

**Voltage Alignment**

**Alignment**

**I. F. ALIGNMENT:** When aligning the Intermediate Frequency Amplifier, the external oscillator must be set at 456 kc. The Band Switch should be in the position marked "Broadcast", and the tuning condenser should be set at maximum capacity. Connect the "antenna" lead of the external oscillator to the control grid of the type 6K7 tube in the I. F. Amplifier stage through a .1 mfd. fixed condenser. Connect the "ground" lead of the external oscillator to the receiver ground lead. The I. F. alignment capacitors are located at the top of the shielded I. F. Transformers. Rotate the adjusting screw of each capacitor on I. F. Unit No. 2 slowly until maximum output is noted. On completion of this operation, remove the external oscillator leads from the type 6K7 I. F. Amplifier tube and connect it in the same manner to the control grid at the top of the type 6A8 tube.

Now rotate each adjustment screw on I. F. Unit No. 1 for maximum output. During these operations, use the least possible input to prevent broadening of the resonance peaks.

In order to obtain the most accurate realignment of the I. F. Amplifier, it is essential to repeat the alignment process in both I. F. units with the external oscillator leads connected across the control grid of the 6A8 tube.

**WAVE TRAP ADJUSTMENT:** With the oscillator still set at 456 kc., connect the oscillator to the antenna and ground. Then adjust the wave trap condenser to minimum deflection on the output meter.

**BROADCAST ALIGNMENT:** After the I. F. Amplifier is completely realigned, connect the external oscillator leads to the receiver antenna and ground leads, through a .0002 mfd. condenser. Set the Band Switch in the "Broadcast" position and place the tuning control pointer at the 1500 kc. mark. Adjust the broadcast band oscillator trimmer to maximum response. Adjust the signal section trimmer in the same manner.

Next adjust the 600 kc. paddler condenser. Set the external oscillator at 600 kc. Rotate the receiver tuning control until resonance is indicated. Then rock the tuning control back and forth about this resonance position, and at the same time adjust the paddler condenser for the highest resonance peak.

Now repeat the 1500 kc. trimmer adjustment, following in every detail the procedure previously described.

**Models 253 and 255 All-Wave,**

**(MODEL 255 IS SOLD IN THE EUROPEAN AREA ONLY)**

The location of the R. F. alignment trimmer condensers is on the side of the band switch. The trimmers in the lowest row are those for aligning Band 1. Those in the second row from the bottom are for Band 2. Those in the third row up are for the Broadcast. In the Model 255 there is an additional row of trimmers located immediately above those for the Broadcast.

The paddler condenser is located under the rear section of the band switch. In the Model 255 an additional paddler for the long wave range is located at the right of the Broadcast paddler. Access to the paddler condenser is made through a hole provided in the rear of the chassis frame.

**I. F. ALIGNMENT:** When aligning the Intermediate Frequency Amplifier, the external oscillator must be set at 456 kc. The Band Selector Switch should be in the position marked "Broadcast", and the tuning condenser should be set at maximum capacity. Connect the "antenna" lead of the external oscillator to the control grid of the type 6D6 tube in the I. F. Amplifier stage through a .1 mfd. fixed condenser. Connect the "ground" lead of the external oscillator to the receiver ground lead. The I. F. alignment capacitors are located at the side of the shielded I. F. Transformers. Rotate the adjusting screw of each capacitor on I. F. Unit No. 2 slowly until maximum output is noted. On completion of this operation, remove the external oscillator lead from the type 6D6 I. F. amplifier tube and connect it in the same manner to the control grid at the top of the type 6A7 tube.

Now rotate each adjustment screw on I. F. Unit No. 1 for maximum output. During these operations, use the least possible input to prevent broadening of the resonance peaks.

In order to obtain the most accurate realignment of the I. F. amplifier, it is essential to repeat the alignment process in both I. F. Units with the external oscillator leads connected across the control grid of the 6A7 tube.

**BROADCAST ALIGNMENT:**

See Models 193 & 195

**AC MODELS 193 and 195**  
**(MODEL 195 IS SOLD OUTSIDE THE U. S. A. ONLY)**

**ALIGNMENT OF THE SHORT-WAVE BANDS:**

The procedure in aligning the short-wave bands is identical with that for the broadcast with the exception of the adjustment of the paddler condenser which is of fixed value and requires no adjustment. The alignment frequency is 16.6 Mceters—(18,000 kc.)

Turn the Band Switch to the right. Tune the external oscillator to 16.6 meters. Tune the receiver so that the dial pointer is in a position coincidental with the 16.6 meter indication on the dial scale. Adjust the short wave oscillator trimmer for maximum response. Next adjust the signal circuit trimmer for maximum resonance. Repeat all adjustments to assure correct alignment, rocking the gang condenser to right or left for maximum gain.

Model 193 is aligned in the same manner at 6,000 kc. with the switch in Band 2 position.

**LONG WAVE ALIGNMENT:** Procedure in the Model 195 is similar to the Broadcast section of that receiver. Align at 375 kc. Adjust the paddler at 160 kc.

Should it be necessary to remove the band switch assembly, it is advisable to realign the receiver after reinstallation.

The D. C. Voltages measured at the tube sockets of the set should be read with a high resistance voltmeter of at least 1000 ohms per volt.

OSC. DET.		I. F.		DIODE DET.		PENTODE RECTIFIER	
Plate	Type 6A8	Type 6K7	Type 6Q7	Type 6F6	Type 5W4	****	
Cathode	4.	3.	1.5	2.05			
Filament	6.3	85	85	6.3	2.30		
Screen	6.3	6.3	6.3	6.3	6.3		

\*Voltages measured through 250,000 ohm resistor.

Speaker field voltage 90 volts. All plate voltages measured to cathode. All screen voltages measured to cathode. All cathode voltages measured to chassis frame.

\*\*Grid bias voltage for No. 42 tube obtained across R-16 (250 ohms resistor).  
\*\*\*Filament to chassis ground 315 volts D. C.  
\*\*\*\*Filament to cathode—195 volts.

**ALIGNMENT OF THE SHORT WAVE BANDS—**

The procedure in aligning the short wave-bands is identical with that for the broadcast with the exception of the adjustment of the paddler condenser. The alignment frequencies are as follows:

- Band 2: 50 Meters—(6,000 kc.)
- Band 1: 16.6 Mceters—(18,000 kc.)

A 400 ohm resistor should be used in series with the antenna lead in place of the condenser used on Broadcast.

When aligning Band 2, set the Band Selector Switch in the position marked "Band 2." Set the tuning control pointer at 50 meters. Adjust the oscillator alignment capacitor on Band 2 for maximum output. Next adjust the interstage and antenna section alignment capacitors for maximum output.

To align Band 1, set the Band Selector Switch in the position marked "Band 1." Set the tuning control pointer at the 16.6 meter mark. Set the external oscillator at 16.6 meters. Adjust the oscillator section alignment capacitor on Band 1 for maximum output.

Proceed next to align the interstage section of Band 1. In doing this, it is essential to rock the tuning control back and forth about the resonance position and at the same time to adjust the trimmer for the highest resonance peak. Next align the antenna section for maximum sensitivity.

**LONG WAVE MODEL 255**

The above alignment positions refer to the Model 253 only, which is calibrated in frequency. The alignment points for the Model 255, which is calibrated in meters only, is as follows:

- High Band Align at 750 meters. Pad at 2,000 meters.
- Broadcast Align at 200 meters. Pad at 500 meters.
- Band 2 Align at 49 meters.
- Band 1 Align at 17 meters.

The Model No. 253 is an all wave superheterodyne receiver with a frequency range extending from 18,800 kc. to 545 kc. (16 meters to 570 meters). The Model No. 255 is similar to the Model No. 253 but has an additional long wave range embracing the wavelengths from 750 meters to 2000 meters (400 kc. to 150 kc.)

**CAUTION: BE CERTAIN OF THE POLARITY OF THE BATTERY BEFORE CONNECTING THE RECEIVER TO IT, OR SERIOUS DAMAGE TO THE RECEIVER MAY RESULT.**

This receiver is designed to operate entirely from a six volt storage battery. A 100-ampere-hour battery is recommended. Connections to the battery are made by means of the RED and the BLACK rubber covered leads. A large clip is attached to each lead. Connect the RED lead to the POSITIVE terminal of the battery. Connect the BLACK lead to the NEGATIVE terminal.