

# BURNDIPT 252

Three-valve, plus rectifier, four-waveband TRF receiver suitable for operation from AC or DC mains, 200-260 volts. Made by Burndept, Ltd., Erith, Kent.

**ALTERNATIVE** aerial taps are provided, A1 through the condenser, C1, and A2 which provides an aerial trimming capacity, T5.

On the short and ultra-short wavebands the grid of the HF pentode amplifying valve, V1, is connected across the aperiodic coil, L1. On medium and long waves the bandpass tuning unit comprising the coupling coil, L1, and the tuning coils L2, L4 (MW), L3 and L5 (LW), are brought into circuit tuned by VC1 and VC2 sections of the ganged condenser.

V1, which has variable-mu characteristics, has a fixed bias resistance, R2, and this is connected to the volume control, R4. R3 feeds R4 with current from the HT line so that the potentials developed across R4 may be used to increase the biasing of the cathode of V1

as the volume control is rotated. R2 and R4 are decoupled by C3.

V1 is coupled to the grid of V2 by a tuned anode circuit to which reaction may be applied. L11 (MW) and L12 (LW) are the anode coils and are tuned by VC3 section of the ganged condenser. Decoupling and voltage dropping in the anode circuit of V1 is effected by R5, C4, and C5.

On the short wave bands separate anode and reaction coils are brought into circuit. L6 and L8 are the ultra-short wave band coils, and L7 and L9 form the second short wave band coils, with L10 shorted out of circuit. L10 is the common reaction coil coupled to the medium and long wave tuning coils, L11 and L12. VC4 is the reaction control.

V2 is a pentode valve of high impedance operating as a leaky grid detector, C6 and R7 being the grid condenser and leak. The screen of the valve is fed from the HT line through R8, which is decoupled by C7.

The anode circuit of V2 comprises R9 with the HF filter network C8 and C9 and R10 which is the LF coupling resistance. As previously stated, reaction is applied to the tuned anode coils, and the necessary HF feedback to the reaction windings, L8, L9, and L10 are derived from R9.

The LF voltages developed across R10 are applied via the LF coupling condenser,

C10; the filter resistance, R11, and the grid stopper, R12, to the pentode output valve, V3. The grid to cathode resistance is R13, which has a high-note by-pass, C11, in shunt with it.

V3 is biased by R14, which is decoupled by C13. The low impedance speaker is coupled to the anode circuit of V3 by the output transformer, L13, L14. A permanent degree of tone correction is effected by the anode to cathode condenser, C14.

HT and LT supply circuits follow conventional lines, the heaters of all the valves and the two pilot lamps being in series with the main dropping resistance, R15, across the mains input. This is filtered by L17, L18 and C18.

HT is obtained from the half-wave rectifying valve, V4, the speaker field, L16, providing smoothing in the positive HT line. C15 is the smoothing condenser, C16 the reservoir condenser, and C17 the anode to cathode by-pass capacity.

### GANGING

All adjustments to the tuned circuits of this receiver are made on medium waves at 200 metres.

A signal of this wavelength should be injected into the aerial and earth terminals through a dummy aerial, and T1, T2, T3, and T4 adjusted for maximum reading on an output meter. T5 should be ad-

justed to give the best results on the particular aerial which is being used with the receiver.

### VALVE READINGS

On 220v, AC mains.				
V	Type	Electrode	Volts	Ma
1	VP1321	Anode	150	7
		Screen	150	1.6
		Cathode	1.1	8.6
2	SP13C	Anode	38	.5
		Screen	30	.2
3	PEN36C	Anode	175	40
		Screen	210	6
		Cathode	6.7	46
4	ID5	Cathode	250	58.2
		Pilot lamps, 6.2v, .3 amp.		

### RESISTANCES

R	Ohms	R	Ohms
1 .. ..	500	9 .. ..	50,000
2 .. ..	150	10 .. ..	250,000
3 .. ..	50,000	11 .. ..	50,000
4 .. ..	10,000	12 .. ..	100,000
5 .. ..	5,000	13 .. ..	250,000
6 .. ..	500	14 .. ..	150
7 .. ..	1 meg	15 .. ..	—
8 .. ..	750,000		

### CONDENSERS

C	Mjds	C	Mjds
1 .. ..	.0005	10 .. ..	.01
2 .. ..	.02	11 .. ..	.0002
3 .. ..	.1	12 .. ..	.5
4 .. ..	.25	13 .. ..	.25
5 .. ..	8	14 .. ..	.005
6 .. ..	.0001	15 .. ..	.24
7 .. ..	.1	16 .. ..	.16
8 .. ..	.00005	17 .. ..	.02
9 .. ..	.0005	18 .. ..	.01

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**IF Circuits.**—Connect service oscillator to E socket, and via a 0.02 mfd condenser to grid (top cap) of V1, leaving clip in place. Switch receiver to LW, turn gang to maximum, feed in a 126.5 kc signal, and adjust T1, T2, T3, and T4 for maximum output.

**SW Bands.**—Connect signal generator to A and E sockets, and feed in an 18 mc signal. Switch set to SW and tune to 18 mc on scale. Fully unscrew T5, then screw it in slowly. Two peakKs will be obtained; adjust to the first.

Feed in a 20.75 mc signal (its second harmonic being 41.5 mc) at full generator output. Then switch to TS and adjust T6 for maximum output.

Switch to SW, feed in a 15mc, tune to 15 mc on scale, and adjust T7 for maximum output.

(On the TS band, the IF is obtained by beating the third harmonic of oscillator circuits with the incoming signal.)

**MW Band.**—Switch receiver to MW, tune to 200m mark on scale, and inject a 1,500 kc signal. Fully unscrew T8, then screw it in slowly, adjusting accurately to the first peak.

Fully unscrew T9. Tune to 250m on scale, inject a 1,200 kc signal, and adjust T10 and T11 for maximum output. Tune to 500m on scale, inject a 600 kc signal, and adjust iron core of L12 for maximum output, while rocking gang. Repeat the adjustments at 200, 250 and 500 m.

**LW Band.**—Switch receiver to LW, tune to 1,100 m on scale, inject a 272.5 kc signal and adjust T12, T13, and T14 for maximum output. T14 is adjusted by sliding the spiralled wire on the insulating sleeve over the inner wire.

Tune to 1,700 m on scale, feed in a 176.5 kc signal, and adjust core of L13 for maximum output, while rocking gang.

**IF Filter Adjustment.**—Leaving set tuned to 1,700m, feed in a 126.5 kc signal at full generator output, and adjust core of L6 for *minimum* output. Reduce output from service oscillator and adjust to 272.5 kc. Set cursor to 1,100m on receiver scale, and repeat LW alignment.

**Image Rejection Adjustment.**—Switch set to MW, inject a 1,000 kc signal at full output. Tune receiver to image of service oscillator frequency (about 400m), and adjust T9 for *minimum* output.

Set cursor to 250m; inject a 1,200 kc signal, and check adjustments of T10 and T11.

