

Sears Roebuck & Co.

Model: 4588B

Chassis:

Year: Pre October 1937

Power:

Circuit:

IF:

Tubes:

Bands:

Resources

Riders Volume 8 - SEARS 8-54

Riders Volume 8 - SEARS 8-55

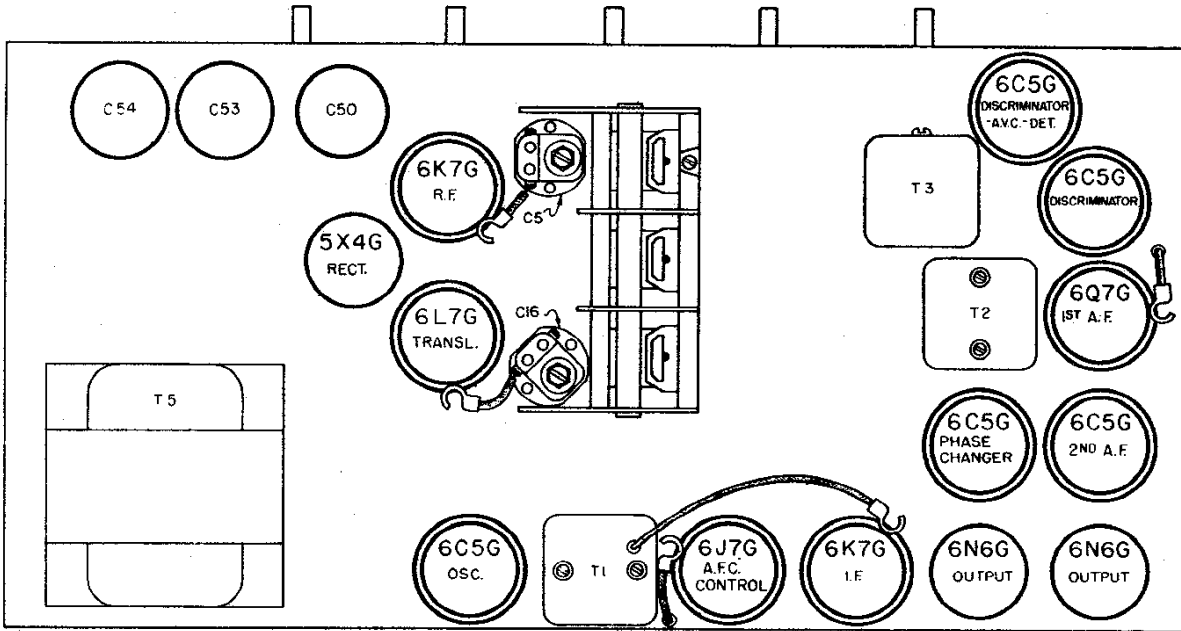
Riders Volume 8 - SEARS 8-56

Riders Volume 8 - SEARS 8-57

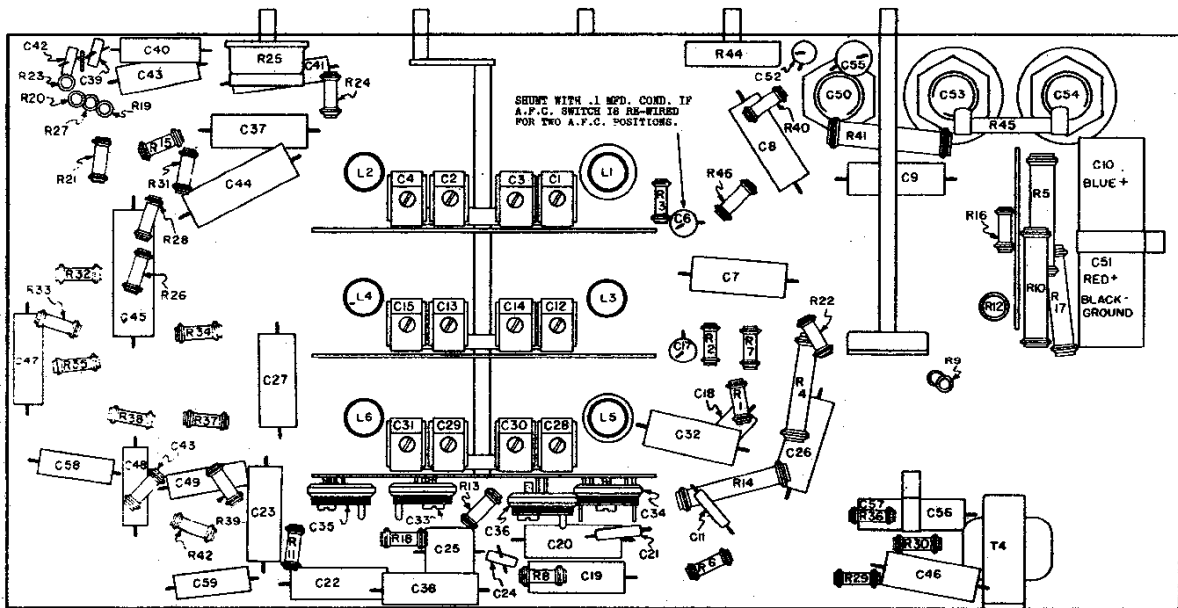
MODELS 4488B, 4588B

Socket, Trimmers
Chassis

SEARS-ROEBUCK & CO.



LOCATIONS OF PARTS ON TOP OF CHASSIS - 101412B



LOCATIONS OF PARTS UNDER CHASSIS - 101412B

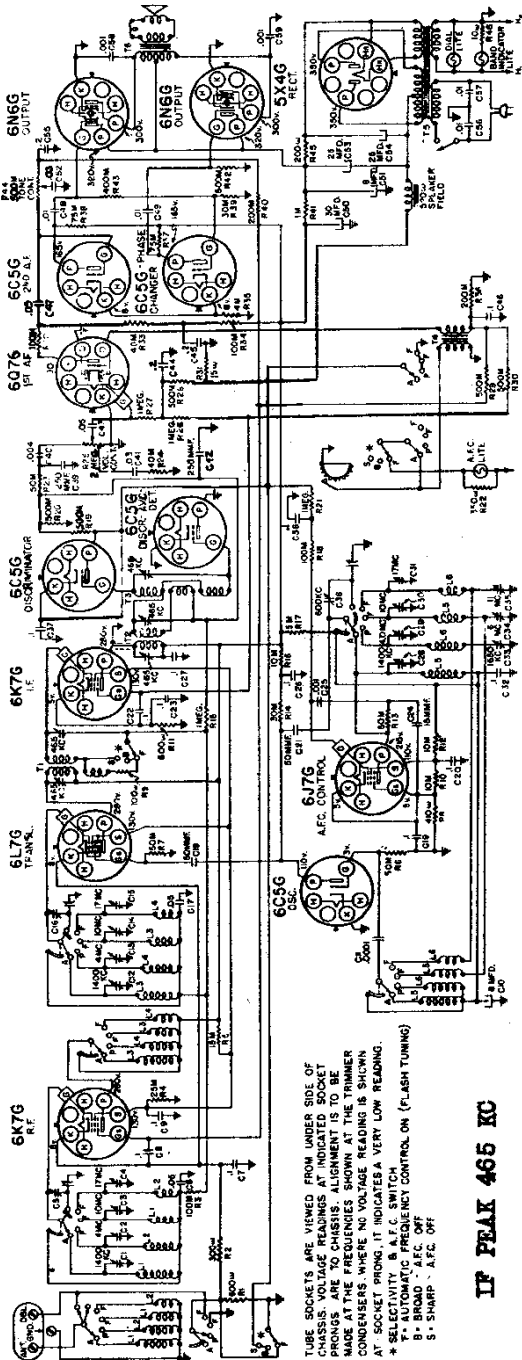
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MODELS 4488B, 4588B
Schematics, Voltage

THIRTEEN TUBE, FOUR BAND SUPERHETERODYNE

MODELS 4488B, 4588B

57RL 23
Supplement No. 8
October 30, 1936

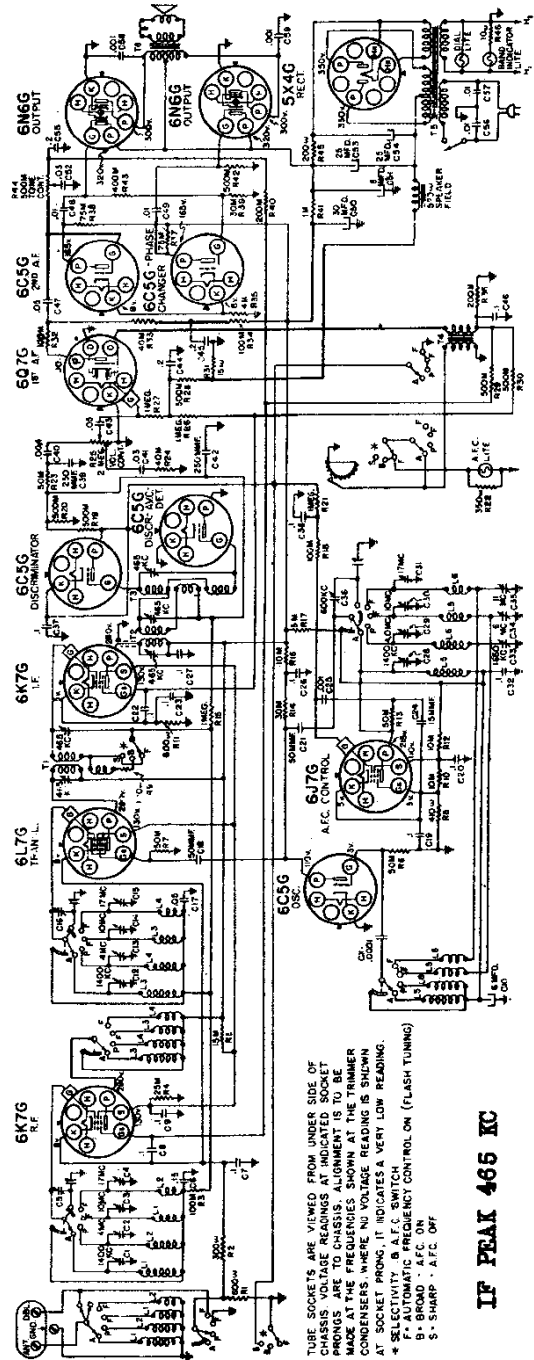


IF PEAK 465 KC

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS. ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER ADJUSTMENT SOCKETS. THE TRIMMER ADJUSTMENT SOCKET PRONGS AT INDICATED VERY LOW READING.

1. SELECTIVITY FREQUENCY CONTROL ON (FLASH TUNING)
 2. AUTOMATIC FREQUENCY CONTROL ON (FLASH TUNING)
 3. BROAD - A.F.C. OFF
 4. SHARP - A.F.C. OFF

WIRING DIAGRAM - 101412B - ONE A.F.C. POSITION



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 4. SHARP - A.F.C. OFF

WIRING DIAGRAM - 101412B TWO A.F.C. POSITIONS

MODELS 4488, 4588, 4488A
4588A, 4488B, 4588B

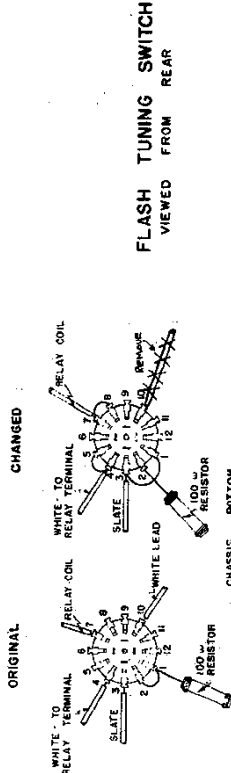
SEARS-ROEBUCK & CO.

Changes

CHANGE IN CONNECTIONS AND OPERATION OF THE FLASH TUNING - SELECTIVITY SWITCH (RIGHT HAND KNOB)

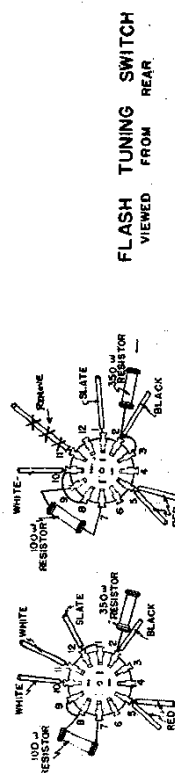
The right hand knob has three positions marked, "SHARP"; "B" (BROAD); "FLASH". In all of the sets using a relay and in the first production of those using a transformer the receiver operated in the conventional manner in the "SHARP" and "B" positions. In the "FLASH" position, the A.F.C. and Flash Tuning circuits were connected. In later production sets using the transformer, the operation and connections were connected. In sets produced after the change in design, the operation and connections were connected in the "SHARP" position. In the "B" position, the A.F.C. is connected and Selectivity is broad. In the "FLASH" position, the A.F.C. also is connected and Selectivity is sharp. In other words, in latest production there are two A.F.C. positions with a choice of broad or sharp selectivity. There is one non-A.F.C. position with sharp selectivity.

With the original connection of the A.F.C. switch, providing only broad selectivity in the "FLASH" position, a difficulty may be encountered in some locations due to adjacent channel interference or heterodyne whistles. If such difficulty is encountered in sets having the original connection, the circuit may be changed to provide the two selectivity positions for A.F.C. - Flash Tuning. Fig. 1 shows the switch connection changes for sets using the relay. Fig. 2 shows the switch connection changes for sets having an A.F.C. transformer. Note that in former sets the original connection is removed entirely from the switch. In addition, in sets of all models 10412, 10413, 10414, 10415 and 10416, the connections are removed entirely from the switch. See the Locations of Parts diagram. In later production of Model 10414B, a condenser CG, (See the Locations of Parts diagram). In later production of Model 10414B, embodying the two A.F.C. - Selectivity positions, a .15 mfd. condenser is used for CG.



FLASH TUNING SWITCH VIEWED FROM REAR

MODELS 4488, 4588, 4488A, 4588A, 4488B, 4588B



FLASH TUNING SWITCH VIEWED FROM REAR

FIG. 2

SUBJECT: A.F.C. INACCURACY DUE TO DIFFERENCE IN LINE VOLTAGE

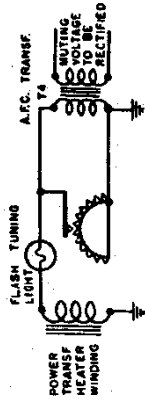
The setting of the teeth for A.F.C. stations is affected by the voltage of the power supply line. For example, suppose the stations to be set up at the Retail Store on a 120 volt line. If the radio is then delivered to the customer's home and the voltage there is considerably lower, say 105 volts, the A.F.C. settings will not be correct. The shift may amount to three or four kilocycles.

Accordingly, if the A.F.C. stations are not set up at the customer's home, care must be taken to see that the line voltage at the time the stations are set up is the same as the average line voltage at the customer's home. It may be necessary to use a series resistor or a booster transformer to duplicate the line voltage conditions that exist at the customer's home.

SUBJECT: CIRCUIT CHANGES TO ELIMINATE ADVANT CHANNEL INTERFERENCE IN MODELS 4488-4588-4588A-4488B-4588B

The 10412 and 10412A chassis, described in Service Instructions 57nd 23 and in Supplement #1, use a relay to accomplish the various switching required by the Automatic Frequency Control - Flash Tuning feature. In later production of this Model the circuit was changed to use a diode transformer in place of the relay to accomplish the same results. Such chassis are identified by the number, 10412B.

The simplified diagram below shows how the transformer is used to mute the receiver and to operate the Flash Tuning light.



The A.F.C. transformer is a step-up transformer. Its primary is connected, in series with the Flash Tuning light bulb, across the heater winding of the power transformer. The toothed disc and contacting arm is connected across the primary of the A.F.C. transformer, as shown. The operation then is as follows: When the contacting arm is not engaging a bent-IP tooth on the disc, the power transformer heater voltage is impressed, in series with the Flash Tuning light bulb, across the primary of the A.F.C. transformer. This voltage is stepped up through the primary. Its impedance is low, so that sufficient current will flow through the tuning light bulb. The voltage impressed on the A.F.C. transformer primary is stepped up in the secondary and rectified by one of the diode plates of the 607V tube. This diode voltage (approximately 80 volts) is applied to the suppressors of the RF and IF tubes and to the control grid of the second AF tube, to provide muting. These are the conditions that exist when the right hand knob is turned to a Flash position and the receiver is tuned between Flash stations.

When the receiver is tuned to a Flash station, the contacting arm touches the tooth bent up on the station. This short circuits the primary of the A.F.C. transformer. With the primary short circuited, no voltage is impressed across the Flash Tuning light bulb causing it to light. Since the A.F.C. primary is short circuited, no voltage is developed across its secondary, thereby removing the muting bias. The receiver then is in operating condition and receives the station selected for Flash Tuning.

In the original sets using a relay, one set of contacts on the relay was used to prevent the A.F.C. transformer from being "pulled over" from its normal position. This was necessary to prevent a strong station from being "pulled over" from its normal position. The receiver was tuned through it, since the receiver was alive up to the audio stage. When the A.F.C. transformer is used in place of the relay, this "pull over" cannot occur because the receiver is made inoperative right at its input by muting of the RF tube.

IMPORTANT NOTE IN SETTING UP A.F.C. STATIONS:

IT IS VERY IMPORTANT THAT THE RECEIVER BE TUNED ON FOR THIRTY MINUTES BEFORE SETTING UP A.F.C. STATIONS ON THE TUNING DISC. IF STATIONS ARE SET UP WITH THE RECEIVER "COLD", FREQUENCY DRIFT MAY CHANGE THE ACCURACY AND RELIABILITY OF THE SETTING WHEN THE RECEIVER WARMS UP.

SEARS-ROEBUCK & CO.

MODELS 4488, 4588, 4488A
4588A, 4488B, 4588B
Revised Alignment
AFC Adjustment

TRIMMING ADJUSTMENT (IN ORDER SHOWN)	GENERATOR FREQUENCY	TUNING RANGE	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
10 mc (next to 700's)	10 mc	400 ohms	Ant. Term.	C3, C14 Ant., Trnsml. 4
6500 kc (next to 700's)	6500 kc	400 ohms	Ant. Term.	C3, C16 ** Ant. Pad., Trnsml. Pad. 20
17 mc	17 mc	400 ohms	Ant. Term.	C31 * Oscillator -
17 mc	17 mc	400 ohms	Ant. Term.	C4, C15 Ant., Trnsml. 6
11 mc (1)	11 mc	400 ohms	Ant. Term.	C35 Osc. Pad. 60

IMPORTANT ALIGNMENT NOTES

Where indicated by (1) the variable should be rocked back and forth a degree or two while making the adjustment.
* Two peaks will be found at two different settings of the trimmer. Use the one in which the trimmer is screwed further in (greater capacity).
** Use a bakelite screwdriver in making these two adjustments. These adjustments should not be touched after this book has been lined up.
Repeat the entire alignment step by step in the original order for greater accuracy. Always keep the generator output power at its lowest possible value. This will prevent the AFC section of the receiver from interfering with accurate alignment.
The shield covering the coils at the bottom of the chassis should be left in place during the alignment. The trimmer condensers are accessible through the holes in the shield.
Only the dummy antenna indicated in the chart for any particular band should be used. Disconnect the dummy antenna used for alignment of any other band. No connection is to be made to the doublet terminal.
After the alignment has been completed, the A.F.C. adjustment should be made as follows:

A.F.C. ADJUSTMENT

1. Set one signal generator (or the broadcast station) to 1000 kc and 5000 microvolts. Connect its output to the "ANT" terminal of the set, through a .0002 mfd. condenser.
2. Tune the receiver for maximum output (at 1000 kc). Then switch the signal generator modulation switch to the "off" position.
3. Short the movable arm to the toothed disc with a piece of wire. The Flash Tuning light should become illuminated.
4. Set the second signal generator to 465 kc and 10,000 microvolts output. Connect its output, in series with a .000015 mfd. condenser to the control grid of the 6L7G tube. Turn the modulation switch to the "off" position.
5. Carefully turn the variable condenser until "zero beat" note is heard (with right hand knob in "SHARP" position).
6. Turn the right hand knob to the "FLASH" position (fully clockwise). Then adjust the dial scale for "zero beat" in the "SHARP" and "BROAD" positions if the A.F.C. is properly adjusted. If it does not, carefully repeat operation #5.
7. Turn the right hand knob to the "BROAD" position and then to the "BROAD" positions. The receiver should give "zero beat" in the "SHARP" and "BROAD" positions if the A.F.C. is properly adjusted. If it does not, carefully repeat operation #5.
8. The A.F.C. can be checked for "pull in" in the following manner. Remove the signal generator from the antenna grid (two generators recommended.) Switch on the modulation of the 1000 kc generator and tune the receiver to give 1.5 volts reading on the output meter. Increase the volume control setting of the receiver to give 1.5 volts reading on the output meter. Increase the signal generator frequency until the output meter reads .5 volt. Note the frequency of the signal generator at this output meter reading. Then decrease the signal generator frequency until the output meter reads 1.5 volts. The receiver should give "zero beat" at generator frequency. If the A.F.C. is operating properly, the signal generator can be shifted 15 to 20 kc either side of 1000 kc before the output meter reading is reduced from 1.5 volts to .5 volt.

IMPORTANT NOTE ABOUT SETTING UP A.F.C. STATIONS ON ADVANCED CHANNELS.

In paragraph #10 under, "SETTING UP THE AUTOMATIC FREQUENCY CONTROL", in the Service Instructions, the suggestion is made that if adjacent channel stations are selected the two bands 700 kc and 710 kc stations should be selected. This is correct. However, suppose you have a 700 kc and 710 kc station to be selected. The teeth corresponding to 697 kc and 715 kc would be bent up instead. The purpose of this is to prevent the receiver from jumping from one station to the other on a weak signal strength this way. This suggestion will be helpful only if you can adjust the signal strength of the stations. This suggestion will be helpful only if you can adjust the signal strength of the stations. This suggestion will be helpful only if you can adjust the signal strength of the stations.

CHANGE IN PROCEDURE FOR REMOVING DIAL GLASS FOR SETTING UP FLASH TUNING SECTION CALL LETTERS

The Service Instructions for this model describe how to remove the dial glass by taking off the split retaining ring that holds it. In receivers using the 10L14PZ chassis this procedure has been simplified by using an escutcheon with the dial glass moulded into it. It is suggested that you use this escutcheon in order to take off the moulded escutcheon and dial glass merely to remove these four screws in order to take off the moulded escutcheon and dial glass.

CHANGE IN PHONOGRAPH PICK-UP JACK OPERATION

The Service Instructions for this model state that if a phonograph pick-up jack is used the "right hand knob must be in either the "SP" or "SHARP" position. This is true only for those receivers that are wired to have the one A.F.C. position ("FLASH"). In later production receivers having the two A.F.C. positions ("FLASH" or "BROAD"), in receivers that are wired to have the two A.F.C. positions, the "right hand knob must be in the "SHARP" position for phonograph operation. This must be done, of course, to remove the arcing from the audio tube, permitting phonograph reproduction.

REVISED ALIGNMENT PROCEDURE:

PRELIMINARY:

- Output meter connections ----- Across speaker voice coil
- Output meter reading to indicate .5 watts output ----- 2.5 volts
- Dummy antenna value to be in series with generator output ----- See chart below
- Connection of generator output lead ----- See chart below
- Generator modulation ----- 305, 400 cycles
- Approximate average sensitivity in microvolts for .5 watts output ----- See chart below
- Position of Volume Control ----- Fully on
- Position of Tone Control ----- Fully clockwise
- Position of Flash Tuning and Selectivity Switch knob ----- Sharp, fully counter clockwise
- Position of Dial Pointer ----- To fall on 10 mc mark when variable is fully meshed

TRIMMING ADJUSTMENT (IN ORDER SHOWN)	GENERATOR FREQUENCY	TUNING RANGE	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS	
"ANT" 550 kc	465 kc	1 mfd.	6L7G Grid	F2, F1 IF Output IF Input -	
"ANT" 1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C28, C1, Transmitter Osc., Ant. 30	
"ANT" 600 kc (1)	600 kc	.0002 mfd.	Ant. Term.	C36 Osc. Pac. 12	
"POL" 4 mc	4 mc	400 ohms	Ant. Term.	C22, C2, Osc. Ant., Transmitter 4	
"POL" 1650 kc (1)	1650 kc	400 ohms	Ant. Term.	C33 Osc. Pad. 30	
"POL" 10 mc	10 mc	400 ohms	Ant. Term.	C30 * Oscillator -	
"SP" (next to 700's)	6 mc (1)	6 mc	400 ohms	Ant. Term.	C34 Osc. Pad. 20