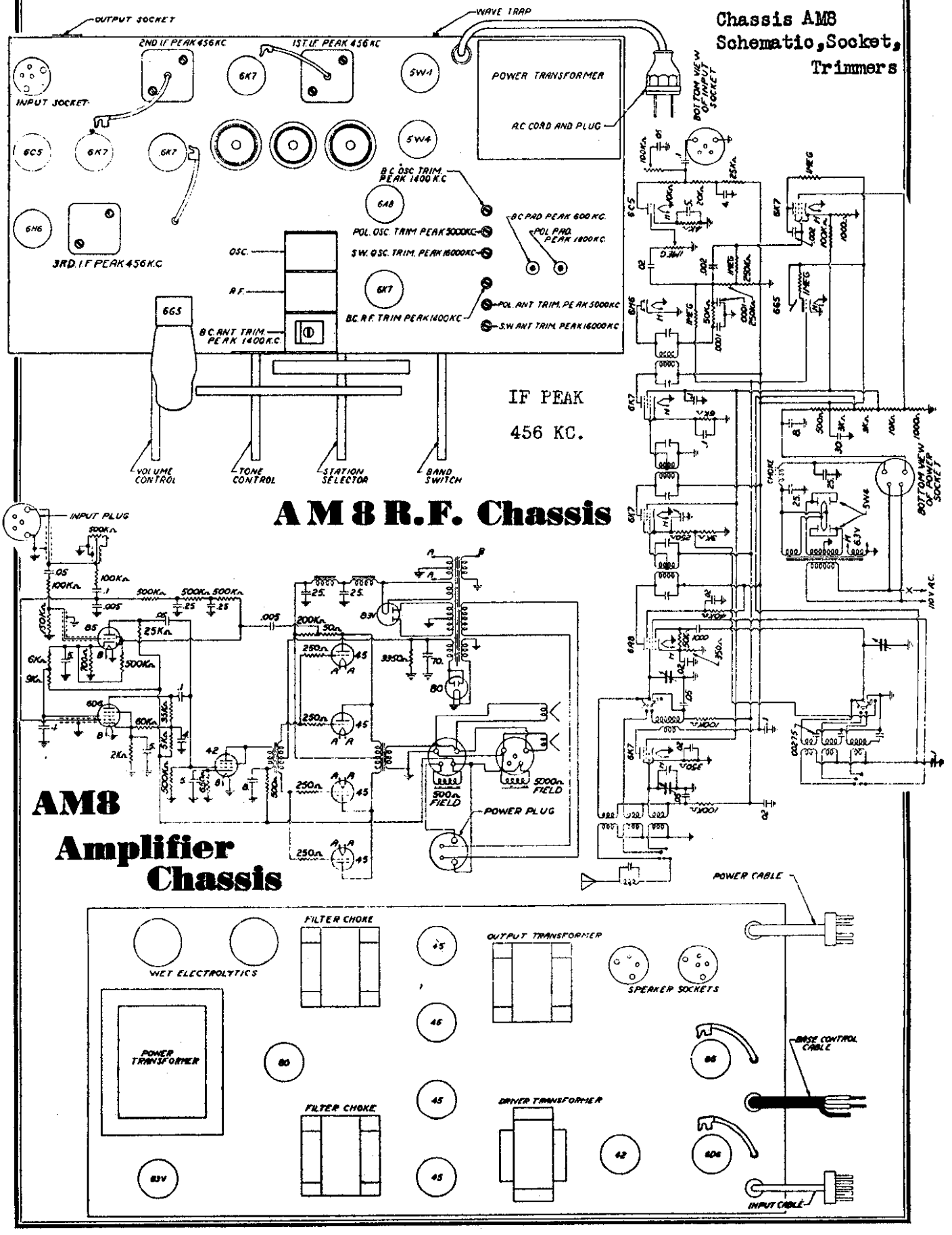
ALLIED RADIO CORP.

MODELS A9785, A9786, A9855 A9856

Chassis AM8
Schematic, Socket, Trimmers



GENERAL DATA

The alignment of this receiver requires the use of a test oscillator which will cover the frequencies of 456, 600, 1400, 1800, 4000, 6000, and 14,000 KC and an output meter which is to be connection across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible, to prevent the AVC from operating and giving false readings.

CORRECT ALIGNMENT PROCEDURE

The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the Broadcast Band should always be the next procedure; after which, either or both of the Short Wave Bands may be aligned.

I.F. ALIGNMENT

Adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (6A8) through a .05 or .1 mfd. condenser. The ground on the test oscillator can be connected to the chassis ground. Align all five I.F. trimmers to peak or maximum reading on the output meter. As there are two stages of I.F. in this receiver, there will be consequently three I.F. transformers to align.

BROADCAST BAND ALIGNMENT

550 to 1700 K.C.

Adjust the oscillator to 1400 KC and connect the output to the antenna post marked "A" through a .001 mfd. mica condenser to give the equivalent of an antenna about 60 feet. Set the receiver pointer to 1400 KC and adjust the broadcast oscillator trimmer to peak. (See drawing for location.) After this has been carefully done, the next step is to adjust the front trimmer of the gang condenser to peak. The front condenser section tunes the pre-amplifier stage. Then adjust the Broadcast Band R. F. trimmer to peak. This trimmer aligns the grid or input circuit of the 6A8 tube. (See drawing for position of Broadcast R. F. trimmer). Next, re-set the dial pointer on the receiver and the test oscillator to 600 KC. Slowly increase or decrease the B. C. oscillator padding condenser and at the same time continuously tune back and forth across the signal with the receiver until the maximum reading is obtained on the output meter. This adjustment may seem a little complicated but is the easiest way to adjust the oscillator to the R.F. section. (For location of B.C. padding condenser see drawing.) Return to 1400 KC and again go over the adjustments of this frequency to be certain that they were not put slightly out of alignment when adjustment was made at 600 KC.

This completes the correct sequence of operations in properly aligning the receiver for the Broadcast Band.

FOREIGN BAND ALIGNMENT

5.5 to 18 megacycles

The Foreign Band of 19 to 49 meters can be adjusted by the two trimmers marked and illustrated in the drawing as S.W. oscillator and S.W. trimmer. In preparing the test oscillator for alignment of this band, connect a 400 ohm carbon resistor in series with the .0001 mfd. condenser on the output lead of the test oscillator. Set the receiver pointer to 14,000 KC (also test oscillator).

Then proceed to adjust these two trimmers for peak at 14,000 KC (adjust oscillator trimmer first) and as the inherent design of the circuit has been expressly developed for simplicity in servicing, only these two adjustments are necessary for aligning this band. NOTE: Always start this procedure by having the oscillator coil trimmer loose (out all the way), and the antenna coil trimmer fairly tight (in all the way); otherwise it is possible to make a false alignment on the image frequency. In order to prevent alignment on the image frequency, it is suggested that the following check be made: Readjust the pointer to 13,100 KC where the image frequency should be found. If properly aligned, the image frequency will be found to be weaker. If, however, the signal at 13,100 KC is found to be stronger than the signal at 14,000 KC, it signifies that alignment was incorrectly made on the image frequency.

POLICE BAND

1700 to 5400 K.C.

In preparing the test oscillator for alignment of this band, connect a 400 ohm carbon resistor in series with a .0001 mfd. condenser on the output lead of the test oscillator. This resistor is used with the test oscillator only on the Short Wave Bands and should not be used for Broadcast Band alignment.

Set the receiver pointer to 4000 KC (also test oscillator) and adjust the Police Band oscillator circuit trimmer to peak.

After this has been carefully done, the next step is to adjust the Police Band antenna trimmer to peak.

Now reset the dial pointer and the test oscillator to 1800 KC in preparation for adjusting the police band padding condenser.

Slowly increase or decrease the oscillator padding condenser and at the same time continuously tune back and forth across the signal with the receiver until the maximum reading is obtained on the output meter. This adjustment may seem a little complicated, but is the easiest way to correctly adjust the oscillator to the R.F. or antenna section. Return to 4000 KC and again go over the adjustments of this frequency to be certain that they were not put slightly out of alignment when adjustment was made 1800 KC.

If it is found that in returning to 4000 KC the pointer is accurately on scale, no further adjustment should be necessary (in this recheck). If the pointer is found off scale, it may be corrected and put on scale by readjustment of the police band oscillator trimmer. Alignment of the pointer can only be corrected by adjustment of the oscillator trimmer.

IMPORTANT: The Police Band Oscillator Trimmer, Police Band Antenna Trimmer Police Band Padding Trimmer are the only three adjustments required in aligning this band.

WAVE TRAP ADJUSTMENT

At the rear of the chassis near the Antenna and Ground posts is an adjustment screw connected to a trap circuit for elimination of code interference when operating on the broadcast band. If code interference is encountered adjustment of this screw will filter it out. It is to be used only if such interference is experienced in broadcast reception. It's use prevents code transmitters operating on a frequency around 456 K. C. from being received by the I. F. amplifier which is tuned to 456 K. C.

This receiver is designed to operate from a power supply main of 110-120 volts, 60 cycle alternating current (AC). Never plug into a DC outlet.

M 8 19 Tube Radio Set

Part No.	Description
P 124	Pilot Light
P1028	Output Audio Transformer
P1038	Large Knob
P1040	Small Knob
P1047	Broadcast Interstage Coil
P1048	Broadcast Antenna Coil
P1162	Wave Trap Coil
P1172	Power Transformer
P 178	AC Cord and Plug
P1149	1st I.F. Transformer
P1151	2nd I.F. Transformer
P1152	Double Tuned I.F. Transformer
P1129	3 Gang Variable Condenser
P1146	Tilt Dial Complete
P 807	Escutcheon Plate
P 490	6H8 Tube Socket
P 944	5W4 Tube Socket
P 489	6K7 Tube Socket
P 488	6A8 Tube Socket
P1041	6G5 Tube Socket
P1032	Input Audio Transformer
P 845	Speaker Socket
P 873	Speaker Plug

Part No.	Description
P1191	Gang Candohm Resistor
P1158	Volume Control with Switch
P1159	Tone Control
P1135	Wave Switch
P1160	6 Gang Trimmer Condenser
P 617	500 Mmfd. Padding Condenser
P1139	1500 Mmfd. Padding Condenser
G1187	Short Wave Antenna Coil Complete
G1188	Short Wave Oscillator Coil Comp.
G1189	Middle Band Antenna Coil Comp.
G1190	Middle Band Oscillator Coil Comp.
P1145	Straight Dial Complete
P1186	Volume Control with Switch (S. Dial)
P1187	Tone Control (S. Dial)
P1143	Wave Switch (S. Dial)
P 806	Escutcheon Plate and Glass (S. Dial)
P1184	20 Mfd. 300 V. Electrolytic Con.
P1155	12 Mfd. 300 V. Electrolytic Con.
P1043	4 Mfd. 300 V. Electrolytic Con.
P1156	25 Mfd. 450 V Electrolytic Con.
P 304	5 Mfd. 30 V. Electrolytic Con.
P 924	.05-400 V. Condenser
P 142	.10-200 V. Condenser

Part No.	Description
P 276	.10-400 V. Condenser
P 143	.02-400 V. Condenser
P1193	.002-400 V. Condenser
P1194	.005-400 V. Condenser
P1055	.00275 Mica Condenser ± 5%
P 480	.0001 Mica Condenser
P1114	2 Megohm ⅛ Watt Resistor
P182A	1 Megohm Insulated ¼ Watt Resistor
P1182	1,500 Ohm ¼ Watt Resistor
P 417	50,000 Ohm ¼ Watt Resistor
P 278	1,000 Ohm ¼ Watt Resistor
P 162	1 Meg. Ohm ¼ Watt Resistor
P 136	250 Ohm ¼ Watt Resistor
P 280	100,000 Ohm ¼ Watt Resistor
P1186	600 Ohm ¼ Watt Resistor
P 757	4,000 Ohm ¼ Watt Resistor
P1189	15,000 Ohm 1 Watt Resistor
P 810	350 Ohm ⅛ Watt Resistor
P 187	10,000 Ohm ¼ Watt Resistor
P 419	20,000 Ohm ½ Watt Resistor
P 185	25,000 Ohm ¼ Watt Resistor

Amplifier Unit Parts AM8

P 138	250 Ohm Resis. ¼ Watt Resis.
P 137	500,000 Ohm Resis. ¼ Watt Resis.
P 165	25,000 Ohm Resis. 1 Watt Resis.
P 187	10,000 Ohm Resis. ½ Watt Resis.
P 418	150,000 Ohm Resis. ½ Watt Resis.
P1215	35,000 Ohm Resis. 1 Watt Resis.
P1216	5,000 Ohm Resis. ¾ Watt Resis.
P1230	60,000 Ohm Resis. 2 Watt Resis.
P1218	2,000 Ohm Resis. ½ Watt Resis.
P1219	500 Ohm Resis. ½ Watt Resis.
P1220	200,000 Ohm Resis. ½ Watt Resis.
P1209	Candohm Resistor
P1210	Gang Candohm Resistor

P1207	45 Tube Socket
P1211	Bass Tone Control
P1212	5 Prong Speaker Socket
P1213	5 Prong Speaker Plug
P1221	Base Control Cable
P1222	Power Cable
P1223	Input Cable
P1040B	Knob
P 141	.25-200 V Condenser
P1208	70 Mfd. 100 V Electrolytic Con.
P 304	5 Mfd. 25 V Electrolytic Con.
P 850	4-8 Mfd. 450 V Electrolytic Con.
P1158	25 Mfd. 450 V Electrolytic Con.

P 184	Tube Shields
P 492	80 Tube Socket
P 535	42 Tube Socket
P 536	6D6 Tube Socket
P 873	4 Prong Speaker Plug
P 845	4 Prong Speaker Socket
P1199	Output Audio Transformer
P1200	Power Transformer
P1201	Input Audio Transformer
P1202	Filter Choke
P1203	Filter Choke
P1204	85 Tube Socket
P1206	83 Tube Socket

LOWER CENTER KNOB

(Continuous Variable Bass Control). The bass control permits the regulation of the extreme low notes at the usual volume for reception in the average room, without affecting the high notes.

CHASSIS MODEL No.46A

A. C. Superheterodyne Receiver

ALIGNMENT PROCEDURE:

Realignment of this receiver should never be necessary unless one of the oscillator, antenna, or I. F. coils has been replaced. Lack of sensitivity, selectivity, and poor tone quality may be due to any one or a combination of causes, such as weak or defective tubes or speaker, inadequate or excessively long antenna, open or grounded bias resistor, bypass condenser, etc. Under no circumstances should realignment be attempted until all other possible sources have been first thoroughly investigated and have been definitely proven not to be the cause.

If an I. F. tube is replaced it is advisable to realign the I. F. Amplifier particularly if the replacement tube is one of a different manufacture than the one in the receiver. It is important when aligning to carefully follow the procedure in the order given, otherwise the receiver will lack sensitivity and the dial calibration will be incorrect.

IT IS IMPERATIVE THAT AN ACCURATELY CALIBRATED OSCILLATOR BE USED WITH SOME TYPE OF OUTPUT MEASURING DEVICE.

INTERMEDIATE ALIGNMENT:

1. Connect the high side of the test oscillator output to the control grid of the 6D6 modulator tube through a .02 Mfd. condenser. Leave the grid cap connected to the grid terminal of the tube, and connect the ground side of the test oscillator to the receiver ground.

2. Set the test oscillator frequency to 465 kilocycles (this must be accurate).

3. Align the second intermediate transformer by turning one of the trimmer screws accessible through holes in the top of the transformer shields up and down (increasing and decreasing capacity) until maximum reading is obtained on the output meter, after which adjust the other trimmer screw of the same transformer for maximum sensitivity.

4. Adjust the first intermediate transformer in the same manner as the second I. F. transformer.

TO ALIGN THE VARIABLE CONDENSER:

It is important when aligning the gang condenser, padding and trimmer condensers to follow the procedure carefully, otherwise the receiver will be insensitive and the dial calibration will be incorrect. The padding and trimmer condensers located underneath the chassis will be referred to by their function as indicated on the circuit diagram.

1. Connect the high output side of the test oscillator through a 400 ohm resistor to the receiver antenna lead and the low side to the set ground.

2. Place the band selector switch for operation on the 5.8 to 18.1 megacycle band, tune the receiver dial, and set the test oscillator frequency to EXACTLY 18.1 MEGACYCLES.

Tune in the 18.1 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING THE 18.1 MEGACYCLE OSCILLATOR TRIMMER. When adjusting this trimmer two peaks, the fundamental and the image peak will be noticed. CARE MUST BE TAKEN THAT THE FUNDAMENTAL PEAK AND NOT THE IMAGE PEAK IS USED FOR ALIGNING THE RECEIVER at 18.1 MEGACYCLES. Always back off the trimmer to minimum capacity, then screw down the trimmer (add capacity) until the first peak which is the fundamental and the proper one to use is tuned in. If the trimmer is screwed down beyond the point where the first peak is received, the incorrect image peak will be tuned in. After completing adjustment of the oscillator trimmer at 18.1 megacycles always check to see if the proper peak has been used. To do this leave the test oscillator frequency at 18.1 megacycles, increase the output of the test oscillator and tune the receiver dial to approximately 17.1 megacycles, and if the fundamental peak was used in aligning at 18.1 megacycles the test oscillator signal will be heard at approximately 17.1 megacycles on the receiver dial. If it is not possible to receive the signal, then the fundamental peak was not used and the 18.1 megacycle oscillator trimmer must be properly readjusted.

3. With band selector switch set for operation on 5.8 to 18.1 megacycle band tune the receiver dial and set test oscillator frequency to EXACTLY 16 MEGACYCLES. Adjust 16 megacycle antenna trimmer for maximum 16 megacycle signal sensitivity.

4. Place band selector switch for operation on 1.7 to 5.8 megacycle band, tune the receiver dial, and set test oscillator frequency to EXACTLY 5.8 MEGACYCLES. BRING IN 5.8 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT by adjusting 5.8 megacycle oscillator trimmer.

5. With the band selector switch set for operation on the 1.7 to 5.8 megacycle band tune receiver dial and set test oscillator frequency to EXACTLY 5 MEGACYCLES. Then adjust 5 megacycle antenna trimmer for maximum 5 megacycle signal sensitivity.

6. Replace the 400 ohm resister in series with test oscillator lead with a 200 Mmfd. condenser, place the band selector switch for operation on the 540 to 1720 kilocycle band, tune receiver dial, and set test oscillator frequency to EXACTLY 1720 KILOCYCLES. NEXT BRING IN THE 1720 KILOCYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING 1720 KILOCYCLE OSCILLATOR TRIMMER.

7. With band selector switch placed for operation on the 540 to 1720 kilocycle band set test oscillator frequency and receiver dial to EXACTLY 1400 KILOCYCLES. Adjust 1400 kilocycle preselector and antenna trimmers for maximum 1400 kilocycle signal sensitivity.

Model 68B-68BE— Six Volt Storage Battery Operated Three Band Superheterodyne Receiver

ALIGNMENT PROCEDURE:

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, low battery voltage, open or grounded bias resistor, bypass condenser, inadequate or excessively long antenna, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proven not to be the cause.

NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED, OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMER AND PADDING CONDENSERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE CIRCUIT DIAGRAM.

ALIGNING I.F. STAGE AT 465 KILOCYCLES:

(a) Attach the ground lead of the test oscillator to the chassis. Connect the other lead to the grid cap of the 6A7 tube through a .02 Mfd. series condenser. DO NOT REMOVE GRID CLIP.
(b) Set test oscillator to EXACTLY 465 kilocycles and turn receiver volume control on full.
(c) Peak each of the second I.F. transformer trimmers.
(d) Peak each of the first I.F. transformer trimmers.

ALIGNING 1720-535 KILOCYCLE BAND:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh), at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If the dial needle does not point exactly to the last line move needle to correct position.
(b) Remove test oscillator lead from grid of 6A7 tube and connect to receiver antenna lead through a .00025 Mfd. series condenser.
(c) Adjust band selector switch for operation on the 1720-535 kilocycle band.
(d) Set test oscillator frequency and receiver dial to EXACTLY 1720 kilocycles, and BRING IN 1720 KILOCYCLE TEST OSCILLATOR SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING 1720 KILOCYCLE OSCILLATOR TRIMMER.
(e) Tune receiver dial and set test oscillator frequency to EXACTLY 1400 kilocycles. Adjust 1400 K.C. preselector and antenna trimmers for maximum sensitivity.
(f) Set test oscillator frequency and receiver dial to approximately 600 kilocycles. Then while rocking gang condenser slightly to right and left, adjust 600 K.C. oscillator padder for maximum signal response.

ALIGNING 1.8-5.8 MEGACYCLE BAND:

(a) Replace .00025 Mfd. test oscillator antenna lead series condenser with a 400 ohm resistor.
(b) Adjust band selector switch to 1.8-5.8 megacycles, tune receiver dial and set test oscillator frequency to EXACTLY 5.8 megacycles. Bring in 5.8 megacycle test signal to maximum output by adjusting 5.8 M.C. oscillator trimmer.
(c) Tune receiver dial and test oscillator frequency to EXACTLY 5 megacycles, and adjust 5 M.C. antenna trimmer for maximum sensitivity.

ALIGNING 5.8-18.3 MEGACYCLE BAND:

(a) Leave 400 ohm resistor in series with test oscillator lead and place band selector switch for operation on 5.8-18.3 megacycle band, tune receiver dial and set test oscillator frequency to EXACTLY 18 megacycles.
(b) Adjust 18 M.C. oscillator trimmer to bring in 18 megacycle test signal to maximum output.

NOTE: When adjusting this trimmer two peaks, the fundamental and the image peak will be noticed. CARE MUST BE TAKEN THAT THE FUNDAMENTAL PEAK AND NOT THE IMAGE PEAK IS USED FOR ALIGNING THE RECEIVER AT 18 MEGACYCLES. Always back off the trimmer to minimum capacity, then screw down the trimmer (add capacity) until the FIRST PEAK which is the fundamental and the proper one to use is tuned in. If the trimmer is screwed down beyond the point where the first peak is received the incorrect image peak will be tuned in. After completing adjustment of the oscillator trimmer at 18 megacycles, always check to see if the proper peak has been used. To do this leave test oscillator frequency at 18 megacycles, increase the output of the test oscillator and tune receiver dial to approximately 17 megacycles. Then vary the receiver dial slightly to the right and left of 17 megacycles, and if the fundamental peak was used in aligning at 18 megacycles the test oscillator signal will be heard at approximately 17 megacycles on the receiver dial.

(c) Tune receiver dial and set test oscillator frequency to EXACTLY 15 megacycles.
(d) Rock gang condenser slightly to right and left and adjust 15 M.C. antenna trimmer for maximum 15 megacycle test signal response.

To assure more accurate trimmer setting, repeat all above adjustments several times always using lowest possible test oscillator output consistent with readable output meter scale deflection.

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8. Leave band selector switch for operation on 540 to 1720 kilocycle band, tune receiver dial and set test oscillator frequency to approximately 600 kilocycles. While rocking gang condenser slightly to right and left adjust 600 kilocycle oscillator padder for maximum sensitivity.