

Stewart-Warner Corp.

Model: R-119

Chassis:

Year: Pre March 1934

Power:

Circuit:

IF:

Tubes:

Bands:

Resources

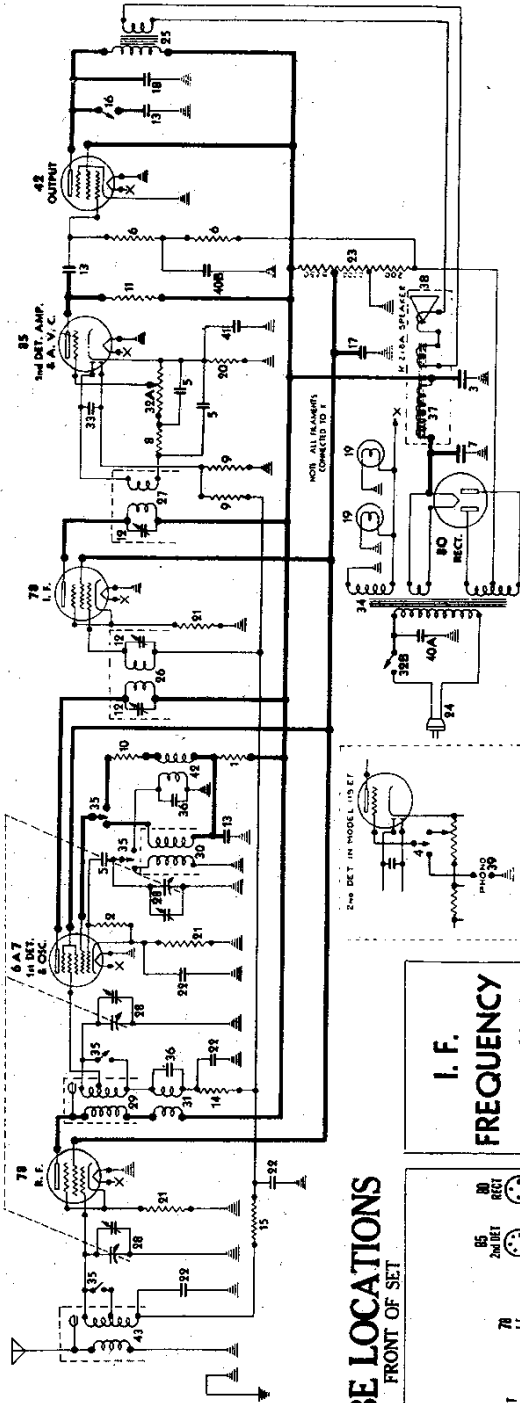
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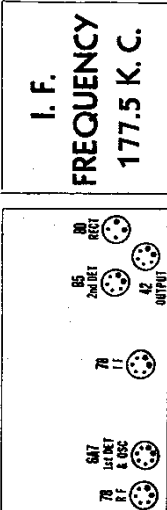
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MODEL R-119
Schematic, Voltage
Socket, Parts List

STEWART - WARNER CORP.



TUBE LOCATIONS
FRONT OF SET



I. F.
FREQUENCY
177.5 K. C.

R-119 PARTS LIST

Diag. Part No.	Description	List Price
1	20,000 ohm. 1 watt Carbon Resistor.....	80.25
2	50,000 ohm. 1/2 watt Carbon Resistor.....	25
3	8 Mfd. 50 volt. Wax Capacitor.....	25
4	Phonograph Switch (Note: Used in Model R-119 EF only).....	1.75
5	.00025 Mfd. Mica Fixed Condenser.....	1.00
6	250,000 ohm. 1/2 watt Carbon Resistor.....	.30
7	250,000 ohm. 1/2 watt Carbon Resistor.....	.20
8	10,000 ohm. 1/2 watt Carbon Resistor.....	.20
9	1.1 Megohm. 1/2 watt Carbon Resistor.....	.20
10	100,000 ohm. 1/2 watt Carbon Resistor.....	.20
11	100,000 ohm. 1/2 watt Carbon Resistor.....	.20
12	100,000 ohm. 1/2 watt Carbon Resistor.....	.20
13	.02 Mfd. 400 volt Fixed Condenser.....	.50
14	3000 ohm. 1/2 watt Carbon Resistor.....	.20
15	76,000 ohm. 1/2 watt Carbon Resistor.....	.25
16	Tune Control Switch.....	.25
17	100,000 ohm. 1/2 watt Fixed Condenser.....	.30
18	.01 Mfd. 400 volt Fixed Condenser.....	.30
19	6.3 volt Pilot Light Bulb.....	.10
20	10,000 ohm. 1/2 watt Carbon Resistor.....	.25
21	300 ohm. 1/2 watt Carbon Resistor.....	.25
22	300 ohm. 1/2 watt Carbon Resistor.....	.25
23	9250-10,000-200 Power Cord and Plug.....	1.30
24	Output Transformer.....	2.75
25	1st Intermediate Transformer Coil.....	1.25
26	2nd Intermediate Transformer Coil.....	1.25
27	3rd Intermediate Transformer Coil.....	3.25
28	Broadcast Int. Detector Coil.....	1.75
29	Short-Wave Int. Detector Coil.....	1.75
30	Short-Wave Int. Detector Coil.....	1.75
31	300,000 ohm Volume Control* In one unit.....	1.30
32	500 Mfd. 1000 voh. Fixed Condenser.....	.25
33	83436.....	.25
34	Power Transformer, 115 volts, 60 cycle (Note: See No. 83442 for 25-60 cycle 115-250 volt Transformer used in Model R-119 EF only).....	9.00
35	Range Switch (4 sections).....	3.75
36	25 Mmf/d. Fixed Condenser.....	1.10
37	Speaker Field and Hambraking Coil Assembly.....	2.50
38	Diaphragm, Voice Coil, Spider and Shell Assembly.....	2.75
39	Strip (Used in Model R-119 EF only).....	.15
40-A)	Power Transformer, 115-250 volts, 25-60 cycle (Note: Used on Model R-119-EF only).....	9.00
40-B)	.02 Mfd. 1000 volt Fixed Condenser in one unit.....	.75
41	10 Mfd. 100 volt Fixed Condenser.....	.75
42	10 Mfd. 25 volt Electrolytic Condenser.....	.75
43	Antenna Coil.....	1.00

MISCELLANEOUS PARTS NOT SHOWN ON DIAGRAM

- 67236 Rubber Drive Roller..... .02
- 81831 6 prong Tube Socket..... .15
- 81941 7 prong Tube Socket..... .20
- 81949 7 prong Tube Socket..... .05
- 83049 Button for covering trimmer hole..... .05
- 83405 Pilot Light Socket and Socket..... .30
- 83460 Pilot Light Socket and Socket..... .35
- 83461 Pilot Light Socket and Socket..... .35
- 83461 Enclosure for Model R-119-2..... .20
- 83497 Knob for Model R-119-2..... .20
- 83505 Knob for Model R-119..... .20
- R-218A Dynamic Speaker (8 inch)..... 6.75

Line Voltage VOLTAGE TABLE Volume Control Full On 115 A.C.

Type of Tube	Position in Circuit	Plate Voltage	Screen Grid Voltage	Control Voltage	Cathode Voltage
78	R. F.	260	104	3.2	3.2
6A7*	1st Det. & Osc.	260	104	3.0	3.0
78	I. F.	260	104	3.0	3.0
85	2nd Det.	50	-	17.5	0
42	Output	247	260	-1.8†	0
80	Rectifier	520	520 Volts to Ground	-	-

* Oscillator plate voltage 175; Oscillator grid voltage -5.
† Actual bias on 42 tube is 17.3 volts measured across 200 ohm section of voltage divider.
Speaker Field Voltage, 40.
All D. C. voltages are to be measured with respect to ground, using a high resistance voltmeter of 1000 ohms per volt. Readings will vary, depending upon voltage range of meter, being highest on the lowest range instruments. This variation is most marked for the screen grid voltage readings taken with set analyzers which will be different because such instruments generally measure voltages with respect to cathode.

STEWART-WARNER CORP.

MODEL R-119
Alignment

SERVICE DATA FOR MODEL R-119 CHASSIS

CIRCUIT DESCRIPTION

The Stewart-Warner Model R-119 Chassis is a six-tube super-heterodyne. It will cover the broadcast and short wave ranges from 530 to 3750 K. C. The tuning dial is calibrated from 530 to 1740 K. C. and a short wave range is provided through a switch on the back of the chassis, for reception up to 3750 K. C. (80 meters).

The R-119A Chassis is designed for operation on 115 volt, 60 cycle power circuits while the R-119EF is adaptable for use with voltages of 115, 125, 230, 240, or 250 at any frequency from 25 to 60 cycles. To accomplish this, the power transformer has two separate tapped primaries. The method of connecting these primaries is shown on a tag attached to the chassis. The R-119-EF chassis is wired for operation with a high impedance phonograph pick-up.

In the R-119A and EF chassis, the incoming signal is amplified by a stage of tuned radio frequency to improve selectivity and sensitivity, and to prevent image frequency interference. It then goes to the 6-A-7, first detector and oscillator, where its frequency is converted to 177.5 K. C.

The 177.5 K. C. intermediate frequency signal is amplified by the high gain I. F. stage, and is then rectified by the diodes of the 85 tube. Detection is accomplished by the diode connected directly to the I. F. transformer. A modulated D. C. voltage drop is produced across the 500,000 ohm potentiometer by the rectified current. The volume is controlled by selecting any desired portion of the A. F. voltage with the moving arm of the potentiometer which is connected to the grid of the 85-tubes. The triode section of this tube acts as an audio amplifier and is resistance-coupled to the 42 output tube.

Delayed A. V. C. is obtained by using the voltage drop produced by the rectified current of the second diode of the 85 tube, for bias on the 78 and 6A7 tubes. This diode, which is coupled to the I. F. transformer by a .002 mfd. condenser, is 17.5 volts negative with respect to the cathode since it is biased by the cathode bias resistor. Consequently, no rectification and no A. V. C. action can take place in this circuit until the incoming signal is strong enough to exceed this value. This represents the minimum signal capable of giving full audio output. Through the use of the delayed A. V. C. any signal which cannot be amplified to this minimum value is not reduced in volume by the action of the A. V. C. circuit.

Short wave reception is accomplished by shorting a portion of the antenna coil, shorting the secondary of the broadcast r. f. coil so that only the short-wave r. f. coil is active, and by switching in a short wave oscillator coil. These operations are performed by a single two-position switch located on the back of the chassis.

ALIGNING THE R-119 CHASSIS

Before attempting to align a set, the service man should become familiar with the general layout of the chassis and with the function and location of the various trimmer condensers. The following discussion briefly explains the action of each alignment step.

R. F. alignment and calibration are accomplished by the three trimmer condensers located on the top of the variable condenser gang. The oscillator is kept in exact step with the other R. F. circuits by the special shape of the stator plates in the oscillator tuning section.

Both windings of the first I. F. transformer are tuned but only the plate coil (primary) of the second I. F. transformer is tuned. The three I. F. tuning trimmers are mounted on the rear of the chassis and may be reached through holes which are covered with flat metal buttons. The buttons may be pried out with a knife or screw-driver.

EQUIPMENT AND PRELIMINARY STEPS

A good modulated oscillator and an output meter are essential for proper alignment. The attenuator on the oscillator must be capable of reducing the signal to a low value because the A. V. C. will function if the signal is too strong and thus make correct alignment impossible. The output meter must be sensitive enough to give a satisfactory reading with this low signal.

The output meter should be connected from the plate of the 42 tube to ground through a .25 mfd. condenser or across the speaker voice coil, depending upon the type used.

All alignment adjustments should be made with the volume control full on but with no broadcast signal being received.

ALIGNING THE I. F. CIRCUITS

An insulated, 1/4 inch socket wrench is needed for I. F. alignment since two of the trimmers are connected to B plus. A Stewart-Warner phasing tool (No. T-79890, net price 75c) should be used although a Spintite wrench insulated with tape so that it will not short to the chassis, can be employed.

The step-by-step routine given below should be carefully followed after reading the preceding instructions:

1. The modulated oscillator must be tuned exactly to 177.5 K. C. This frequency can be accurately determined by checking the oscillator harmonics against broadcast stations. First check the accuracy of the broadcast dial, and then tune in either the fourth or eighth harmonic of the 177.5 K. C. signal. If they come in at exactly 710 or 1420 K. C. the oscillator frequency is correct. To be sure that you have the harmonic of a 177.5 K. C. signal instead of some other frequency, tune in the other 177.5 K. C. harmonics on the broadcast dial. These should come in 177.5 K. C. on either side of the original setting. Do not use the oscillator calibration curve to determine this intermediate frequency.

2. Connect the oscillator output across the 6-A-7 grid cap and ground.

3. Set the oscillator output to give about half scale deflection on the output meter.

4. Adjust all three I. F. trimmer condensers, in each case tuning carefully to get maximum deflection of the output meter. Reduce oscillator output if output meter goes off scale.

It is very important that no inward or sideward pressure be applied to the alignment tool or the condenser may spring back to a different setting as soon as the tool is removed.

5. Repeat all three adjustments since the adjustment of each I. F. trimmer may affect the others to a certain extent. Replace buttons covering trimmer holes to prevent tampering.

ADJUSTING R. F. AND OSCILLATOR CIRCUITS

1. Connect a .0001 mfd. condenser from the blue aerial wire to the output of the oscillator, and ground both set and oscillator. Adjust the oscillator frequency to 1400 K. C. and carefully tune the receiver to give maximum output. Set the oscillator output to produce about half scale deflection of the output meter.

2. Carefully tune the radio frequency, "A" trimmer, which is the back one on the condenser gang, until the output meter reading reaches a maximum.

3. Retune the set and adjust the first detector "B" trimmer, which is the middle one, for maximum output. The oscillator, or "O" trimmer should not be touched unless the set is badly out of calibration at the high frequency end of the dial.

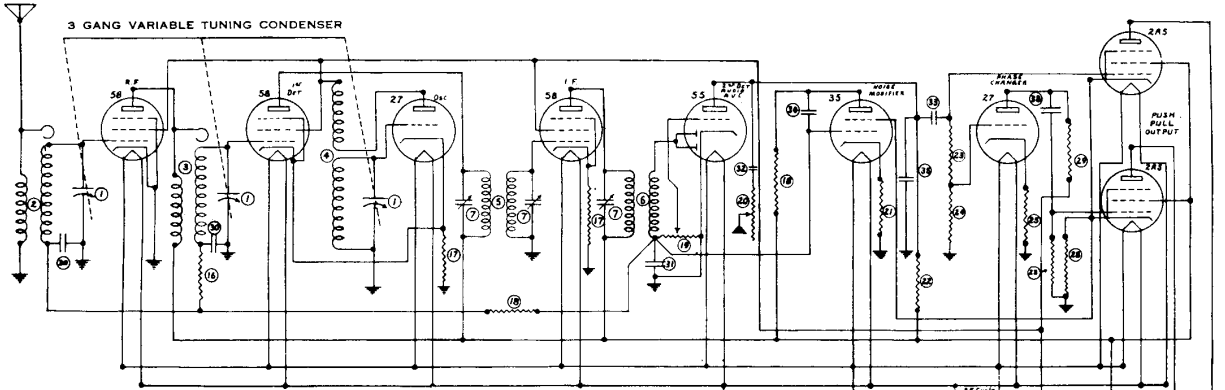
CALIBRATION

Calibration can be checked by arranging a wire pointer above the condenser shaft center and then tuning in several stations of known frequency. With the condenser plates fully meshed, the lowest dial division (530 K. C.) should line up with the pointer.

If the set is out of calibration, it can be re-calibrated as follows: Disconnect the test oscillator, connect an aerial to the blue wire, and set the tuning dial at the frequency reading of some station between 1200 and 1500 kilocycles, whose exact frequency is known and which can be picked up without any difficulty. Adjust the oscillator trimmer "O" until this station is brought in with maximum volume. Then use the modulated oscillator and output meter to re-adjust the "A" and "B" trimmers, since these are always affected by any change to the oscillator tuned circuit, taking care to retune the set between adjustments.

No adjustment is provided for aligning the set for the short wave band.

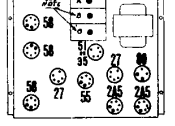
Models R110 a-b 1933-34



R-110-A & B 10 TUBE CHASSIS PARTS LIST

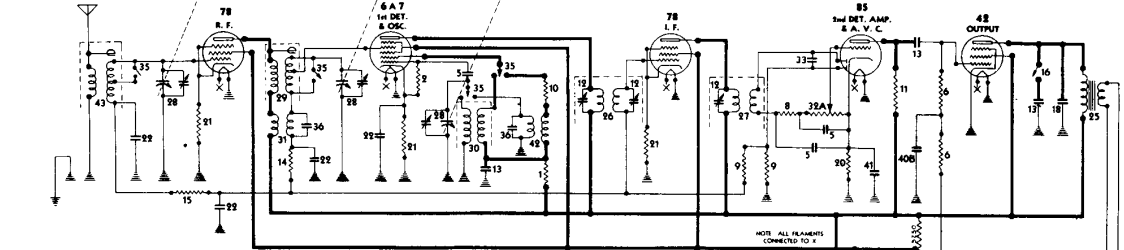
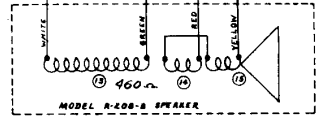
Diagram No.	Part No.	Description
1	81860	Variable tuning condenser
2	82825	Antenna tuning coil
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100	82825	Antenna tuning coil

TUBE LOCATIONS FRONT OF SET

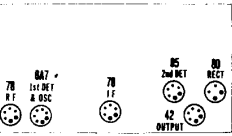


Intermediate Frequency Transformers Tuned to 177.5 K. C.

Type of Tube	Tube Circuit	Filament Voltage	Plate Voltage	Screen Grid Voltage	Bias Voltage
58	R. F.	2.4	280	80	...
58	1st Det.	2.4	280	80	9
27	Osc.	2.4	80	...	9
58	I. F.	2.4	280	80	...
55	2nd Det.	2.4	30	...	...
85	A.V.C.-Audio Noise Modifier	2.4	5	16.5	...
27	Phase Changer	2.4	30	...	...
2A5	Output Push	2.4	275	280	16.5
2A5	Pull Output	2.4	275	280	16.5



TUBE LOCATIONS FRONT OF SET



I. F. FREQUENCY
177.5 K. C.

R-119 PARTS LIST

Line No.	Part No.	Description	Diagram No.	Part No.	Description
1	67100	20,000 ohm, 1 watt Carbon Resistor	40-A	83476	.02 Mfd. 1000 volt Fixed Condenser
2	67301	75,000 ohm, 1/2 watt Carbon Resistor	40-B	83476	.05 Mfd. 1000 volt Fixed Condenser
3	67328	8 Mfd. 485 volt, Wet Electrolytic Condenser	41	83537	10 Mfd. 25 volt Electrolytic Condenser
4	73639	Photograph Switch (Note: Used in Models R-119 EF only)			
5	81157	.00025 Mfd. Mica Fixed Condenser			
6	81161	250,000 ohm, 1/2 watt Carbon Resistor			
7	81347	8 Mfd. 485 volt Wet Electrolytic Condenser			
8	81681	29,000 ohm, 1/2 watt Carbon Resistor			
9	81682	1.1 Megohm, 1/2 watt Carbon Resistor			
10	81727	1000 ohm, 1/2 watt Carbon Resistor			
11	81810	100,000 ohm, 1 watt Carbon Resistor			
12	81940	I. F. Trimmer Condenser			
13	83007	.02 Mfd. 600 volt Fixed Condenser			
14	83078	2000 ohm, 1/2 watt Carbon Resistor			
15	83081	76,000 ohm, 1/2 watt Carbon Resistor			
16	83179	Tone Control Switch			
17	83214	.25 Mfd. 250 volt Fixed Condenser			
18	83219	.01 Mfd. 600 volt Fixed Condenser			
19	83278	6.3 volt Pilot Light Bulb			
20	83285	10,000 ohm, 1/2 watt Carbon Resistor			
21	83298	300 ohm, 1/2 watt Carbon Resistor			
22	83353	.05 Mfd. 100 volt Fixed Condenser			
23	83398	9250-10,000-200 ohm Voltage Divider			
32-A	83424	1500,000 ohm Volume Control			
32-B	83424	(Line Switch)			
33	83436	.002 Mfd. 1000 volt, Fixed Condenser			

Type of Tube	Position in Circuit	Filament Voltage	Plate Voltage	Screen Grid Voltage	Control Grid Voltage	Cathode (Bias) Voltage
78	R. F.	6.1	260	104	...	3.2
6A7*	1st Det. & Osc.	6.1	260	104	...	3.0
78	I. F.	6.1	260	104	...	3.0
85	2nd Det.	6.1	50	...	...	17.5
42	Output	6.1	247	260	-1.8†	0
80	Rectifier	5.1	320 Volts D. C. From Filament to Ground	...	...	...

* Oscillator plate voltage 175; Oscillator grid voltage -5.
† Actual bias on 42 tube is 17.3 volts measured across 200 ohm section of voltage divider.
‡ Speaker Field Voltage, 60.

MODEL R-119 CHASSIS 1933-34

DATA SHEET

PRINTED IN CANADA

COURTESY
STEWART-WARNER 16
ALEMITE CORP. LTD.