Models 31, 32

The "Richelieu"

Radio Receiver

Specifications

Frequency Range:

Broadcast

I.F.:

175 K.C.

Tubes:

Type	Position
235	1st Detector
227	Oscillator
235	I.F. Amplifier
224	2nd Detector
247	Audio
280	Rectifier

Power Supply:

Model 31—105-120 volts A.C. 60 cycles
Model 32—105-120 volts A.C. 25 cycles

Controls:

Left—"On-Off" and Volume
Centre—Tuning
Right—Tone

Alignment Instructions:

1. Ground antenna lead.

   Set volume control to maximum, tone control to treble.

   Set signal generator to 175 K.C. and connect output to control grid of Type 235 I.F. amplifier.

   Tune C-9 for maximum output.

2. Similarly connect output to control grid of Type 235, 1st Detector Tune C-7 and C-8, re-check C-9.

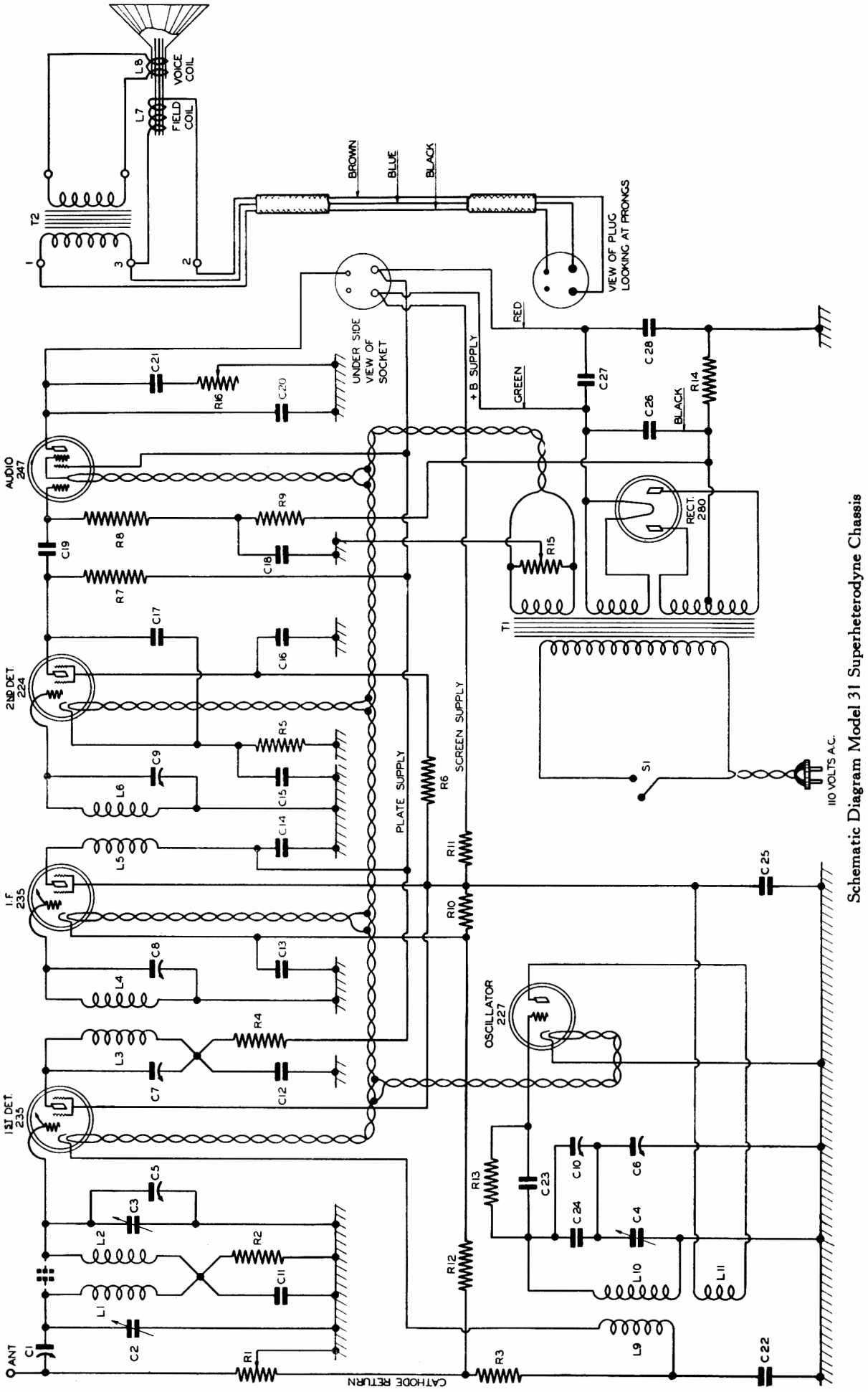
3. Set receiver dial to 550 K.C. Set signal generator to 1400 K.C. and connect output to control grid of Type 235 1st detector tube. Tune C-6.

4. Set receiver dial to 600 K.C. Set signal generator to 600 K.C. and connect output to control grid of Type 235 1st detector tube.

   Tune C-10.

   Re-check C-6 as above.

5. Set receiver and signal generator to 1400 K.C. and connect to antenna lead of receiver. Tune C-1 and C-5.



Schematic Diagram Model 31 Superheterodyne Chassis

NOMENCLATURE

R-1 Volume Control 10,000 ohms
R-2 Coupling Resistor 1,000 ohms
R-3 1st Det. Cathode Resistor 5,000 ohms
R-4 1st Det. Plate Resistor 1,000 ohms
R-5 2nd Det. Cathode Resistor 50,000 ohms
R-6 2nd Det. Screen Resistor 2 megohms
R-7 2nd Det. Plate Resistor 1 megohm
R-8 Audio Grid Resistor ½ megohm
R-9 Extra Audio Grid Resistor, 100,000 ohms
R-10 Divider Resistor 20,000 ohms
R-11 Screen Supply Resistor 30,000 ohms
R-12 I.F. Cathode Resistor 300 ohms
R-13 Oscillator Grid Resistor 100,000 ohms
R-14 Audio Bias Resistor 350 ohms
R-15 Mid Tap Resistor
R-16 Tone Control 0-20,000 ohms

C-1 Antenna Trimmer
C-2, C-3, C-4 Gang: Tuning Condenser (First Stage Preselector); Tuning Condenser (Second Stage Preselector); Oscillator Tuning Condenser
C-5 Trimming Condenser for second stage Preselector
C-6 Trimming Condenser (on gang) (Oscillator Shunt)
C-7 Alignment Condenser (Primary 1st Transformer I.F. Amplifier)
C-8 Alignment Condenser (Secondary 1st Transformer I.F. Amplifier)
C-9 Alignment Condenser (Secondary 2nd Transformer I.F. Amplifier)
C-10 Oscillator Series Trimming Condenser
C-11 R.F. Coupling Condenser .05 mfd.
C-12 1st Det. Plate By-Pass .05 mfd.
C-13 I.F. Cathode By-Pass .05 mfd.
C-14 I.F. Plate By-Pass .05 mfd.
C-15 2nd Det. Cathode By-Pass .5 mfd.
C-16 2nd Det. Screen By-Pass .25 mfd.
C-17 2nd Det. Plate By-Pass .0001 mfd.
C-18 Audio De-coupling Condenser .02 mfd.
C-19 Audio Coupling Condenser .006 mfd.
C-20 Audio Plate Condenser .01 mfd.
C-21 Tone Selector Condenser .05 mfd.
C-22 Cathode By-Pass Condenser .05 mfd.
C-23 Oscillator Grid Condenser .0001 mfd.
C-24 Oscillator Series Tuning Condenser .0011 mfd.
C-25 Screen By-Pass Condenser 8.0 mfd.
C-26 Filter Condenser 3.5 mfd.
C-27 Field Coil Tuning Condenser .08 mfd.
C-28 Filter Condenser 3.5 mfd.

S-1 Main Switch

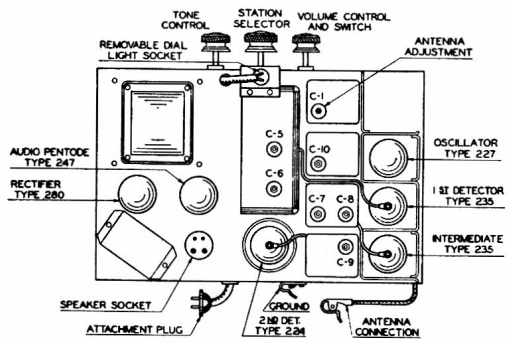
T-1 Power Transformer
T-2 Output Transformer

L-1 Antenna Coil (Tuned Preselector Stage)
L-2 R.F. Coil (Tuned Preselector Stage)
L-3 Primary Coil First Transformer I.F. Amplifier
L-4 Secondary Coil First Transformer I.F. Amplifier
L-5 Primary Coil (untuned) Second Transformer I.F. Amplifier
L-6 Secondary Coil Second Transformer I.F. Amplifier
L-7 Speaker Field
L-8 Speaker Voice Coil
L-9 Oscillator Coupling Coil
L-10 Oscillator Grid Coil
L-11 Oscillator Plate Coil

SOCKET VOLTAGES AND CURRENT READINGS—"RICHELIEU" MODEL

Stage	Tube	Fil. Volts	Plate	Screen	Cathode	Control Grid	"C" Bias	Normal Plate Mils.	Grid Change Plate Mils
1st Detector	235	2.4	245	75	10.5	12	—	2	4
Oscillator	227	2.4	65	—	—	—	—	6	6.5
Intermediate Frequency	235	2.4	245	80	3.5	4	—	6.5	8.5
2nd Detector	224	2.5	55	10	2	4	—	.1	.15
Audio	247	2.5	245	250+	—	—	*1.5	31	34
Rectifier	280	4.8	H. T. Sec. 700	—	—	—	—	No. 1 Plate—28	No. 2 Plate—30

Line Voltage 116 volts. Volume Control on maximum.
Tone control on treble.
* (asterisk) This reading is incorrect due to high resistance—read 14-16 volts.



(I.F. 175 K.C.)
"RICHELIEU" MODEL CHASSIS

SERVICE

I.F. coils L-5 and L-6 are close wound. Where shorts occur replacement should be made with I.F. coil part No. 102568. R-11—the screen supply resistor (30,000 ohms)—should be 2 watts rating. Hum modulation on this receiver can be corrected by connecting buffer condenser part No. K-853 (in metal can) across one side line.