demodulation stage R9 and C23 provide tone correction according to the volume adjustment. I.F. transformers are permanently set at the factory.

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if an oscillator anode feed resistance of 25,000 ohms is being replaced and the anode current is 5 ma., the required wattage is $.005^2 \times 25{,}000 = .625$. A one-watt type resistor will be needed.

Note that, like all electrical formulæ, the units are ohms, volts and *amperes*. Hence, in the above, 5 ma. has to be correctly written as .005.

To avoid decimal complications we can write the formulæ as :

$$W = \frac{\text{Milliamperes}^2}{1{,}000{,}000} \times \text{ohms}.$$

In order to save engineers the trouble of working out even these simple figures, some resistance manufacturers—for, example, Bulgin—give in their catalogue tables the maximum voltage and current ratings for various values of resistance under the quarter, half, one and five watt ratings.

In the majority of positions in the usual set, quarter-watt resistors are required. Oscillator anode feed resistances and output valve bias resistors may require half or one watt types. Resistances for bleeder and other special purposes must be considered on their merits in each case.