

## Stewart-Warner Corp.

**Model:** R-115

**Chassis:**

**Year:** Pre March 1934

**Power:**

**Circuit:**

**IF:**

**Tubes:**

**Bands:**

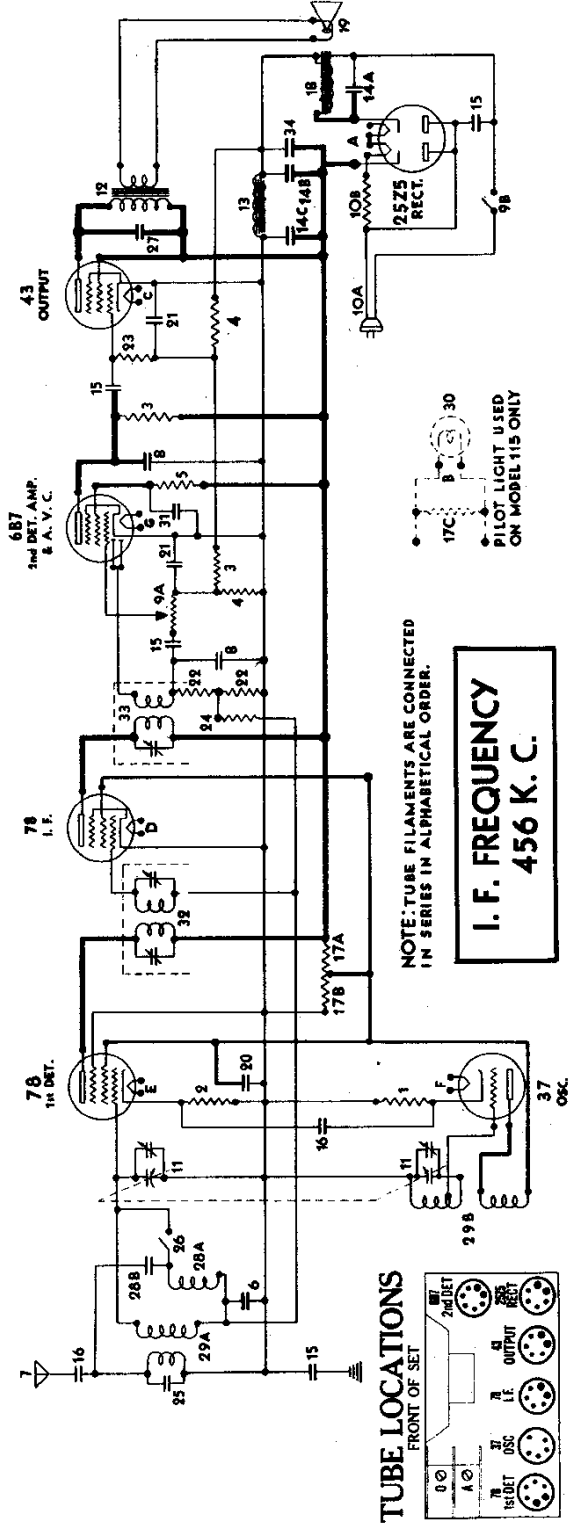
### Resources

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STEWART-WARNER CORP.

MODEL R-111, R-115  
Schematic, Voltage  
Socket, Parts List



R-111 AND R-115 PARTS LIST

Diag. Part No.	Description	List Price
1	500 ohm 1/2 watt resistor	.25
2	4000 ohm 1/2 watt resistor	.20
3	250,000 ohm 1/2 watt resistor	.25
4	150,000 ohm 1/2 watt resistor	.25
5	150,000 ohm 1/2 watt resistor	.25
6	300 ohm 100 watt resistor	.30
7	Antenna wire per 100 ft.	.70
8	.00051 mfd. mica fixed condenser	.25
9A	500,000 ohm volume control	.25
9B	(Use in Model 111) Power cord and plug	.70
10A	(Use in Model 111) Including filament series resistor	.85
10B	(Use in Model 115)	.70
11	Two gang variable tuning condenser	.85
12	Separate transformer on 217-A speaker	2.50
13	600 ohm 1 watt resistor	2.00
14A	13 mfd. 50 volt electrolytic	1.75
14B	13 mfd. 50 volt electrolytic	2.20
14C	13 mfd. 50 volt electrolytic	2.50
15	100 ohm 1 watt resistor	.20
16	300 ohm 1 watt resistor	.25
17A	2500 ohm 1 watt res. In one unit	.50
17B	2500 ohm 1 watt res. In one unit	.50
17C	2500 ohm 1 watt res. In one unit	.50
18	Field coil and housing for 217-A speaker	2.75
19	Diaphragm, voice coil, shell and spider assembly	1.75
20	5 mfd. 100 volt paper fixed condenser	.45
21	510,000 ohm 1/2 watt resistor	.20
22	260,000 ohm 1/2 watt resistor	.20
23	1 mfd. 50 volt electrolytic	.25
24	1 mfd. 50 volt electrolytic	.25
25	Short wave coil	.30
26	Short wave coil	.30
27	91 mfd. 600 volt paper fixed condenser	.30
28A	Short wave coil	.30
28B	Short wave coupling condenser	.60
29A	Antenna coil	1.25
29B	Pilot bulbs (6.3 volt). Used on Model 115 only	.15
30	Including filament series resistor. See part No. 83295 for Model 111. See part No. 83305 for Model 115	.85
31	Model 115 12500 ohm 1/2 watt res.	.70
32	Model 115 20 ohm ballast res.	.20
33	(See Part No. 83029 for Model 111)	.20
34	24 I.F. transformer with trimmers	2.00
35	12 mfd. 100 volt dry electrolytic condenser	1.30

Tube of Type	Position in Circuit	Filament Voltage	Plate Voltage	Screen Grid Voltage	Control Grid Voltage	Volume Control	Carthode (Bias) Voltage
78	Int. Det.	5.4	98	59	-0.4	5.8	0
87	Onc.	5.3	58	0	0	5.6	0
78	I. F.	5.7	98	59	-0.4	0	0
43	Output	20.	91	98	-2.0	0	0
25Z5	Rect.	22.	-21	-21	-21	70 (5pk.)	89
6B7	2nd Det.	5.4	21	37	-0.5	0	0

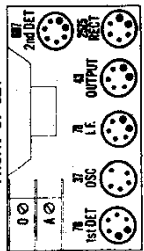
IMPORTANT: All D. C. voltages measured with respect to condenser frame, using high resistance voltmeter of 500 ohms per volt or higher. Do not use lower range instruments. This variation is most marked for second detector plate voltages.

NOTE: The 0.4 Volt from Diode of 6B7 to Ground. Speaker field voltage 70. The 10 to 15% variation in the above voltages will be about 10 to 15% lower with the exception of the speaker field voltage which will be about 85 and the filament voltages which will be the same. The A. C. filament voltages will depend upon the meter range and resistance.

NOTE: TUBE FILAMENTS ARE CONNECTED IN SERIES IN ALPHABETICAL ORDER.

I. F. FREQUENCY 456 K. C.

TUBE LOCATIONS FRONT OF SET



MISCELLANEOUS PARTS NOT LISTED ON DIAGRAM

81824	Antenna reel	.80-25
81834	6-prong tube socket	.10
81841	Antenna reel clip	.02
81899	Knob (Used on Models 1116-7-8)	.45
81949	7-prong tube socket	.10
81951	5-prong tube socket	.10
82345	Tuning capacitor	.30
82346	Volume control capacitor	.30
82352	Knob (Used on Model 1119)	.25
82356	Volume control capacitor	.30
82397	Pilot light socket	.15
82399	Pilot light socket and bracket assembly	.15
83304	Knob (Used on Model 115)	.25

MODEL R-111, R-115  
Alignment

STEWART - WARNER CORP.

# SERVICE DATA FOR MODELS 111 AND 115 CHASSIS

## CIRCUIT DESCRIPTION

The Models 111 and 115 Stewart-Warner Radio Chassis are identical except that the 115 has a pilot light inserted in the filament circuit. These models use a six-tube superheterodyne circuit employing automatic volume control (A.V.C.) through the action of the type 6-B-7 detector tube. They are designed for operation on 110-120 volt D.C. or 60 cycle A.C. power supplies. In addition to the regular broadcast band, these sets are designed to receive signals on the 175 and 120 meter police bands. In operation, the incoming signal is first passed to the tuned first detector circuit and then beats with the oscillator output to produce a 456 K. C. intermediate frequency signal.

The I.F. signal is amplified in an exceptionally high gain stage and then fed to the diodes of the 6-B-7 tube where it is rectified. The rectified current produces a modulated D.C. voltage drop across the two resistors No. 22. This audio modulation is impressed across the 500,000 ohm potentiometer. Any desired portion of the A.F. voltage is picked up by the moving arm of the potentiometer and applied to the grid of the 6-B-7 tube. The pentode section of the tube then acts as an A.F. amplifier. Good tone quality is made possible by the resistance-coupling and by the high power output of the 43 tube.

The necessary A.V.C. potential is taken from the mid-tap of the two resistors, No. 22, smoothed out by a resistance-capacity filter, and applied as a bias to the grids of the first detector and I. F. amplifier tubes. Thus as the incoming signal increases or decreases in strength, the bias is raised or lowered proportionally and the audio output of the set is maintained at a constant value.

## ALIGNING THE 111 AND 115 CHASSIS

Alignment can be carried out intelligently only if the service man knows the general layout of the set, and how each circuit is affected during the process of alignment. The simplified top view of the chassis appearing on the other side of this sheet gives the layout of the receiver. The following brief discussion of what actually happens during alignment should be carefully read, using the sketch as a basis before commencing the actual work.

## LOCATION AND FUNCTION OF ALIGNING ADJUSTMENTS

The first detector and oscillator circuits are aligned by the two trimmers, "A" and "O"; and are kept in exact step by the special shape of the rotor plates of the oscillator tuning condenser. This shaping of the plates makes it unnecessary to use a padding condenser for low frequency alignment.

For the reception of police calls and other short wave signals, a switch, No. 26, shunts an additional coil (No. 28A) across the first detector tuned circuit, thus making it tune to higher frequencies. The constants are such that it tunes to exactly 456 K. C. ABOVE the oscillator frequency and thus a 456 K.C. I.F. signal is produced on the short waves with no change in the oscillator circuit.

The first intermediate frequency (I.F.) transformer is a tuned-input, tuned-output type and each winding is tuned by a separate trimmer condenser. In the second I.F. transformer only the primary is tuned by a trimmer.

The I.F. transformers are located under the chassis in the front and the trimmers may be reached through holes in the front of the chassis.

## PRELIMINARY STEPS IN ALIGNING

In aligning the Models 111 and 115 it is essential to use a high grade oscillator and sensitive output meter. The R.F. signal fed into the receiver must be very weak or it will cause the A.V.C. circuit to function, making correct alignment impossible. The output meter must be sufficiently sensitive to give a satisfactory reading with this low signal.

Before starting the alignment procedure see that the volume control is full on, and the output meter connected either between the 43 plate and the frame of the tuning condenser thru a .25 mfd condenser or across the voice coil, depending upon its sensitivity. Do not hook the output meter to the chassis.

## ALIGNING PROCEDURE

With this preliminary discussion clearly in mind, the actual alignment can be started. The following step-by-step routine should be followed for satisfactory results:

1. A modulated oscillator having a fundamental frequency of 152, 228, or 456 K.C. is needed to align the 456 K.C. intermediate frequency trimmers. Do not use the oscillator calibration curve to determine the frequency but determine by checking against broadcast stations. With the oscillator set at 152 K.C., the third harmonic is used for aligning and the fifth harmonic is 760 K.C. Thus if a 760 K.C. station is tuned in, the oscillator can be accurately adjusted by beating its fifth harmonic with the station.

To be sure that you have the harmonic of the 152 K.C. signal, tune in the other harmonics on the broadcast dial. These should come in 152 K.C. on either side of the original setting. With a 228 or 456 K.C. oscillator a similar procedure can be followed using a 910 K.C. station. (The exact frequency to be used is 912 K.C. but 910 will be close enough).

2. Connect the oscillator output from the grid cap of the first detector tube to the frame of the variable condenser.
3. Adjust the oscillator output to give about one-half full scale deflection of the output meter.

## ADJUSTING THE I. F. CIRCUITS

1. Adjust all three I.F. trimmer condensers, in each case tuning carefully to make sure that maximum deflection is obtained on the output meter. A screwdriver can be used for this operation on some sets but in others the first I.F. transformer has a double trimmer consisting of a slotted screw for one trimmer and a hex. nut around it for the other. If a suitable aligning tool is not available, we can furnish one, Part No. T-79800, priced at 50c net.

IT IS VERY IMPORTANT THAT ABSOLUTELY 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.

2. Go back and repeat all three adjustments since the adjustment of each I.F. trimmer affects the others to a certain extent, thus necessitating readjustment.

## ADJUSTING THE R. F. AND OSCILLATOR CIRCUITS

Connect the aerial wire to the output of the oscillator and connect both set and oscillator to ground through a condenser of .1 mfd. or more. Do not omit this series condenser because the set is directly connected to the 110 volt line. Adjust the oscillator frequency to 1400 K.C. and carefully tune the receiver to give maximum output. Adjust the oscillator output to produce about one-half full scale deflection of the output meter.

2. Adjust the "A" first detector trimmer for maximum output. The oscillator, or "O" trimmer should not be touched unless the set is out of calibration at the high frequency end of the dial.