

EKCO PB189

Six-valve, plus rectifier, motor-tuned, push-button receiver with automatic frequency correction. Covering three wavebands, with ten PB stations, and suitable for 200-250 volt, 40-80 cycle, AC mains. Made by E. K. Cole, Ltd., Service Dept., Southend-on-Sea.

THE aerial input is through transformer on SW and bandpass on MW and LW, T1 providing image suppression feed-back. V1 is a hexode frequency-changer with tuned grid oscillator circuits and anode reaction coils, L14, L16 and L18.

An iron-dust cored IF transformer passes the signal to V2, the IF amplifier,

and a second transformer leads to V5, the double diode triode. The AVC diode is fed by C25 and has R17 and R27 to provide different control voltages for V1 and V2.

The signal for demodulation is fed via L20 and L22 to V5 and LF passes via C40 and R29 to the volume control R21. V5 is resistance capacity coupled to V6, the output tetraode, R31 being a stopper of parasitic oscillation.

Tone control components across the output transformer primary include R32, C39, C38 and a low-pass filter, L23, C34. An additional winding with R23, R24 and C32 provide tone improvement by negative feed-back.

HT from the full-wave rectifier V7 is smoothed by L8, C35 and C36 with C9 for HF by-pass.

Noise-Suppression.—When the tuning motor operates, the armature thrust closes S3 and S4 and earths the grids of V3 and V5.

Motor Circuit.—When PB11, the white "knob" tuning, is pushed in, one end of the special mains transformer winding is earthed and the pilot lamp circuit (run

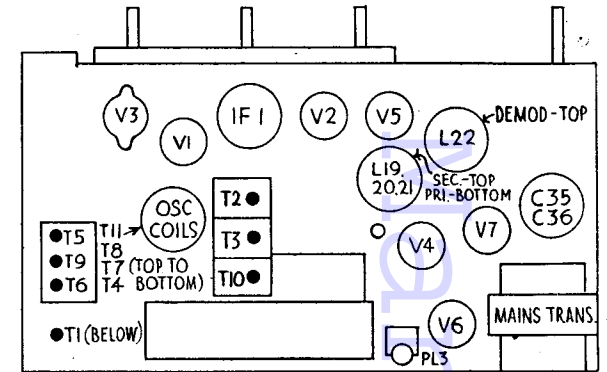
from a tap on the winding) also completed. The two windings on the motor connect to the two segments on the contact disc, thus the direction of motor is determined by whichever disc is in the circuit of the button which is pressed. The motor then revolves the gang until the insulating strip between the segments comes under the adjustable contact.

Push-button Setting.—Push in both the white "knob tuning" button and the button which is to be reset. Tune manually to station. Slide contact associated with button on rail until PL3 goes out.

Discriminator Circuit.—To compensate for slight mechanical tuning inaccuracy, V4 is provided to detect the resulting error in IF while V3 compensates by altering the tuning of the oscillator circuit.

IF voltages are applied from the two halves of L21 to the two diodes of V4. According to whether the IF is high or low the polarity at point x changes. This voltage is applied to the grid of V3, and the resulting change of anode current through L11 and L12 alters the inductance of the oscillator coils, L15 and L17.

Layout diagram of the top of the PB189 chassis showing the positions of the trimmers, valves, coils and other main features



GANGING

IF Circuits.—Set TC to high, VC to maximum, WC to LW and gang to full in. Inject 126.5 Kc through .02 mfd insulation of V1 grid leak. Adjust IF coils for maximum on output meter; more than half a turn either way should not be necessary. Adjust in this order: L9, L10, L19, L22.

Discriminator.—Connect 0-10 volt high resistance meter between chassis and the insulated screw beside V4 valveholder. Inject IF to V1 grid and adjust L21 to increase meter reading. Note maximum obtainable. Reverse meter leads and adjust L21 for maximum in this reverse direction. The two readings should be roughly similar. Adjust core for zero reading with great accuracy.

SW Band.—With gang in pointer should register 6 mc.

Tune to 16.6 m (18mc) and inject 16.6 m. Adjust T2 for maximum. Adjust T3 at 17.6 m (17 mc).

MW Band.—Tune to 200 m, inject 200 m and adjust T4. Adjust T5 and T6 at 250 m. Pad with T7 (L15 core) at 500 m.

LW Band.—Tune and inject 1,300 m, and adjust T8, T9 and T10. Pad with T11 (L17 core) at 1,700 m.

Image Rejector.—Tune to second channel whistle and adjust T1 for minimum.

VALVE READINGS

V	Type	Electrode	Volts	Mas
1	TH4A	Anode	250	2.2
		Screen	90	5.2
		Osc Anode	130	5
2	VP41	Anode	240	10
		Screen	250	4
		Anode	220	2
3	T41	—	—	—
4	2D41	—	—	—
5	DT41	Anode	110	2.4
6	OP42	Anode	240	32.5
		Screen	250	5
7	R41	Anode	300 AC	—

WINDINGS

L	Ohms	L	Ohms
1	50	17	9
2	2.5	18	2.3
3	25	19	500
4	.2	20	15,000
5	.1	21, 22	15,000
6	2.5	23	250,000
7	25	OT(P)	750,000
8	650	(S)	50,000
9, 10	45	(T)	500,000
11	19	MT(P)	200
12	90	(HT)	460
13, 14	Below .1	(24V)	2.5
15	2	Motor fields	7
16	1		

RESISTANCES

R	Ohms	R	Ohms
1	200	19	250,000
2	25,000	20	1,000
3	25,000	22	500
4	15,000	23	15,000
5	1,200	24	15,000
6	100,000	25	250,000
7	100,000	26	750,000
8	15,000	27	15,000
9	3,000	28	500,000
10	300	29	50,000
11	1 meg	30	200
12	100,000	31	100,000
13	500,000	33	1 meg
14	100,000	34	1,000
15	500,000	35	30,000
16	50,000	36	20,000
17	500,000	37	500,000
18	100,000		

CONDENSERS

C	Mfds	C	Mfds
1	.001	27	.0002
6	.1	28	.0002
7	140mmfd	29	.25
8	140mmfd	30	.1
9	.1	31	.2
10	.1	32	.2
11	.1	33	.50
12	.1	34	.005
13	.00025	35	.16
16	1.620mmfd	36	.8
17	800mmfd	37	.02
18	140mmfd	38	.0025
19	140mmfd	39	.1
20	100mmfd	40	.01
21	.1	44	140mmfd
22	.04	45	.1
23	.02	46	.02
24	.04	47	.1
25	15 cm	48	.000
26	.1		

