



Sears Roebuck & Co.

	Model: 4486	Chassis:	Year: Pre October 1937
	Power:	Circuit:	IF:
	Tubes:		
	Bands:		

Resources

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MODELS 4486, 4586, 4586A

Whistle Elimination

Data

SEARS-ROEBUCK & CO.

GENERAL INFORMATION

The sensitivity is automatically increased on bands "P" and "F" by removal of the residual bias furnished by the resistor, R14. This resistor is connected in the circuit only when the Wave Band switch is in position "A". Contacts on the Wave Band switch automatically perform this switching.

Variable selectivity is obtained by a two position switch. It changes the selectivity of the IF input transformer by connecting or disconnecting coupling turns between primary and secondary.

ELIMINATING WHISTLE AT 930 KC:

A whistle, due to a beat between the second harmonic (930 kc) of the 465 kc IF, and a 930 kc signal may be experienced. In localities where the 930 kc station is one that is frequently listened to, it will be desirable to shift the whistle to some other point where it will not be objectionable. This can be done by shifting the IF frequency of the receiver.

Determine at what point between 900 kc and 960 kc the whistle will be least objectionable. Dividing this frequency by two will give the new IF frequency to which the receiver should be aligned. For example, if it is determined that a whistle at 915 kc would not be objectionable, the IF should be realigned at 915/2 or 457.5 kc.

Align the IF at the new frequency and then realign the receiver as described under, "ALIGNMENT PROCEDURE".

POWER SUPPLY:

All models available - - - - - 105-125 volts, 50-60 cycle, 85 watts
All models available - - - - - 105-125 volts, 25 cycle, 90 watts

FREQUENCY RANGES:

Band "A" - - - - - 540-1800 kc
Band "P" - - - - - 1800-6000 kc
Band "F" - - - - - 6-18 mc

ALIGNMENT FREQUENCIES:

	Oscil. Trimmer	Ant-Transl. Trimmer	Oscil. Padder
Band "A"	1800 kc	1500 kc	600 kc
Band "P"	5 mc	5 mc	2 mc
Band "F"	15 mc	15 mc	Fixed

INTERMEDIATE FREQUENCY - - - - - 465 kc

POWER OUTPUT:

Type - - - - - Push-Pull Pentode
Undistorted - - - - - 6 watts
Maximum - - - - - 10 watts

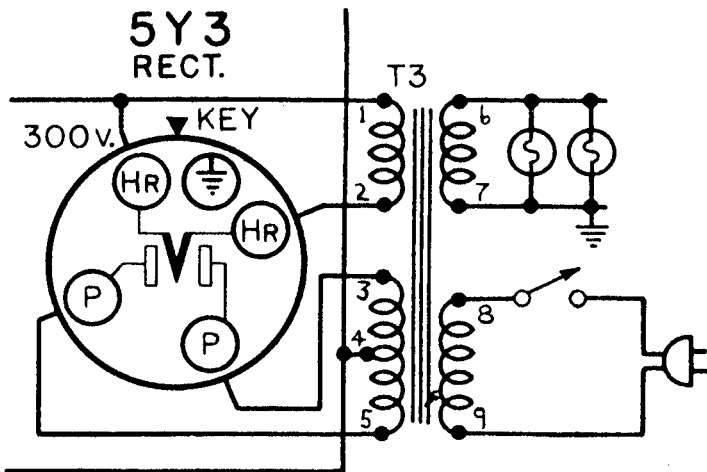
LOUD SPEAKER:

Type - - - - - Dynamic
Size - - - - - 10"
Field coil resistance - 650 ohms, hot
Speaker field coil voltage drop - 60 volts

ELIMINATING HUM

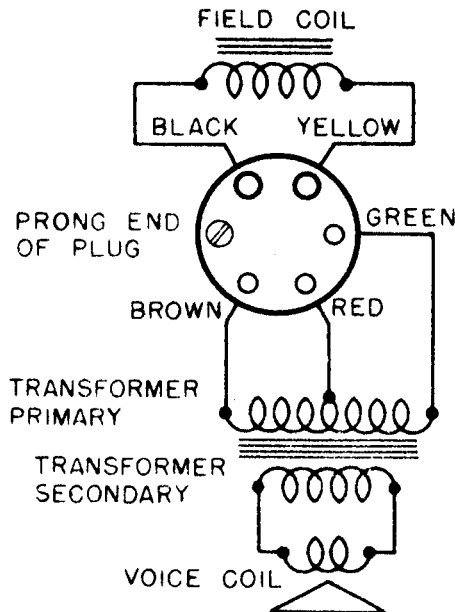
Excessive hum may be caused by a faulty 6C5G phase changer tube. Such tubes may test O.K. in a tube tester but cause hum due to leakage between the heater and cathode. If excessive hum is encountered, try changing the 6C5G phase changer tube.

Under certain conditions reversing the line plug will eliminate hum.



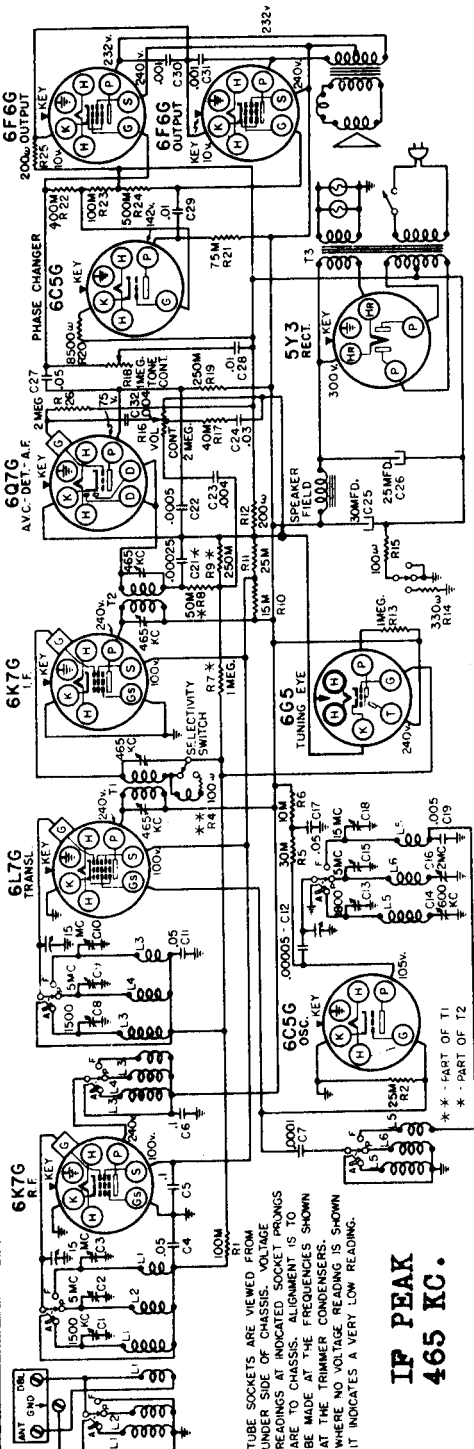
POWER TRANSFORMER COLOR CODE

1-Red	4-Slate	7-Black
2-Red	5-Blue	8-Green
3-Red	6-Black	9-Black



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MODELS 4486, 4586, 4586A
Schematic, Voltage
Phono Pick-up Jack Data
Interference Elimination



WAVE-TRAP TO ELIMINATE INTERFERENCE FROM SHIP OR AIRPORT TRANSMITTERS:

In locations near ship transmitters or airports or air beacon stations, code interference may be experienced. Part #1013115433 wave-trap is designed to eliminate such interference. It can be ordered from Colonial Radio Corporation, 254 Rano Street, Buffalo, N. Y. Use Purchase Order blank, form F5284. The retail selling price is \$1.00.

Mount the trap, by means of two wood screws, at any place on the chassis shelf or cabinet where it will be near the antenna terminals of the receiver. Connect the yellow lead of the trap to the terminal marked, "DBL", on the terminal block at the rear of the chassis. Connect the black lead of the trap to the ground terminal on the chassis. Any excess length should be cut off the wave-trap leads so that they are as short as possible. The antenna or doublet connections to the receiver are not to be changed in any way.

The trap is pre-tuned to the IF frequency so that normally no further adjustment is necessary. However, should interference still be experienced, tune the receiver between approximately 550 and 600 kc. Then adjust the wave-trap, by means of the trimmer screw at the bottom of the container, until the interference is eliminated. Addition of the trap will reduce the sensitivity of the receiver around 600 kc by approximately 50%. The customer should be forewarned of this to avoid complaints of reduced sensitivity.

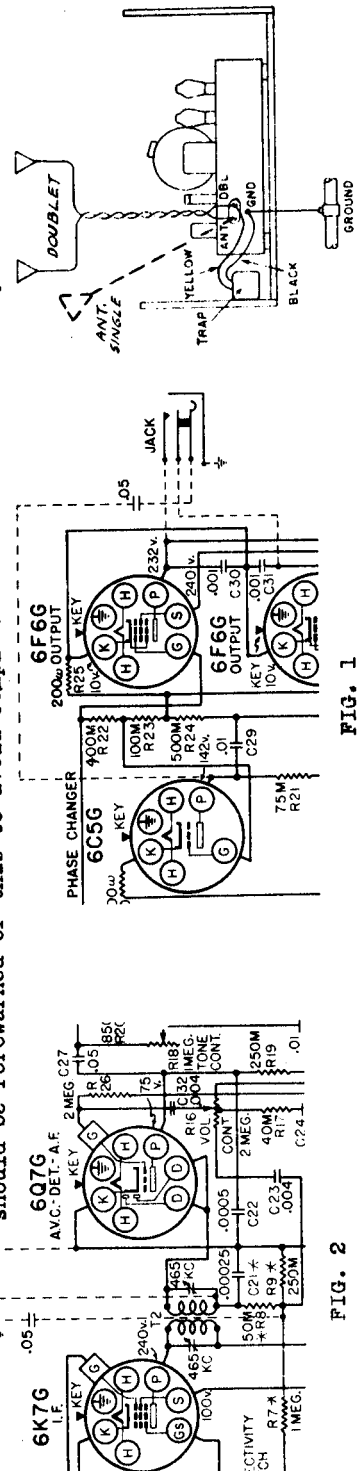


FIG. 1

FIG. 2

CONNECTING A PHONOGRAPH PICK-UP JACK OR AN EARPHONE JACK:

A hole, plugged with a brass insert, will be found at the rear of the chassis. This hole is provided for the installation of either a phonograph pick-up jack or an earphone jack. The circuit for the earphone jack connection is shown in Fig. 1. The circuit for the phonograph pick-up jack connection is shown in Fig. 2. The condenser shown is .05 mfd. 200 volt. The part number of the jack is 1011813585. It can be ordered directly from Colonial Radio Corporation, 254 Rano Street, Buffalo, N. Y. The retail selling price is \$.60.

MODELS 4486, 4586, 4586A

Socket, Trimmers, Chassis

Alignment, Sensitivity

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDUREPRELIMINARY:

Output meter connections - - - - - Across speaker voice coil
 Output meter reading to indicate .5 watts output - - - - - .85 volts
 Approximate average sensitivity in microvolts for .5 watts output - - - - - See chart below
 Dummy antenna value to be in series with generator output - - - - - See chart below
 Connection of generator output lead - - - - - See chart below
 Generator modulation - - - - - 30%, 400 cycles
 Position of volume control - - - - - Fully clockwise
 Position of tone control - - - - - Fully clockwise
 Position of selectivity control - - - - - Fully clockwise
 Position of dial pointer - - - - - To fall on second line from right, of ornamental lines running from tuning eye toward center of dial, when variable is fully meshed.

WAVE BAND POSITION	POSITION OF DIAL POINTER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	APPROXIMATE MICROVOLTS
"AM"	550 kc	465 kc	.1 mfd.	617 Grid	T2, T1	-
"AM"	1800 kc	1800 kc	.0002 mfd.	Antenna Terminal	C13	90
"AM"	1500 kc	1500 kc	.0002 mfd.	Antenna Terminal	C1, C8	20
"AM"	600 kc (rock)	600 kc	.0002 mfd.	Antenna Terminal	C14	32
"POL"	5000 kc	5000 kc	400 ohms	Antenna Terminal	C15 (*)	-
"POL"	5000 kc	5000 kc	400 ohms	Antenna Terminal	C9, C9	2
"POL"	2000 kc (rock)	2000 kc	400 ohms	Antenna Terminal	C16	18
"FOR"	15 mc	15 mc	400 ohms	Antenna Terminal	C18 (*)	-
"FOR"	15 mc	15 mc	400 ohms	Antenna Terminal	C5, C10	2
"FOR"	6 mc	6 mc	400 ohms	Antenna Terminal	-	40

IMPORTANT ALIGNMENT NOTES

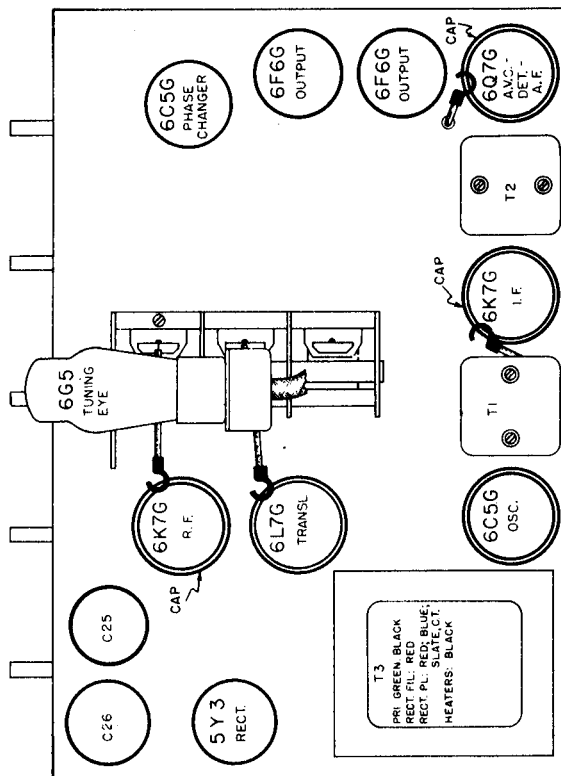
(*) If two peaks can be obtained at two different settings of the trimmer adjusting screw, use the adjustment in which the trimmer is screwed further out (lesser capacity). Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value, to prevent the AVC action of the set from interfering with accurate alignment.

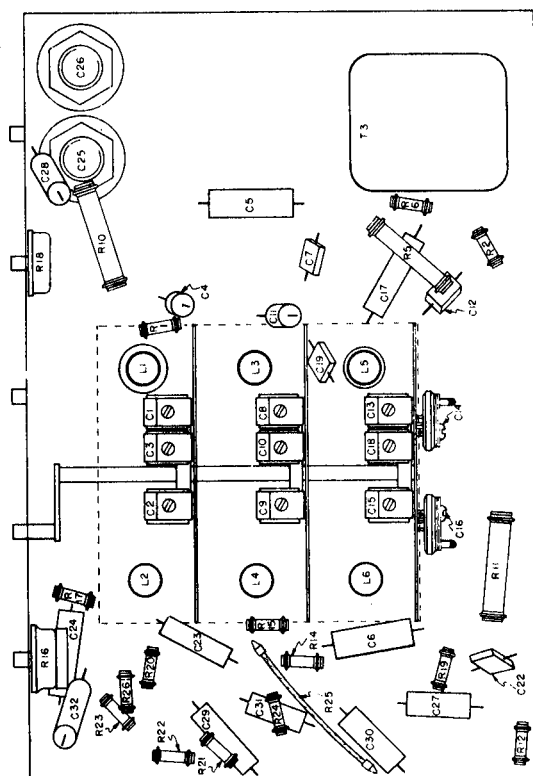
The shield plate that covers the coil assembly should be left in place while making the alignment adjustments. The trimmer screws are accessible through the holes in the shield.

Only the dummy antenna indicated in the chart for any particular band should be used. Remove the dummy antenna used for alignment of any other band.

After the alignment procedure has been completed, tune in a station at about 900 kc. If necessary, shift the dial pointer to the station's frequency on the dial.



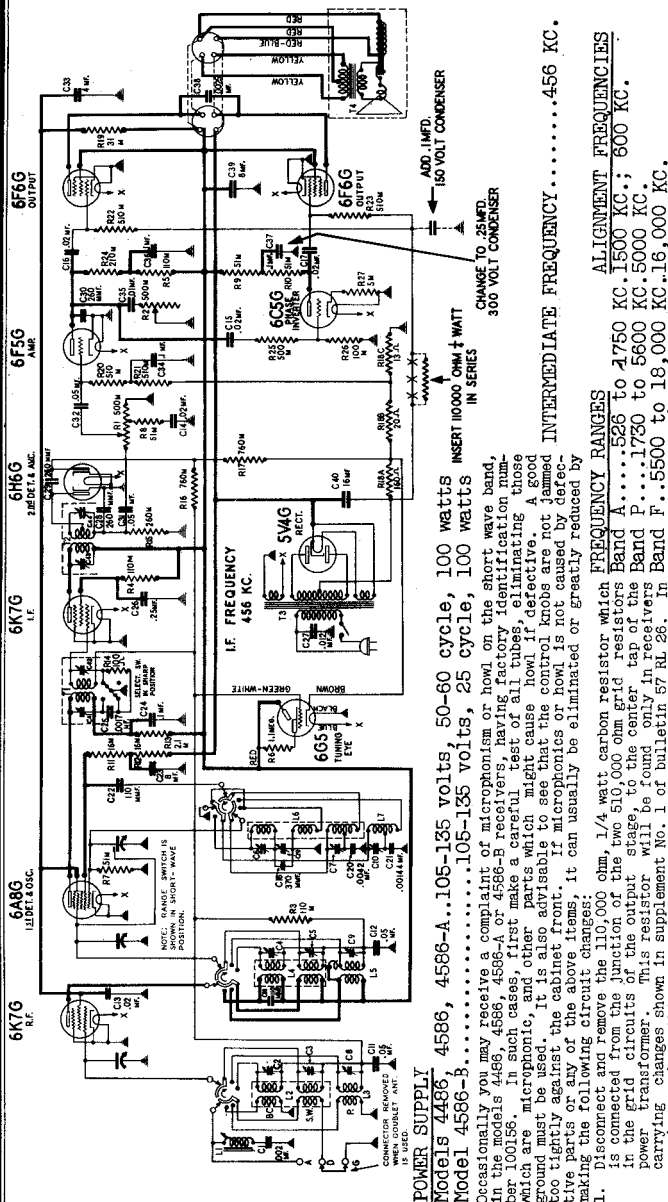
LOCATIONS OF PARTS ON TOP OF CHASSIS -



LOCATIONS OF PARTS UNDER CHASSIS -

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MODELS 4486 1586, 4586-A,
4586-B CHASSIS 100, 156



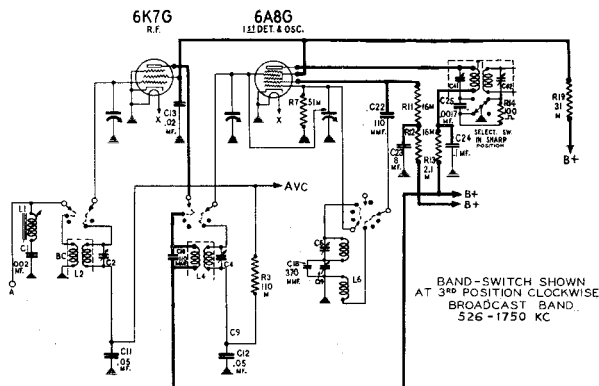
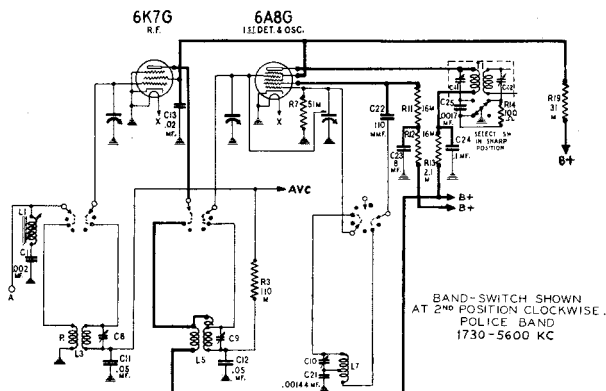
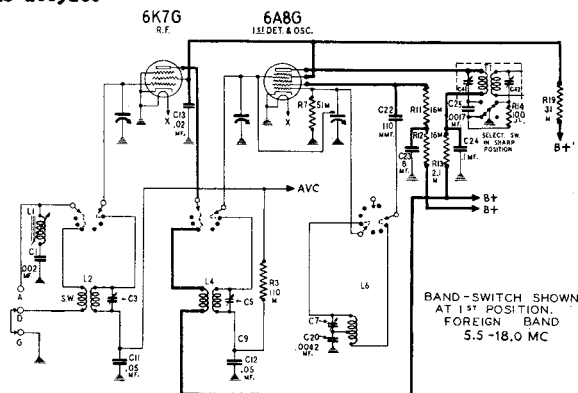
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4586-B CHASSIS 100, 156

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MODELS 4486, 4586, 4586-A,
4586-B CHASSIS 100, 156ALIGNMENT PROCEDUREPRELIMINARY

Output meter connections.....Across voice coil leads
10" spkr. 1.4 volts

Output meter reading to indicate 1 watt output.....
12" spkr. 2.0 volts

Average sensitivity in microvolts for 1 watt output.....See chart below

Generator ground connection.....Receiver Chassis

Dummy antenna to be in series with generator output.....See chart below

Connection of generator output lead.....See chart below

Generator modulation.....30%, 400 cycles

Position of selectivity control.....Sharp position (clockwise)

Position of volume control.....Maximum clockwise

Position of tone control.....Maximum clockwise

<u>BAND SWITCH</u>	<u>POSITION OF * DIAL POINTER</u>	<u>GENERATOR FREQUENCY</u>	<u>DUMMY ANTENNA</u>	<u>GENERATOR CONNECTION</u>	<u>TRIMMERS ADJUSTED (In order shown)</u>	<u>MICRO- VOLTS (Sharp Pos.)</u>
Band A I.F.	1000 KC.	456 KC.	.1 Mfd.	6A8-G Grid	C41, C42, C43, C44	150
I.F. Trap	600 KC.	456 KC.	.00025 Mfd. Ant. Lead		L1 for Min. Output	
	1500 KC.	1500 KC.	.00025 Mfd. Ant. Lead		C6, C4, C2	15
	600 KC. ** (Rock Dial)	600 KC.	.00025 Mfd. Ant. Lead		C19	15
Band P	5000 KC.	5000 KC.	400 Ohm.	Ant. Lead	*** ** C10, C9, C8	30
Band F	16000 KC.	16000 KC.	400 Ohm.	Ant. Lead	*** ** C7, C5, C3	30

.IMPORTANT ALIGNMENT NOTES

* Before attempting to align the receiver check to see that the dial pointer coincides with the last scale division at the low frequency end of the dial scale when the gang condenser is in full mesh.

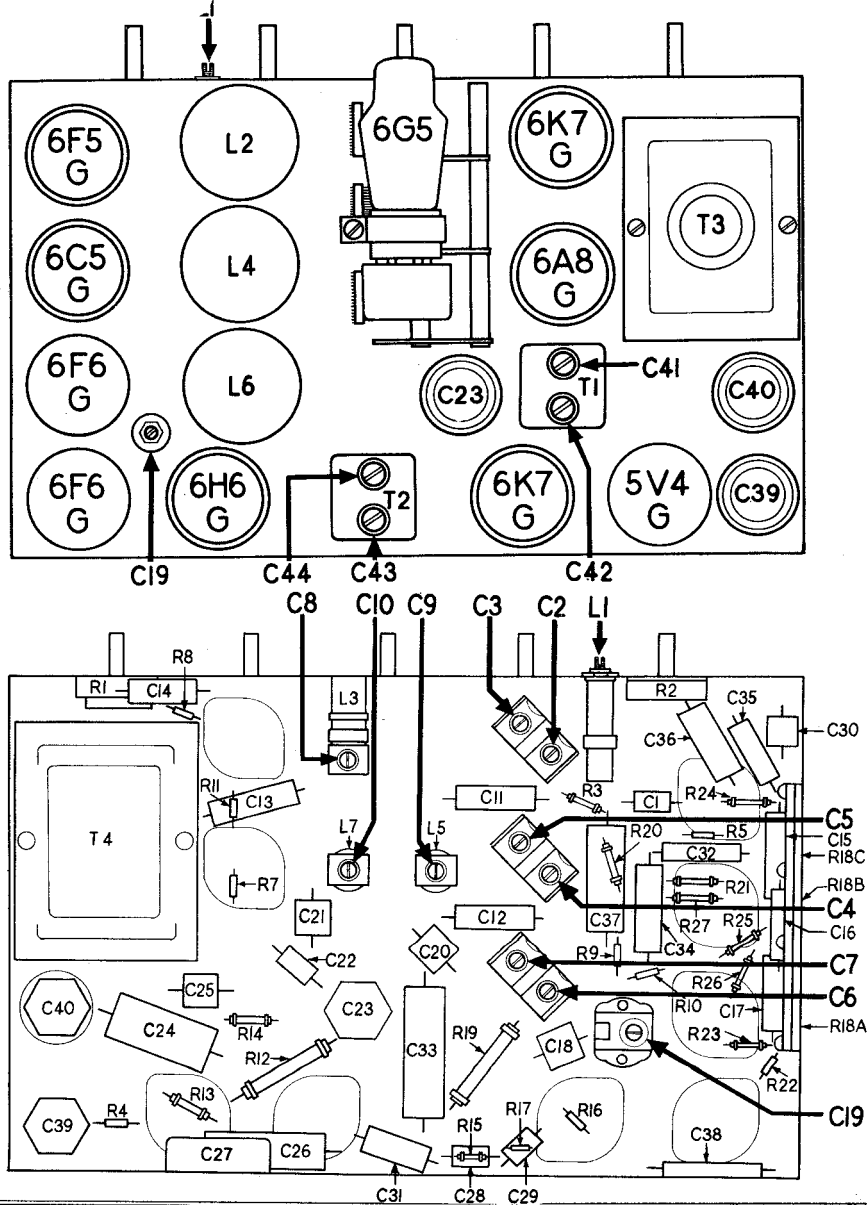
After adjusting the I.F. trimmers C41, C42, C43 and C44, go back and repeat the adjustment, since the setting of each trimmer will have some effect on others. When adjusting L1, antenna trap trimmer, increase generator output to obtain clearly defined trimmer setting for a minimum.

** When aligning the broadcast band padder C19 at 600 KC. and the short wave detector trimmers, it is necessary to adjust the trimmers while slowly rocking the gang condenser through a small distance. Rocking the gang is essential if maximum sensitivity is to be obtained.

*** When aligning the short wave bands, care should be taken in adjusting trimmers C7 and C10, since two possible adjustments of these trimmers will result in signal peaks. The proper peak is that which occurs with the trimmer screw farthest out.

MODELS 4486, 4586, 4586-A,
4586-B CHASSIS 100, 156

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MODELS 4486, 4586, 4586-A,
4586-B CHASSIS 100, 156GENERAL INFORMATION

The R-100156 three band radio receiver has a frequency range extending from 526 KC. to 18,000 KC. The intermediate frequency is 456 KC. A three deck band selector switch is used for selecting the proper combination of coils to be used for each wave band. Special contacts on one deck of the switch are used for shorting out unused oscillator coils to prevent dead spots due to absorption.

The coils for the antenna, R.F., and oscillator circuits covering the broadcast and short wave bands, are shielded and located on top of the chassis. They are designated by L2, L4 and L8 respectively in the circuit diagram. The antenna, R.F. and oscillator coils covering the police band are located on the underside of the chassis and are designated by L3, L5 and L7 respectively in the circuit diagram.

The receiver is designed for use with a conventional or doublet antenna. A 456 KC. wave trap is connected across the antenna input to prevent code interference from stations operating on frequencies in the vicinity of 456 KC.

The control grid circuit of the 6K7-G, radio frequency amplifier, is tuned by the secondary of the antenna coil and one section of the variable condenser. Similarly, the control grid circuit of the 6A8-G first detector and oscillator, is tuned by the secondary of the R.F. coil and one section of the variable condenser. After amplification in the 6K7-G R.F. amplifier, the signal is impressed on the control grid of the 6A8-G, 1st detector and oscillator, where frequency conversion to 456 KC. takes place. The 456 KC. output voltage of the 6A8-G tube is amplified by the 6K7-G intermediate frequency amplifier and impressed on the diode plates of the 6H6-G second detector and A.V.C. tube.

By means of the selectivity control, two degrees of selectivity are obtainable in the intermediate frequency amplifier. This is accomplished by altering the resonance characteristics of the 1st I.F. transformer. When the selectivity control is in the sharp position (clockwise) the 1st I.F. transformer functions as a typical transformer with tuned primary and secondary circuits. When it is in the broad position (counter-clockwise) the resonant frequency of the primary circuit is decreased and that of the secondary circuit increased. At the same time the selectivity curve of the secondary is broadened.

One section of the 6H6-G twin diode tube is used as a linear detector. The 260,000 ohm resistor R15 serves as a load resistor for the detector section of the twin diode. The potentiometer type of volume control R1, is capacity coupled to the diode load resistor R15, and acts as a continuous voltage divider of the audio frequency voltage developed. Hence any portion of the audio frequency voltage developed may be applied to the control grid of the 6F5-G resistance coupled audio frequency amplifier. The second section of the twin diode, fed through the condenser C29 is used for delayed A.V.C. With sufficient signal intensity, A.V.C. voltage is developed across resistance R17 and applied to the control grids of the 6K7-G and 6A8-G tubes through a resistance capacity filter.

The output of the 6F5-G audio amplifier is fed into a resistance coupled push-pull output stage. In this circuit, the 6C5-G tube operating as a phase inverter, takes the place of a push-pull input transformer.

The control grid bias of the 6F5-G is obtained from the negative end of resistance R18-C. Similarly, the control grid bias of the 6K7-G tubes, the 6A8-G tube, and the delay voltage for the A.V.C. section of the 6H6-G is obtained from the negative end of resistances R18-B and R18-C. Also the bias for the 6F6-G output tubes is obtained from the negative end of resistors R18-A, R18-B and R18-C. Resistances R18-A, R18-B and R18-C are located in the negative lead of the high voltage D.C. supply.

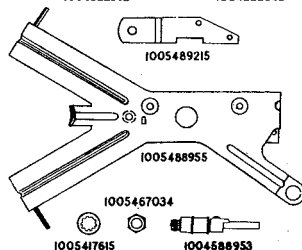
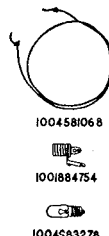
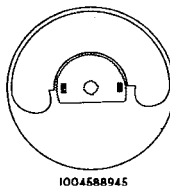
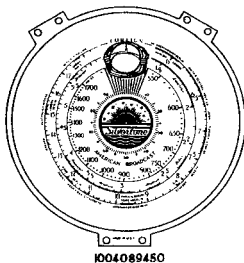
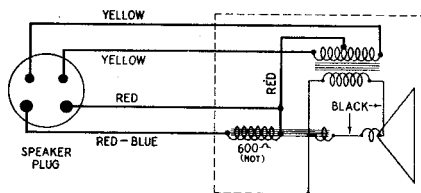
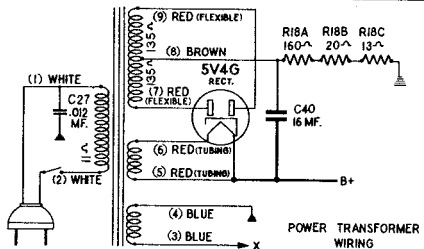
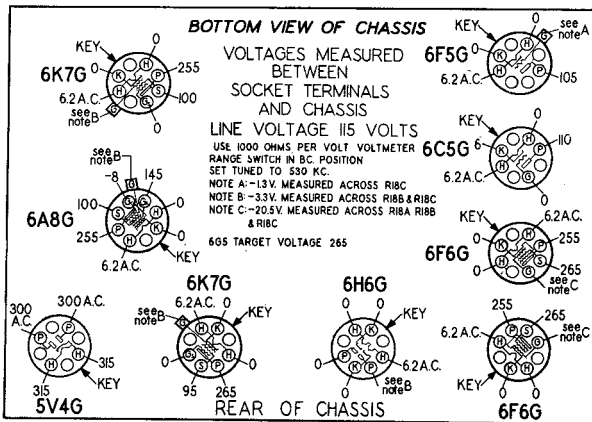
WEAK OR INOPERATIVE SETS DUE TO SHORT-CIRCUITED POLICE BAND
R.F. COILS

Occasionally you may find a set which is weak or completely inoperative on all three bands due to a short between the coupling turn and the secondary of the police band R.F. coil (L5). The short circuit may first cause crackling and sputtering and then later the set will stop playing. To test for this short, disconnect the red and yellow wires from the coil (L5) and test for continuity from either end of the trimmer condenser on the coil to the lug to which the coil coupling turn is connected. This should show an open circuit. Even the slightest leakage between these two points with the red and yellow wires disconnected, calls for the replacement of the coil which is part number 1002889604. Such shorted coils do not occur very often, therefore, we recommend that tubes and voltages be checked first to make sure that no other trouble exists.

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MODELS 4486, 4586, 4586-A,
4586-B CHASSIS 100, 156

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MODELS 4486, 4586, 4586-A,
4586-B CHASSIS 100, 156

DEFECT	GENERALLY CAUSED BY	REMEDY
Dead Receiver On All Bands	No power at A.C. outlet..... Shorted by-pass condenser. Burned out power transformer. Defective tubes. Open coupling condenser. Shorted filter condenser. Open plate resistor. High resistance short between coupling turn (primary circuit) ... and secondary of Police band R.F. Coil (L5)	Check or repair A.C. power source. Determine defective parts by means of continuity and voltage tests, and replace. Replace coil.
Low Volume, Insensitive. Tuning Eye Does Not Close Sufficiently	Inadequate antenna..... Defective tubes. Leaky filter condenser. Leaky by-pass condenser. High resistance short between coupling turn (primary circuit) ... and secondary of Police band R.F. Coil (L5)	Replace antenna system. Replace defective parts. Replace coil.
Poor Tone	Defective tubes. Leaky by-pass condenser. Open filter condenser. Speaker cone off center..... Receiver out of alignment.....	Replace defective parts. Recenter speaker cone. Realign receiver.
Oscillating Receiver	Defective tubes. Open by-pass condenser. Poor contact of tube shield. Receiver out of alignment..... Poor chassis grounds.....	Repair or replace defective parts. Realign receiver. Check ground connections in chassis.
Fading Receiver	Defective tubes..... Defective audio coupling condenser.. Loose connections..... Defective antenna system	Replace defective tubes. Replace defective condenser. Resolder loose connections. Check and repair antenna.
Hum	Open filter condenser. Defective by-pass condenser. Shorted heater type tube.	Replace defective parts.
Off Calibration	Dial pointer shifted..... Receiver out of alignment.....	Set dial pointer. Realign receiver.
Audio Howl	Shipping blocks not removed..... Knob shafts in contact with cabinet. Microphonic tubes.....	Remove wood shipping blocks. Readjust chassis in cabinet. Replace microphonic tubes.

MODELS 4486, 4586, 4586-B, 4586-B CHASSIS 100, 156

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Part No.	Description	Schematic Location	Part No.	Description	Schematic Location
1002069186	Condenser - 4 mfd. 150 V. electrolytic	C35	1004899511	Shaft and gear - pointer	
C36	Condenser - .01 mfd. 400 V.	C34	1005384982	Shield - tube, section (slotted end)	
C35	Condenser - .01 mfd. 400 V.	C35	1005384981	Shield - tube, section	
C36	Condenser - .0025 mfd. 750 V.	C37	1005386708	Socket - pilot light	
C39	Condenser - 8 mfd. 400 V. electrolytic	C38	1001888675	Socket - speaker	
C40	Condenser - 16 mfd. 450 V. electrolytic	C39	10058284	Speaker - 10"	
1001888650	Condenser - variable gang		10058286	Speaker - 12"	
1002069542	Connector - ground		10058287	Speed nut used on 1004489819 (each)	
1002069541	Control - volume (250 H. with switch)	R1	1005384983	Spring - dial glass shield	
1002069540	Control - tone (500 H.)	R2	1005384984	Spring - dial glass	
1004089450	Dial drive cord		1004581089	Spring - dial glass retainer	
1004589450	Dial scale		1004386918	Spring - escutcheon mounting used on 1004489816	
1005789193	Dial gear		1003786877	Switch - range	
1005789192	Diaphragm and voice coil assembly 10" sp.		1002888874	Terminal strip G.D.A.	
1004389514	Drum and bushing assembly		1005885068	Transformer - 8 ft. i.f.	
1004389515	Escutcheon - dial		1005384985	Transformer - 2 ft. i.f.	
1004489819	Escutcheon - dial		1001089532	Transformer - Power, 115 V. 50 cycles	
1005789198	Gasket 3/16" for 10" speaker		1001089532	Transformer - Power, 115 V. 25 cycles	
1005467034	Hex. nut 3/8" for 10" speaker		1001386903	Transformer - Output 10" sp.	
1003988604	Knob - range switch		1001386901	Transformer - Output 12" sp.	
1003988602	Knob - selectivity control		1005489551	Bracket - dial mounting	
1003988607	Knob - tone control		1005489552	Bracket - selectivity switch	
1003988601	Knob - tuning control		1005489553	Bracket - planetary support	
1004982716	Knob - volume control		1005489554	Cable and plug - retaining spring	
1004982718	Knob - volume control		1005489555	Cap - pointer shaft	
1005417615	Lockwasher 2 3/8" planetary		1002888592	Coil - antenna (B.C. & S.W. with shd. & trimmer)	
1005436437	Planetary - dial drive		1002888591	Coil - antenna (B.C. & S.W. with shd. & trimmer)	
1004589532	Plug - escutcheon		1002888590	Coil - R.F. (Police)	
1001888631	Plug - speaker		1002888589	Coil - osc. (B.C. & S.W. with shd. & trimmer)	
1001888632	Pointer and stud assembly		1001988606	Coil - osc. (Police)	
1004186923	Resistor - band spread	R3 R4 R5	1001988605	Condenser - .002 mfd. (mica)	
	Resistor - 1 1/2 megohm 1/4 watt		1001988604	Condenser - dual trimmer	
R7 R8 R9 R10	Resistor - 51,000 ohm 1/4 watt	C2 C3 C4	1001788596	Condenser - single trimmer	
R11	Resistor - 16,000 ohm 1/2 watt	C5 C6 C7	1001788597	Condenser - .08 mfd. 150 V.	
R12	Resistor - 16,000 ohm 1/2 watt	C8 C9 C10		Condenser - .02 mfd. 400 V.	
R13	Resistor - 2,100 ohm 1/4 watt	C11 C12	1001989525	Condenser - .00037 mfd. (mica)	
R14	Resistor - 2,100 ohm 1/4 watt	C13 C14	1001785285	Condenser - padding trimmer	
R16 R17	Resistor - 260,000 ohm 1/4 watt	C15 C16 C17	1001988597	Condenser - .0042 mfd. (mica)	
	Resistor - 760,000 ohm 1/4 watt		1001988596	Condenser - .00144 mfd. (mica)	
	Resistor - 160 ohm sect. 3 watt		1002089614	Condenser - .0011 mfd. (mica)	
R18A	Resistor - 20 ohm sect. 2 watt			Condenser - 8 mfd. 350 V. electrolytic	
R18B	Resistor - 13 ohm sect. 2 watt		1001988607	Condenser - .0017 mfd. (mica)	
R18C	Resistor - 31,000 ohm 1 watt		1001988606	Condenser - .25 mfd. 200 V.	
R19	Resistor - 510,000 ohm 1/4 watt		1001988605	Condenser - .012 mfd. 1,000 V.	
R20 R21	Resistor - 210,000 ohm 1/4 watt		1001988604	Condenser - .0028 mfd. (mica)	
R22 R23	Resistor - 330,000 ohm 1/4 watt			Condenser - .05 mfd. 200 V.	
R24	Resistor - 100,000 ohm 1/4 watt				
R25	Resistor - 100,000 ohm 1/4 watt				
R26	Resistor - 5,000 ohm 1/4 watt				
R27	Resistor - 5,000 ohm 1/4 watt				

Note: This escutcheon is mounted on cabinet with three escutcheon pins No. 1005436437 and three speed nuts No. 1005489837.