

ENGINEERING DATA
STROMBERG-CARLSON NOS. 410 AND 411 RADIO RECEIVERS

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
ROCHESTER, NEW YORK

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IDENTIFICATION TABLE

Model	Input Power	Frequency	Chassis	Cabinet	Speaker
410-H	50-60	Cycles	30302	30361	30304
410-HB	25-60	Cycles	30303	30361	30304
410-J	50-60	Cycles	30302	30478	30304
410-JB	25-60	Cycles	30303	30478	30304
410-T	50-60	Cycles	30302	30459	30304
410-TB	25-60	Cycles	30303	30459	30304
411-PF	60	Cycles	30629	30603	30304
411-PFB	25	Cycles	30630	30603	30304
411-PT	60	Cycles	30629	30604	30304
411-PTB	25	Cycles	30630	30604	30304

SPECIFICATIONS

Type of Circuit	Superheterodyne with Electric Tuning
Tuning Ranges	A—540 to 1700 Kc. C—5800 to 18,000 Kc.
Number of Tubes	Five
Type of Tubes	6A8G, Modulator and Oscillator 6K7, I. F. Amplifier 6SQ7, Demodulator, A. V. C., and Audio Amplifier 6F6G, Output 80, Rectifier
Voltage Rating	105 to 125 Volts
Power Frequency Rating	Standard 50-60 Cycles, also available 25-60 Cycles
Input Power Rating	52 Watts
Intermediate Frequency	455 Kilocycles
Speaker Voice Coil Impedance at 400 Cycles	Approximately 5 Ohms
Speaker Field Coil Resistance	1000 Ohms

FEATURES

General

This is a five tube, two gang, two range receiver with the 1600 to 1700 Kc. police band included in the broadcast range. Provision is made for a record player to be used with the No. 410 Receivers without additional wiring.

The No. 411 Receivers are equipped with a single record phonograph unit using a crystal pick-up in conjunction with a specially equalized circuit. The phonograph unit is designed to play the standard 10 or 12 inch 78 R.P.M. records.

Tone is adjusted on the No. 410 Receivers by a step tone control and on the No. 411 Receivers by a variable tone control. The dial is of the slide rule type edge lighted to provide visibility without glare.

The chassis is designed to provide the maximum in sensitivity and tone quality for a set of this type. The selectivity and freedom from interference should be satisfactory under all normal reception conditions.

Special Circuits

Iron core coils are used in the oscillator and antenna circuits to provide greater stability. The high frequency end of each band is spread out by means of special capacitor plates, to provide greater ease in tuning.

Phonograph Operation (410)

A socket is provided on the back of the chassis into which a record player may be plugged, and a switch is provided on the front of the chassis for switching from "Radio" to "Phonograph".

Television (411 Receivers only)

Switching to "Phonograph" also makes the audio amplifier and loud speaker available for use with television receivers designed for this type of sound reproduction.

ACCESSORIES

Antenna

For best results use a Stromberg-Carlson Antenna. These Antennas are supplied in kits containing all the necessary parts for mounting and installation.

Playing Records (410 Receivers only)

To obtain the best quality of phonograph reproduction a Stromberg-Carlson record player is recommended. They are designed for use with this receiver, and all that is necessary is to connect the record player to the single prong socket provided in the chassis, tune the receiver to a quiet place on the dial scale and proceed to operate. The volume may be controlled with the volume control at the receiver, or (if such is provided) with the volume control on the record player.

A low impedance pick-up may also be used, but a matching transformer must be placed between the phonograph pick-up and the chassis.

Headset Attachment

Headphones can be very simply attached to this receiver. Ask for Pc. No. 28303 Headset Package Assembly, which comes complete with headphones and installation instructions.

Care of Cabinet

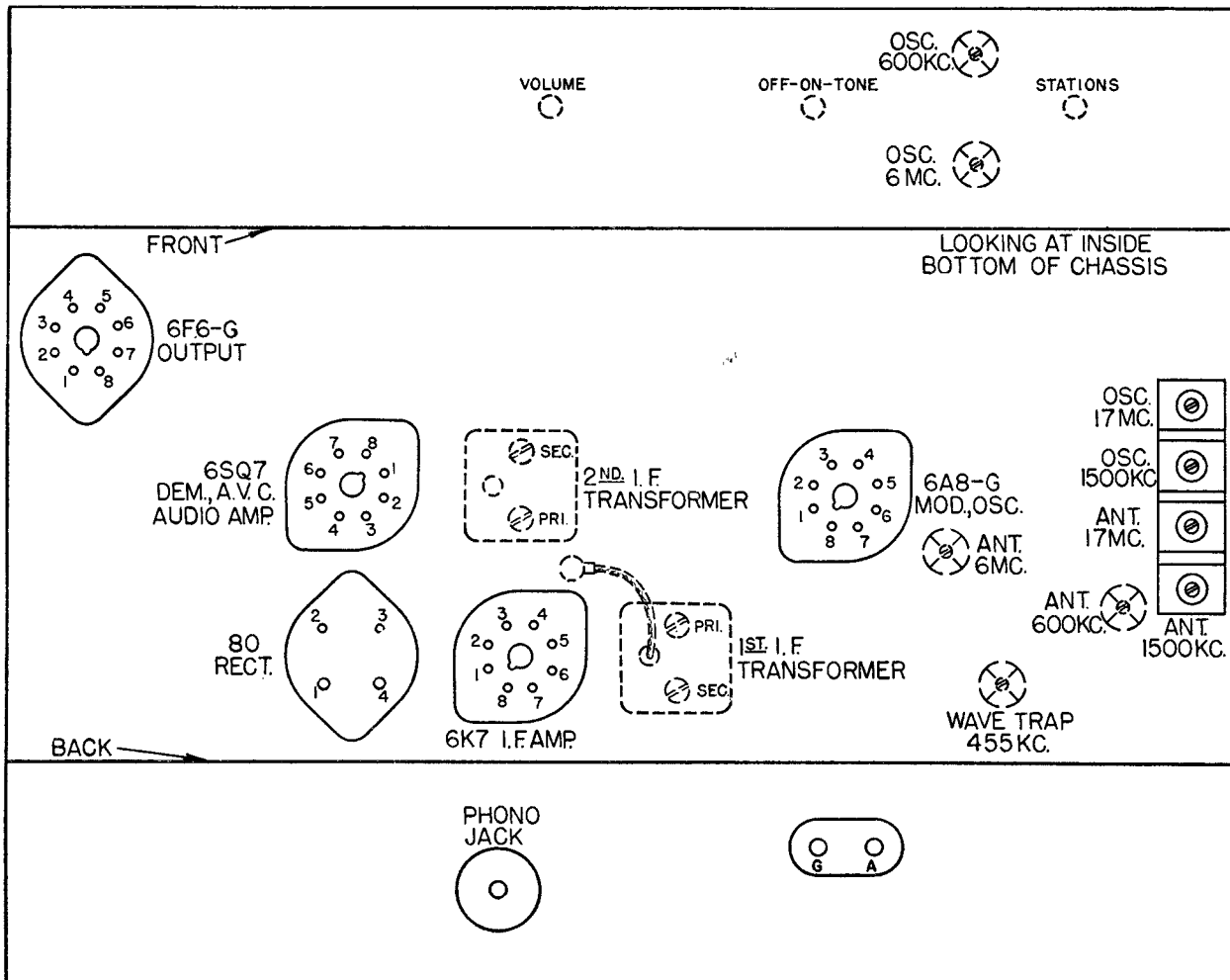
The finish of Stromberg-Carlson Cabinets should be protected by using Stromberg-Carlson Cabinet Polish regularly. It is available in pint cans, designated as Pc. No. 28601.

Nicks and scratches of most kinds can be repaired quickly and easily by proper use of the Pc. No. 26962 Touch-Up Kit. Complete instructions are provided with each kit.

Tools

Stromberg-Carlson can supply all the tools required for working on these sets. For example:

- SD-29 Phillips Head Screwdriver
- No. 24608 Aligning Tool
- Also pliers, cutters, screwdrivers, etc.



Location Chart

ALIGNING INFORMATION

NEVER ALIGN UNLESS ABSOLUTELY NECESSARY.

Use a good modulated signal generator (test oscillator) with variable output voltage and a sensitive output meter across the voice coil of the speaker.

Always align using the smallest possible input from the signal generator (except when wave trap adjustment is made). A strong signal makes adjustments inaccurate.

Always have receiver volume control full on.

Never align with tone control in "Bass" position.

See location chart on Page 3 for location of all the aligning adjustment screws.

Aligning Procedure (follow this order exactly)

I. Dial pointer adjustment.

With the plates of the gang tuning capacitor fully engaged, set the dial pointer directly on the vertical line located at the extreme low frequency end of the short-wave band.

II. Intermediate frequency adjustments.

1. Set the range switch to Standard Broadcast position.
2. Tune set to extreme low frequency end of the dial.
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce a modulated signal of 455 Kilocycles to the grid cap of the 6A8G Tube, using a 0.1 microfarad capacitor in series with the output lead of the signal generator. (Do not remove the grid clip from this tube.)
5. Adjust the I. F. Aligners for maximum output in the following order:
 - A. Secondary of second I. F. transformer.
 - B. Primary of second I. F. transformer.
 - C. Secondary of first I. F. transformer.
 - D. Primary of first I. F. transformer.

III. Radio frequency adjustments.

Short Wave Range (C Band)

1. Replace the 0.1 microfarad capacitor in series with the output lead of the signal generator with a 400 ohm carbon type resistor, and connect it to the antenna terminal of the chassis.
2. Set the range switch to the short-wave range (C Band).
3. Set the signal generator frequency and the receiver tuning dial to 6 megacycles.
4. Adjust the 6 megacycles oscillator and antenna (iron cores) for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 17 megacycles.
6. Adjust the 17 megacycles oscillator and antenna aligning capacitors for maximum signal.
7. Repeat operations three and four.
8. Repeat operations five and six.

Standard Broadcast Range (A Band)

1. Replace the 400 ohm carbon type resistor in series with the output lead from the signal generator with a 200 micro-microfarad capacitor.
2. Set the range switch to the Standard Broadcast Range (A Band).
3. Set the signal generator frequency and the receiver tuning dial to 600 Kc.
4. Adjust the 600 Kc. oscillator and antenna (iron cores) for maximum signal.

5. Set the signal generator frequency and the receiver tuning dial to 1500 Kc.
6. Adjust the 1500 Kc. oscillator and antenna aligning capacitors for maximum signal.
7. Repeat operation three and four.
8. Repeat operation five and six.

IV. Wave Trap Adjustment.

(Leave the receiver connected in the same manner as when adjusting the Standard Broadcast Range ("A" Band)).

1. Tune set to 1000 Kc.
2. Set the signal generator frequency to 455 Kc. and introduce a fairly strong modulated signal to the receiver.
3. Adjust the wave trap aligner for minimum signal.

ADJUSTING DIAL LAMP

The dial on this receiver is edge lighted, and for proper illumination it is **very important** that the dial light be adjusted so that the filament is exactly opposite the edge of the glass.

To make this adjustment simply slide the pilot light socket back and forth on its mounting bracket until maximum illumination is obtained.

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned to 1000 Kc.—no signal.

Use a line voltage of 120 volts, or make allowance for the variation.

Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt.

Take all D. C. readings on the 500 volt scale except when an asterisk appears.

Read from indicated terminals to chassis base.

See location chart on Page 3 for position of terminals.

A. C. voltages are indicated by italics.

Tube	Circuit	Cap	Terminals of Sockets								Heater Voltages Between Heater Terminals	
			1	2	3	4	5	6	7	8	Terminal Numbers	Volts A. C.
6A8G	Mod.—Osc.	0	0	0	+260	+100	—	+180	6.5	+3*	2-7	6.5
6K7	I. F. Amp.	0	0	0	+260	+100	+3*	+270	6.5	+3*	2-7	6.5
6SQ7	Dem.—A. V. C. —Audio	—	0	—	0	—	—	+100	6.5	0	7-8	6.5
6F6G	Output	—	0	0	+240	+260	—	—	6.5	+15	2-7	6.5
80	Rectifier	—	+330	315	315	+330	—	—	—	—	1-4	5

*Read on lowest possible scale of voltmeter.

CONTINUITY TEST

CAUTION: Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Use a good meter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to electrolytic capacitors in the circuit.

When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base unless otherwise specified.

See location chart on Page 3 for position and numbering of terminals.

TERMINALS OF SOCKETS

Tube	Circuit	Cap	1	2	3	4	5	6	7	8
6A8G	Mod.—Osc.	1.5M	S	S	26,000 Ω	85,000 Ω	50,000 Ω	60,000 Ω	S	150 Ω
6K7	I. F. Amp	1.5M	S	S	25,000 Ω	110,000 Ω	150 Ω	35,000 Ω	S	150 Ω
6SQ7	Dem.—A. V. C. —Audio	—	S	10M	S	550,000 Ω	550,000 Ω	300,000 Ω	S	S
6F6G	Output	—	S	S	25,000 Ω	25,000 Ω	1M	*	S	400 Ω
80	Rectifier	—	26,000 Ω	250 Ω	250 Ω	26,000 Ω	—	—	—	—

Symbols used on chart are as follows: Ω —ohms; M—megohms; S—short; O—open.

* Tone control in "Treble" position—1 megohm.

Tone control in "Bass" position—"short".

Other Tests Not Shown on Chart

Antenna terminal to chassis base—70 ohms.

Ground terminal to chassis base—"short".

Phono terminal to chassis base—500,000 ohms.

Between terminals of AC plug:

AC switch open—"open".

AC switch closed—8 ohms.

Terminals of AC plug to chassis base—"open".

R. F. coil tests measured directly across R. F. coil terminals with range switch set in Standard Broadcast Position (A Range).

L3—3 ohms; L4—"short"; L5—"short"; L6—.5 ohm; L7—4 ohms; L8—.1 ohm; L9—"short".

REPLACEMENT PARTS

Use genuine Stromberg-Carlson parts. It will be to your advantage. They are made for use in Stromberg-Carlson receivers. The specifications are correct and the same high quality material and workmanship is used as in the whole radio receiver. Don't ruin a good receiver with an inferior part.

Capacitors

Piece Number	Circuit Designation	Part
24559	C-26	100 mmf.
24637	C-14	.0017 mf.
24994	C-10	.05 mf.
25054	C-48 (411 only)	150 mmf.
25149	C-1 (C-49, 50—411 only)	.01 mf.
25487	C-12	.001 mf.
25533	C-29	.006 mf.
26512	C-23, 24	2—100 mmfs.
27108	C-19, 20, 21, 22	2—.05 mfs.
27305	C-11	50 mmf.
29973	C-34	.25 mf.
30116	C-9	.003 mf.
30237	C-13	385 mmf.
30322	C-25, 27, 28	.005 mf.
30374	C-7, 8	Variable Capacitor (2 gang)
30399	C-30, 31, 32, 33	1—40 mf. 450 V; 1—15 mf. 350 V; 1—15 mf. 300 V; 1—20 mf. 25 V
30433	C-3, 4, 5, 6	Aligner Assembly

Coils, Transformers and Speaker

30238	L-1; C-2	Wave Trap
30149	L-3	Antenna Coil "A" Band
30150	L-6, 7	Oscillator Coil "A" Band
30401	L-4, 5	Antenna Coil "C" Band
30402	L-8, 9	Oscillator Coil "C" Band
30332	L-2	R. F. Choke Coil
30395	L-18, 19, 20, 21	Power Transformer 50/60 Cycles
30396		Power Transformer 25/60 Cycles
30127	L-10, 11; C-15, 16	1st I. F. Transformer
30405	L-12, 13; C-17, 18	2nd I. F. Transformer
30304	L-14, 15, 16, 17	Speaker and Output Transformer
30528		Speaker Cone
30522	L-14, 15	Output Transformer

REPLACEMENT PARTS—Continued

Control and Knobs

Piece Number	Circuit Designation	Part
26061		Off-On-Tone Control (410 only)
27311		Off-On-Tone Control (411 only)
28685		Range Switch
28686		Phono Switch (411 only)
29560	R-11	Volume Control (411 only)
30136	R-11	Volume Control (410 only)
27802		Large Tuning Knob
28827		Range Switch Knob
28843		Off-On and Tone Control Knob
29461		Volume Control Knob
27628		Felt Washer for Knobs

Resistors

26361	R-26 (411 only)	.22 Megohms, Type "E"
26323	R-7	150 Ohms, Type "E"
26326	R-22	270 Ohms, Type "E"
26333	R-6	1,000 Ohms, Type "E"
26349	R-5 (R-25—411 only)	22,000 Ohms, Type "E"
26353	R-3, 4, 10	47,000 Ohms, Type "E"
26356	R-9	82,000 Ohms, Type "E"
26357	R-2 (R-27—411 only)	100,000 Ohms, Type "E"
26362	R-13	270,000 Ohms, Type "E"
26365	R-29 (411 only)	.47 Megohm, Type "E"
26369	R-8, (R-14—410 only) (R-28—411 only)	1 Megohm, Type "E"
26381	R-12	10 Megohms, Type "E"
27125	R-1	25,000 Ohms, Type "F"
28758	R-15	400 Ohms, 1 Watt
30400	R-17, 18, 19	Voltage Divider
30417	R-16	10,000 Ohms, Type "G"

Phono Parts (411 Receivers Only)

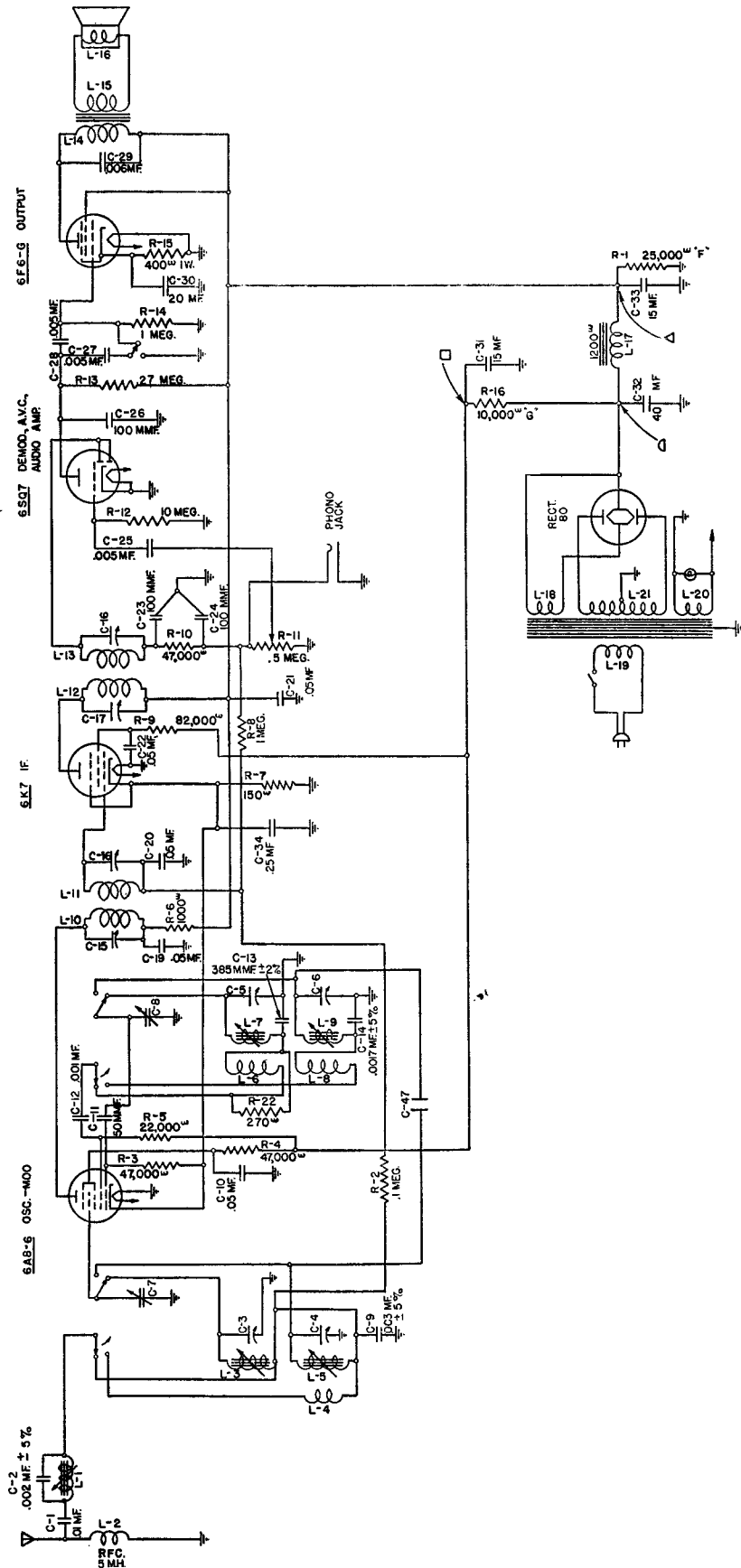
30929		Connector Plug
30886		Complete Phono Motor (411-PT and PF only)
30887		Complete Phono Motor (411-PTB and PFB only)
30890		Stop Switch
30891		Pick-up Arm Assembly

Miscellaneous Parts

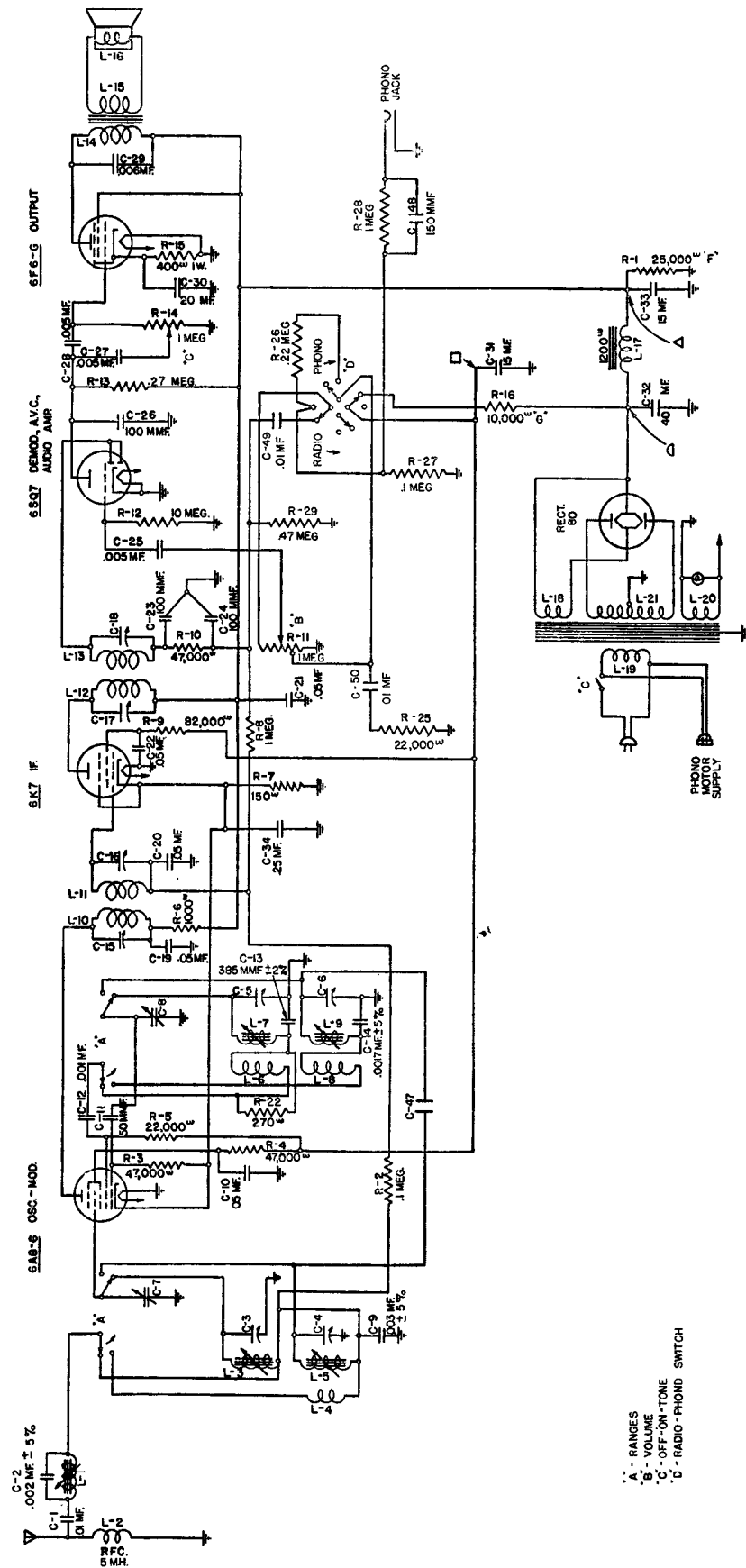
24135		Felt Foot for Cabinet
26122		Antenna and Ground Terminal Strip
28652		Power Supply Cord
30056		Dial Scale
30414		Dial Pointer
30190		Dial Escutcheon
29479		Screw for Mtg. Dial Escutcheon
26287		Pilot Lamp
30269		Rubber for Mtg. Dial Glass
30224		Phonograph Plug
30225		Guard for Phonograph Jack
30226		Phonograph Jack
30151		8-Prong Socket
30153		4-Prong Socket
30413		Bronze Drive Cord
SD-67		Dial Drive Cord
28694		Pilot Lamp Socket Assembly
29628		Spring for Drive Cord
30930		Connector Assembly (411 only)

Accessories

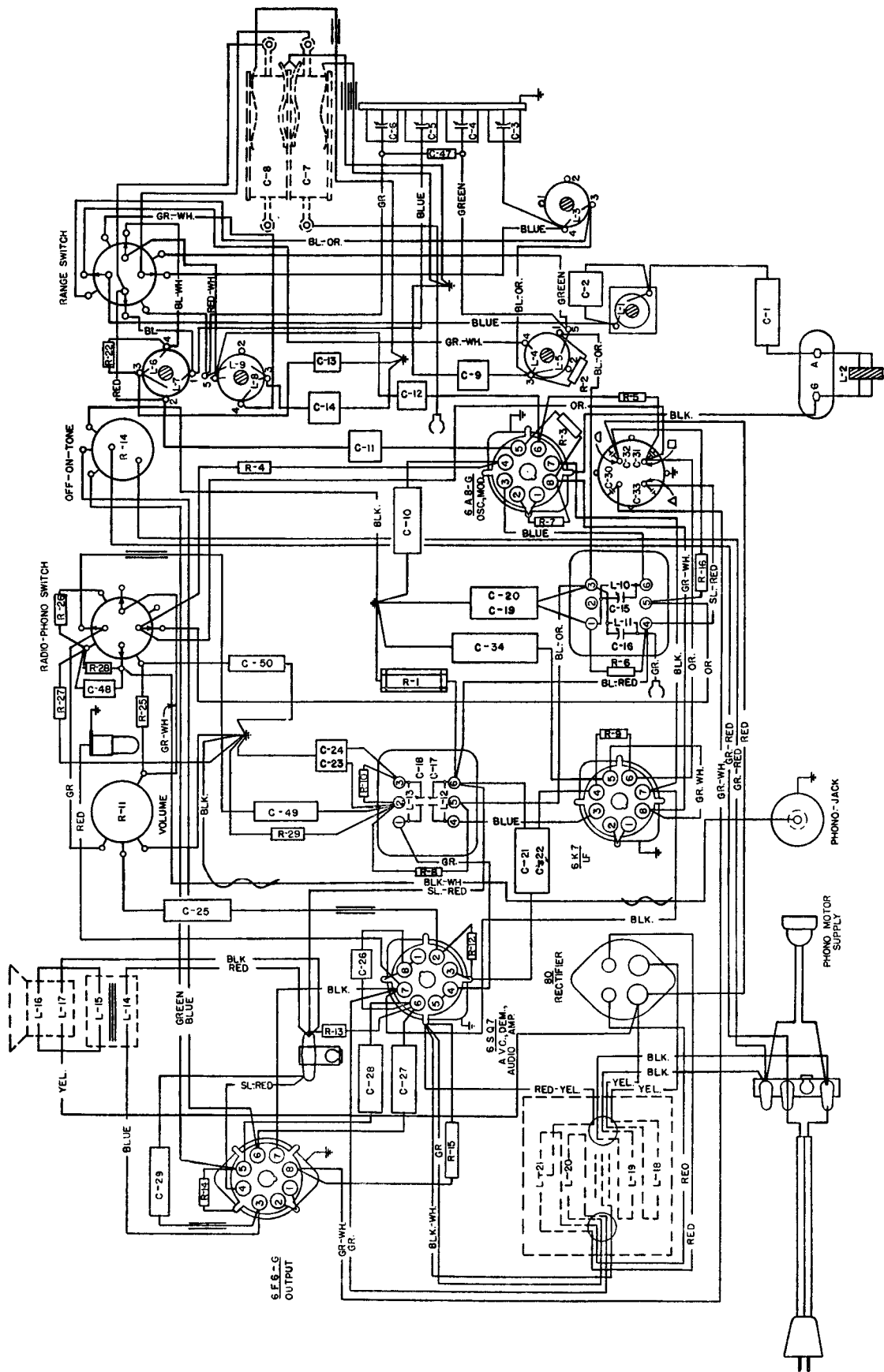
SD-29		Phillips No. 1 Screwdriver
24608		Aligning Tool
28601		Cabinet Polish (Pint Can)
26692		Furniture Touch-up Kit
28303		Headphone Package Assembly



Schematic Circuit—No. 410



Schematic Circuit—No. 411



Wiring Diagram—No. 411