

INVICTA A49PB

Three valve, plus rectifier, four waveband (including trawler waveband) table model superhet with push-buttons for eight stations and wave-changing. Suitable for 200-250 v., 40-100 cycle A.C. supplies.

Circuit.—Transformer coils, with a common primary on medium and long waves, link the aerial to V1, a triode-hexode frequency-changer. Between coils and valve is a 12-unit push-button switch bank. Four switches select the coils for manual tuning, six others connect pre-set capacities across the M.W. coil and the remaining two connect pre-sets across the L.W. coil.

The oscillator circuits of V1 follow a conventional tuned anode arrangement with transformer coils on each waveband. The eight P.B. switches connect permeability-tuned V1 is coupled to V2 by a permeability-tuned

I.F. transformer. The transformer between V2 and V3 is fixed tuned. V3 is a combined double-diode output pentode.

Demodulation and A.V.C. circuits are conventional. The volume control is tone corrected by R16, C36, and a switched tone circuit is connected to the anode.

V4 is a full-wave rectifier. The mains transformer has a separate tapping on the heater winding for the pilot lamps and a mains aerial condenser is provided on the primary side.

P.U. connections are provided and an external speaker should have a low impedance. Pilot lamps, 6.2 v., .3 amp., 15 mm., M.E.S. round.

GANGING

I.F. CIRCUITS: I.F.2 is permanently adjusted. Adjust I.F.1 at 465 kcs.

M.W. BAND (195-560 m.): Adjust T1 and T2 at 250 m. Padding is fixed but check at 500 m.

L.W. BAND (900-2,200 m.): Adjust T3 at 1,200 m. There are no pre-selector or padding adjustments.

S.W. BAND (13-52 m.): There are no adjustments.

TRAWLER BAND (50-200 m.): There are no adjustments.

BUTTON ADJUSTMENT

The appropriate adjustments are below each button. The oscillator coil cores (small screws) should be adjusted first.

The coverage of the buttons is:—

- (1) 200-420 metres. (5) 300-540 metres.
- (2) 200-420 " (6) 300-540 "
- (3) 200-420 " (7) 900-2,000 "
- (4) 300-540 " (8) 900-2,000 "

To increase wave-length turn core trimmers anti-clockwise and condenser trimmers clockwise.

VALVE READINGS

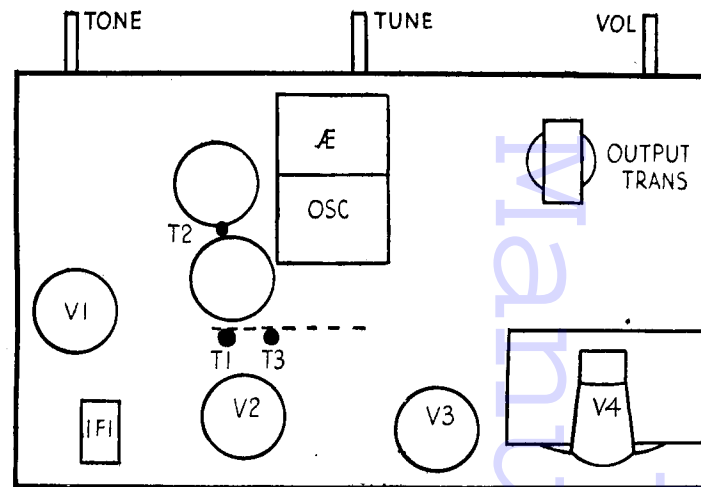
V	Type	Electrode	Ma.	
1	ECH2	Anode	270-275	3-5
		Screen	75-80	7-8
		Osc. anode	89	5-7
		Cathode	4	15-20
2	EF9	Anode	270-275	5-6
		Screen	75-80	1.5-2
		Cathode	2	6.5-8
3	EBL1	Anode	250-265	37-40
		Screen	260-270	4-5
		Cathode	20	41-45
4	AZ1 (All Mullard)	Cathode	400	—

RESISTANCES

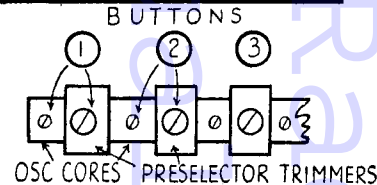
R	Ohms.	R	Ohms.
1	22,000	9	3,300
2	22,000	10	1 meg.
3	22,000	11	1 "
4	220	12	150
5	330	13	330
6	47,000	14	100,000
7	47	15	1 meg.
8	470,000	16	47,000
		Field	2,000

CONDENSERS

C	Mfds.	C	Mfds.
1	542 mmfds.	27	542 mmfds.
2	.1	28	.1
4	6 mmfds.	29	100 mmfds.
6	.1	30	100 "
15	150 mmfds.	31	150 "
16	150 "	32	150 "
17	500 "	33	.05 "
18	.1	34	.20
19	.005	35	.005
20	.0013	36	.005
23	657 mmfds.	37	.20
24	100 "	38	8-8
25	100 "	39	.001
26	150 "		



The manual tuning circuits are easily adjusted, trimmers being shown on the chassis lay-out. Push-button trimmers are below their respective buttons, as shown in the small diagram on the right.



Instability on Edge of Stations

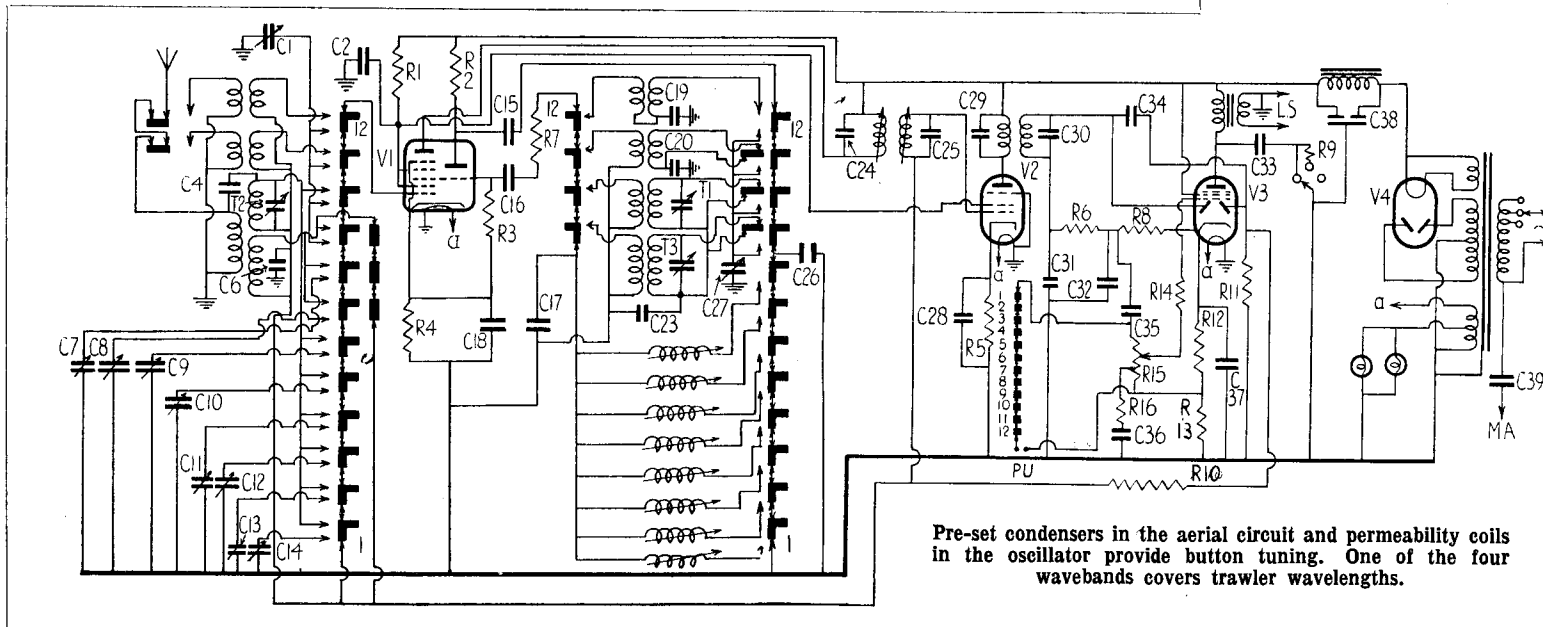
A PHILIPS set had bad instability on the edge of stations and if the pointer was moved quickly across the dial it made a grating sound as it passed over stations. As a station was tuned in bad whistles and sometimes howls occurred.

Instability is usually due to interaction of circuits and can be caused by either insufficient decoupling or bad screening—usually the former in a commercial set.

Condensers appeared O.K. It was discovered that if some of the wiring was moved the trouble ceased and this led to the belief that the alignment was out of order. This was adjusted, but after some time the whistles reappeared.

Moving the wire was again tried and again stopped the trouble. Moving heavier parts then gave the same effect and the screening was finally tried for faults.

After some searching, a screw holding a lug from the screen of the variable condensers was found to be slightly loose. When this was screwed down the trouble permanently disappeared.



Pre-set condensers in the aerial circuit and permeability coils in the oscillator provide button tuning. One of the four wavebands covers trawler wavelengths.