

# BELMONT 541

Four-valve plus rectifier two-wave-band superhet. Provision is made for the connecting of a pickup and a wire is provided for the attachment of an aerial. No provision for earthing is made. Suitable for mains supplies of 105-125v AC or DC, but additional line cord may be fitted to operate the receiver from mains supplies up to 270v. Made by The Belmont Radio Corporation of America.

THE aerial is coupled via C1 and a coupling coil to the single tuned grid circuit which feeds the grid of the HF pentode valve, V1.

The cathode circuit of this valve comprises R1, R2 and R3, the latter being common to the cathode circuit of the second detector, V3.

The oscillator section comprises the cathode, the suppressor grid, and the anode of the valve, V1. The suppressor is used as the oscillator grid whose circuit is tuned by the VC2 section of the ganged

condenser. Reaction is obtained by medium and long wave coils in the anode circuit.

An intermediate frequency transformer trimmed by T3 and T4 couples the output from V1 to the grid of the IF amplifying valve, V2. This valve is permanently biased by R5 decoupled by C5. AVC is applied to it from the second detector diodes.

A second intermediate frequency transformer couples V2 to the strapped diodes of the double diode triode V3. The diode load is R7 with R8, C7 and C8 as a filter network.

The LF signals are passed by C9 to the volume control, R13, while the DC potential is used for AVC and applied via R6 decoupled by C6 to the grid circuit of V2.

A pickup having a high impedance may be connected to the pickup sockets which are coupled to the volume control via a limiting resistance R14 and tone corrector C11.

The output from V3 is resistance capacity coupled by R9 and C10 to the grid of the output pentode V4. The bias for this valve is derived by connecting the grid via a decoupling network R10, R11, R12, to a tapping on the smoothing choke which is in the HT negative lead.

The anode circuit of V4 has permanent

tone correction effected by C14 and is coupled to the energised loudspeaker via the usual matching transformer.

The heater circuits are arranged in series with R15 voltage dropper which is the line cord. R16 is the shunt resistance for the pilot lamps which is mounted in the chassis.

The rectifying valve, V5, is a double-wave rectifier with separate cathodes: one separate cathode supplies current for energising the field of the loudspeaker while the other cathode circuit supplies the current for the receiver circuit via a tapped smoothing choke and condensers C17 and C18.

### GANGING

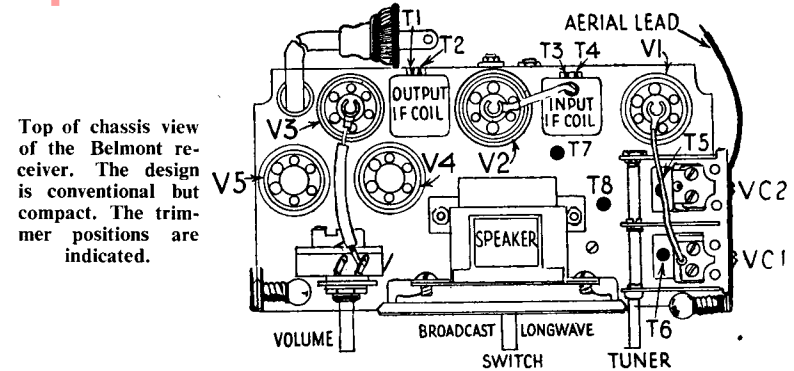
**IF Circuits.**—With volume control at maximum and ganged condenser at maximum capacity inject a 456 kcs signal via a .1 mfd condenser, to the control grid cap of V1.

Adjust T1, T2, T3 and T4 for maximum output.

**MW Band.**—Switch to MW and inject a signal of 1,550 kcs to the control grid of V1.

Adjust gang to minimum capacity and trim T5 for maximum output.

Inject a signal of 1,400 kcs to the aerial wire of the receiver and tune the receiver to the oscillator signal.



Top of chassis view of the Belmont receiver. The design is conventional but compact. The trimmer positions are indicated.

Adjust T6 for maximum output.

**LW Band.**—Switch receiver to LW and inject a signal of 350 kcs to the aerial wire.

Tune in the signal and then adjust T7 for maximum output whilst rocking gang.

Inject and tune in a signal of 150 kcs and adjust T8 for maximum output whilst rocking gang.

### VALVE READINGS

| V | Type | Electrode | Volts |
|---|------|-----------|-------|
| 1 | 6D6  | Anode     | 95    |
|   |      | Screen    | 101   |
|   |      | Cathode   | 14.5  |
| 2 | 6D6  | Anode     | 98    |
|   |      | Screen    | 101   |
|   |      | Cathode   | 2.6   |
| 3 | 75   | Anode     | *70   |
|   |      | Cathode   | 1     |
| 4 | 43E  | Anode     | 90    |
|   |      | Screen    | 101   |
|   |      | Grid      | *16.3 |
| 5 | 25Z5 | Cathodes  | 101   |

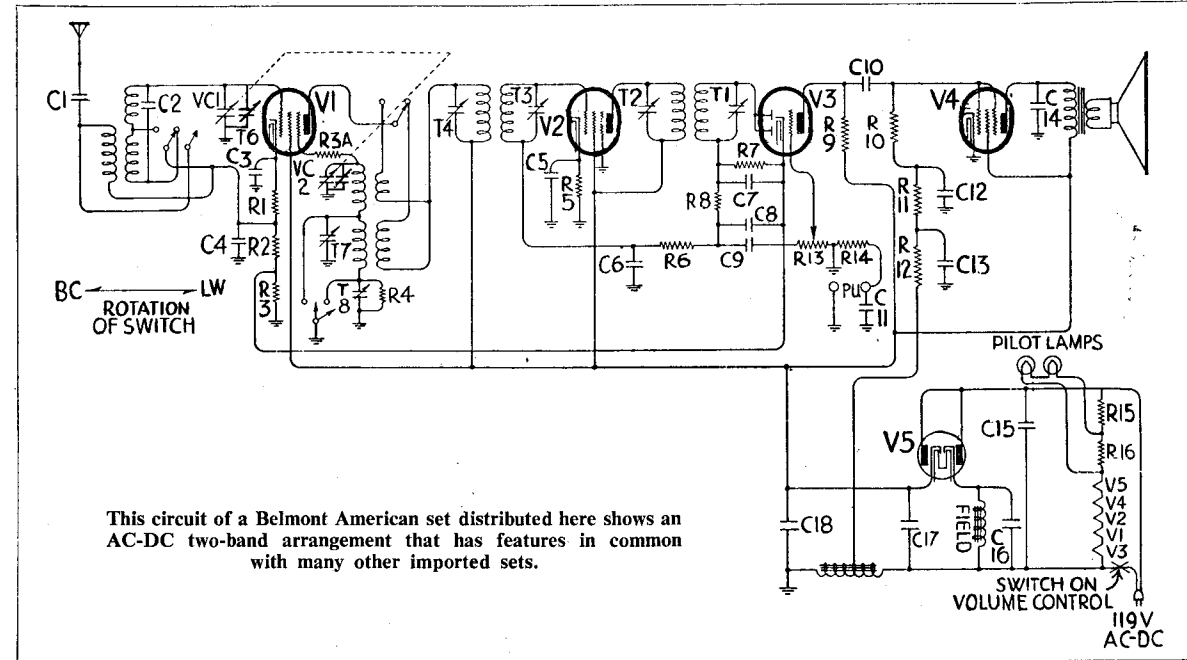
Pilot Lamps 6-8v, .15 amps.  
\* Actual voltages, considerably affected by resistance of voltmeter.

### RESISTANCES

| R  | Ohms    | R  | Ohms    |
|----|---------|----|---------|
| 1  | 300     | 9  | 100,000 |
| 2  | 200,000 | 10 | 301,000 |
| 3  | 180     | 11 | 28,000  |
| 3A | 900     | 12 | 101,000 |
| 4  | 250,000 | 13 | 500,000 |
| 5  | 250     | 14 | 500,000 |
| 6  | 250,000 | 15 | 126     |
| 7  | 250,000 | 16 | 40      |
| 8  | 50,000  |    |         |

### CONDENSERS

| C | Mfds   | C  | Mfds |
|---|--------|----|------|
| 1 | .001   | 10 | .01  |
| 2 | 6 mmfd | 11 | .003 |
| 3 | .05    | 12 | .05  |
| 4 | .05    | 13 | .1   |
| 5 | .05    | 14 | .006 |
| 6 | .1     | 15 | .1   |
| 7 | .0005  | 16 | 4    |
| 8 | .0005  | 17 | 12   |
| 9 | .01    | 18 | 8    |



This circuit of a Belmont American set distributed here shows an AC-DC two-band arrangement that has features in common with many other imported sets.

## PHILCO MODEL V537

Continued from opposite page

Inject and tune in a 160 kc signal and adjust T7 (nut) for maximum while rocking gang. Readjust T5 at 290 kc.

**MW Band.**—Switch receiver to MW and tune to 1,400 kc. Inject a 1,400 kc signal and adjust T8 and T9 for maximum output.

Inject and tune in a 600 kc signal and adjust T10 (screw) for maximum while rocking gang. Readjust T8 at 1,400 kc.

**SW Band.**—Switch receiver to SW, and substitute a 400 ohms resistor for the dummy aerial and inject a 18 mc signal. Set pointer to 18 mc and adjust T11 for the second signal heard from the fully screwed in position of the trimmer. (Care is essential in selecting this signal as the two peaks are narrowly spaced.)

**Note.**—Due to the very small difference between the pre-selector and oscillator frequencies, the adjustment of T12 will have a tendency to "pull" or change the frequency of the oscillator. By shunting a variable condenser (approximately .0035 mfd) across the oscillator section of the gang and tuning it so that the second harmonic instead of the fundamental beats with the incoming signal, this "pull" can be minimised.

Connect the shunt condenser between T11 tag and chassis and tune it (about half open) for signal at 18 mc. Trim T12 underneath chassis for maximum output. Disconnect shunt condenser and retrim T11.

Check that the 18 mc image is obtained at approximately 17.1 mc.

Feed in and tune a signal of 6 mc and check for correct reading on scale. It should not be necessary to adjust the semi-fixed tracker (C14), but if sensitivity is found to be low at 6 mc very slight adjustment only may be made while rocking the gang. Finally retrim T11 at 18 mc.