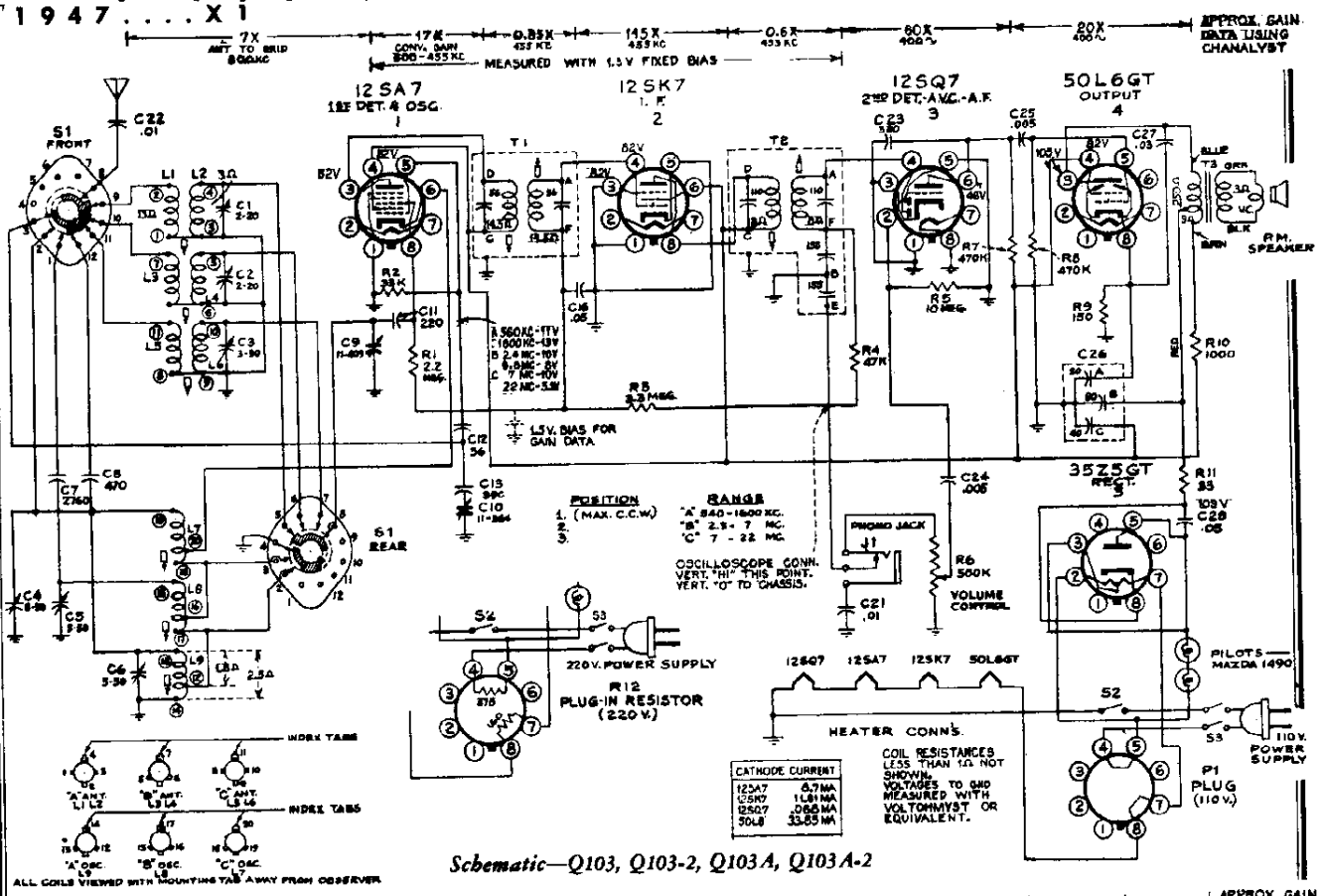
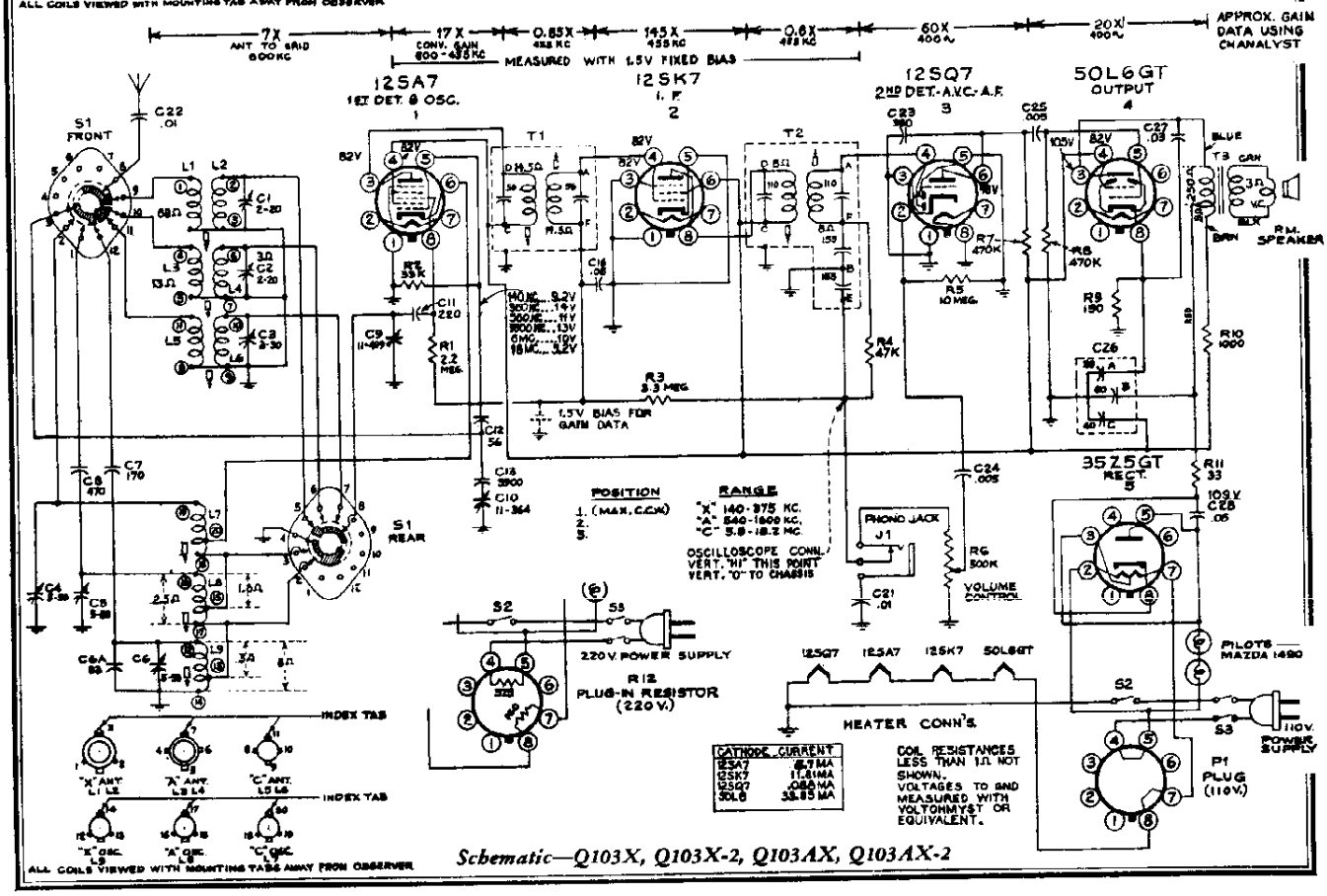
MODELS Q103,-2,A,A-2,Ch.RC1044 RCA MFG. CO.
MODELS Q103X,-2,AX,AX-2,Ch.RC1044B
1947 . . . . X1

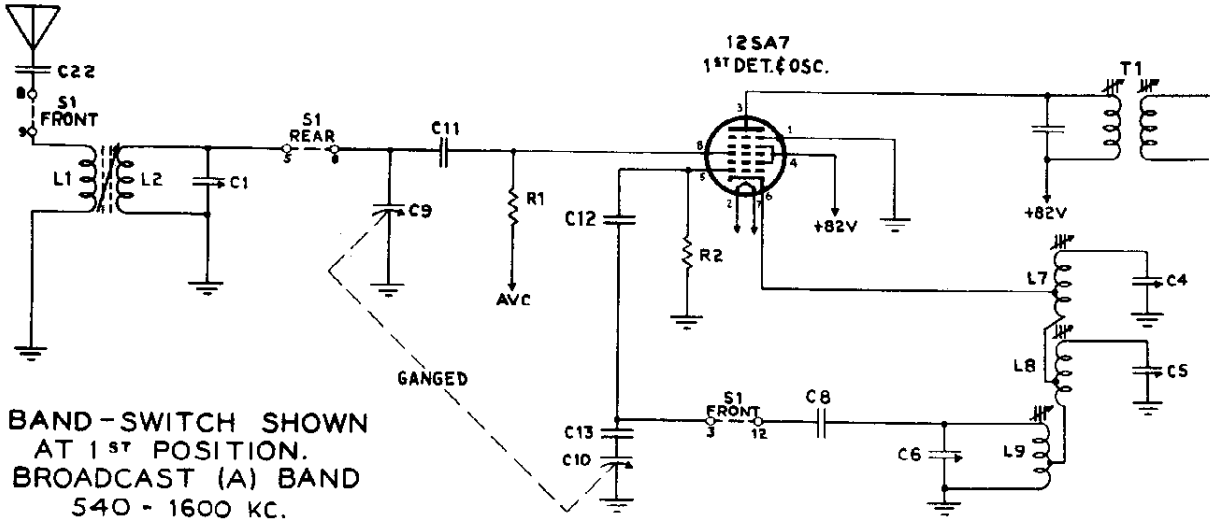


Schematic—Q103, Q103-2, Q103A, Q103A-2

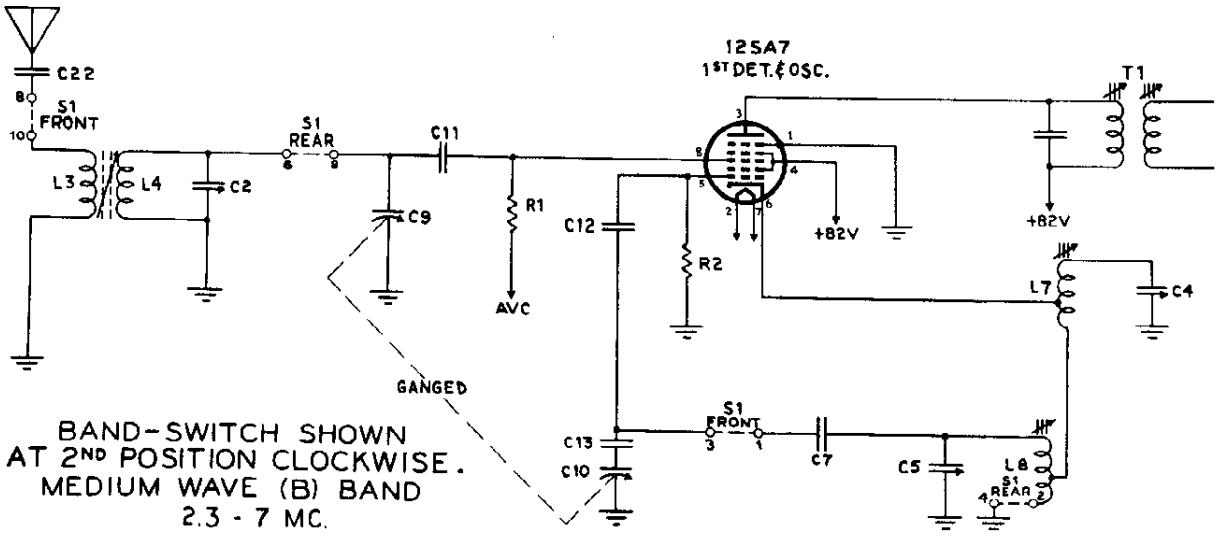


Schematic—Q103X, Q103X-2, Q103AX, Q103AX-2

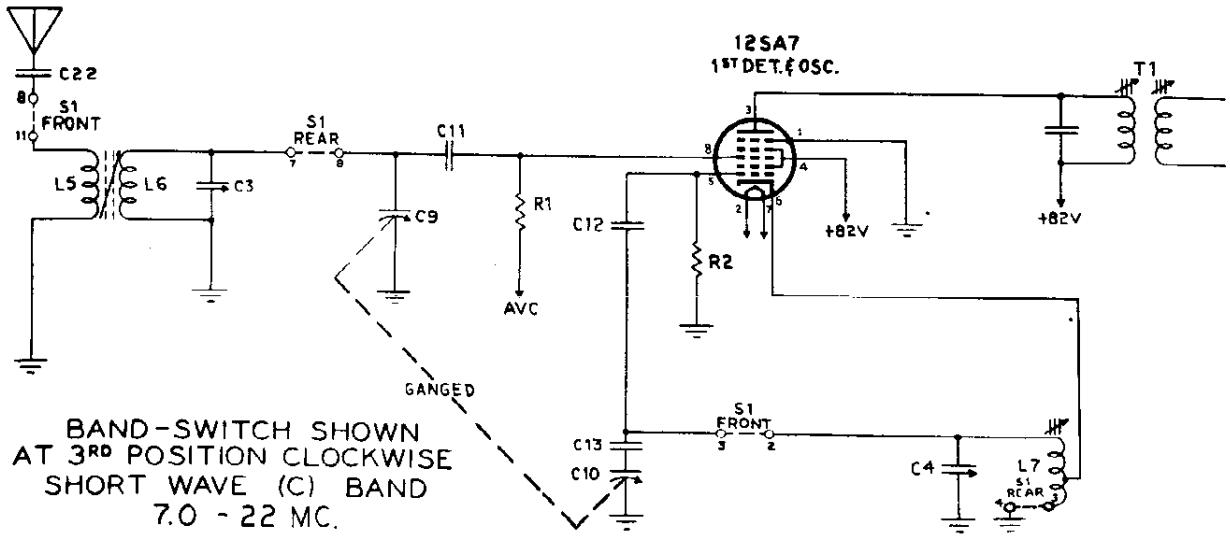
RCA MFG. CO.



BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST (A) BAND 540 - 1600 KC.



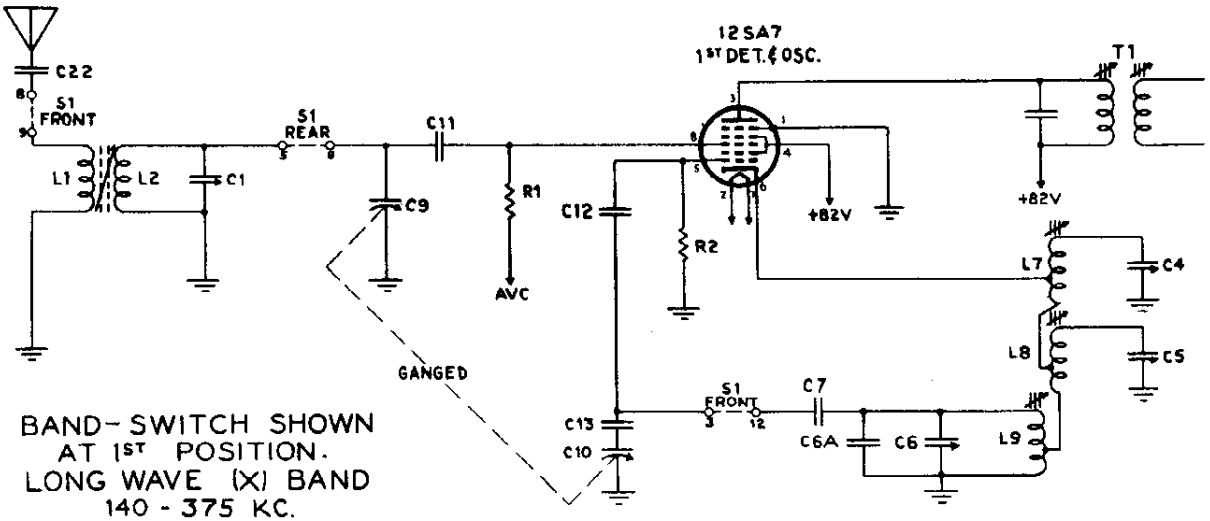
BAND-SWITCH SHOWN AT 2ND POSITION CLOCKWISE. MEDIUM WAVE (B) BAND 2.3 - 7 MC.



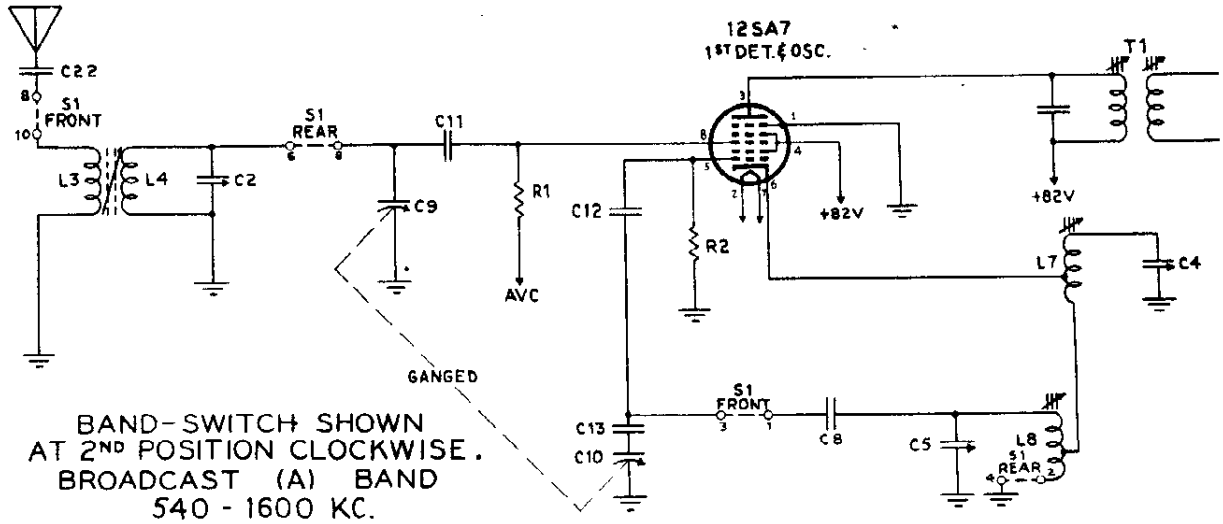
BAND-SWITCH SHOWN AT 3RD POSITION CLOCKWISE SHORT WAVE (C) BAND 7.0 - 22 MC.

MODELS Q103X,-2,AX,AX-2

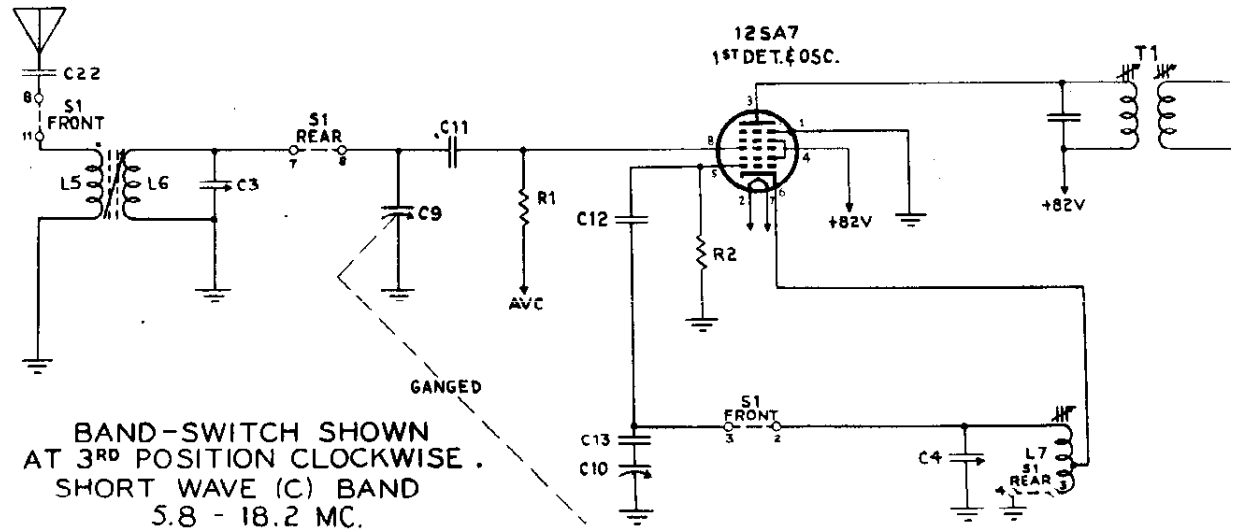
RCA MFG. CO.



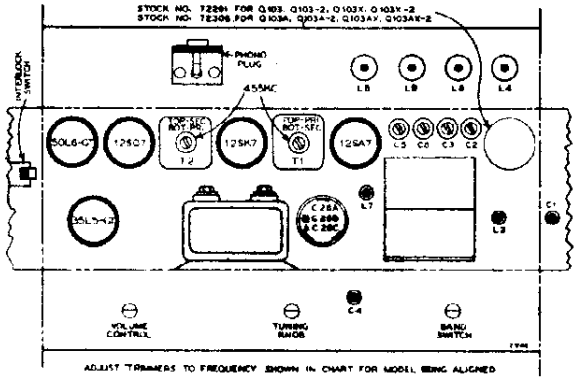
BAND-SWITCH SHOWN
AT 1ST POSITION.
LONG WAVE (X) BAND
140 - 375 KC.



BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE.
BROADCAST (A) BAND
540 - 1600 KC.



BAND-SWITCH SHOWN
AT 3RD POSITION CLOCKWISE.
SHORT WAVE (C) BAND
5.8 - 18.2 MC.



Tube and Trimmer Locations

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscilloscope are shown on the Schematic Circuit Diagram.

Output Meter Alignment.—If this method is used, connect the meter across either voice coil, and turn the receiver volume control to maximum.

***Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

Alignment.—With the gang condenser in full mesh, the pointer should be set three inches from the left edge of the dial back plate. This point corresponds to the first mark on the dial scale to the left of "550" kc. on "A" band. To find any calibration point it is necessary to draw a line on the dial scale drawing through the desired freq., so that the line passes through the same reading on the top and bottom rule scales. For instance, 1300 kc. on "A" band will correspond to a dial indicator setting of 7⅝" from the LEFT EDGE of the dial back plate. Move the indicator the desired distance by turning the tuning knob. ONCE THE INDICATOR HAS BEEN SET AT FULL MESH, MOVE THE INDICATOR ONLY BY TURNING THE TUNING KNOB.

Alignment Table Q103X, Q103X-2, Q103AX, Q103AX-2

Steps	Connect high side of test-osc. to—	Tune test osc. to—	Range Switch	Move indicator to—	Adjust following for max. output—
1	12SK7 I-F grid in series with .01 mfd. condenser	455 kc	A Band	Quiet point around 600 kc	T2 top and bottom core
2	12SA7 1st Det. grid in series with .01 mfd. condenser				T1 top and bottom core
3§	Antenna lead (blue) in series with a 300 ohm resistor	15.2 mc	C Band	15.2 mc	C4 osc.† C3 ant.‡
4		6.1 mc		6.1 mc	L7 osc.* L6 ant.
5	Repeat steps 3 and 4 until aligned				
6	Antenna lead in series a 200 mmf. condenser	1300 kc	A Band	1300 kc	C5 osc. C2 ant.
7		600 kc		600 kc	L8 osc. L4 ant.
8		Repeat steps 6 and 7 until aligned			
9		350 kc	X Band	350 kc	C6 osc. C1 ant.
10		150 kc		150 kc	L9 osc. L2 ant.
11		Repeat steps 9 and 10 until aligned			

Dial Indicator Adjustment.—After the set has been aligned, replace it in the cabinet. Turn the tuning knob until the condenser is in full mesh. The indicator should now be under the first mark on the dial scale face to the left of "550" kc on "A" band. If it is not, press out on the metal strip at the bottom of the dial glass. The metal strip will swing out exposing the dial indicator, which may be moved by sliding it along the dial string until it is at the desired point when the gang condenser is fully closed. If the indicator is more than a half inch off, the calibration should be rechecked.

Alignment.—The most satisfactory method of aligning or checking the ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce inaccuracy on the band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal-controlled oscillator, or by zero-beating against standard broadcast stations.

When a test oscillator is employed for alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be retouched so that the stations come in at the correct points on the dial.

For additional information, refer to booklet "RCA Victor Receiver Alignment."

***Caution:** This is an AC-DC type chassis with one side of the power line connected to the metal base, which is also—B. Connection from the signal generator must have a large (.1 MFD) capacitor in the ground side to prevent damage to the generator attenuator, unless the power source to the receiver is isolated from ground.

Alignment Table, Q103, Q103-2, Q103A, Q103A-2

Steps	Connect high side of test-osc. to—	Tune test osc. to—	Range Switch	Move indicator to—	Adjust following for max. output—
1	12SK7 I-F grid in series with .01 mfd. condenser	455 kc	A Band	Quiet point around 600 kc	T2 top and bottom core
2	12SA7 1st Det. grid in series with .01 mfd. condenser				T1 top and bottom core
3§	Antenna lead (blue) in series with a 300 ohm resistor	18.2 mc	C Band	18.2 mc	C4 osc.† C3 ant.‡
4		7.2 mc		7.2 mc	L7 osc.* L6 ant.
5		Repeat steps 3 and 4 until aligned			
6		6.1 mc	B Band	6.1 mc	C5 osc.† C2 ant.
7		2500 kc		2500 kc	L8 osc. L4 ant.
8	Repeat steps 6 and 7 until aligned				
9	Antenna lead (blue) in series with a 200 mmf condenser	1300 kc	A Band	1300 kc	C6 osc. C1 ant.
10		600 kc		600 kc	L9 osc. L2 ant.
11		Repeat steps 9 and 10 until aligned			

*Use min inductance if two peaks can be found.
†Use min. capacity if two peaks can be found.
‡Use max. capacity if two peaks can be found.
§Bottom shield cover in place after I-F's are aligned.

MODELS Q103,-2,A,A-2
MODELS Q103X,-2,AX,AX-2

RCA MFG. CO.

Specifications

Frequency Ranges Chassis No. RC-1044

Standard Broadcast ("A" Band) ..... 540-1600 kc (555-187 m)
Medium Wave ("B" Band) ..... 2.3-7.0 mc (130-42.2 m)
Short Wave ("C" Band) ..... 7.0-22 mc (42.2-13.6 m)

Frequency Ranges Chassis No. RC-1044B

Long Wave ("X" Band) ..... 140-375 kc (2,222-780 m)
Standard Broadcast ("A" Band) ..... 540-1600 kc (555-187 m)
Short Wave ("C" Band) ..... 5.8-18.2 mc (51.7-16.5 m)

Intermediate Frequency ..... 455 kc

RCA Tube Complement

(1) RCA-12SA7 ..... 1st Detector-Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-50L6GT ..... Power Output
(5) RCA-35Z5GT ..... Rectifier

Power Supply Ratings (D-C or 50 to 60 cycles A-C)

Q103, Q103-2, Q103X, Q103X-2—105-125 volts ..... 30 watts
Q103A, Q103A-2, Q103AX, Q103AX-2—210-250 volts ..... 60 watts

Power Output Rating

Undistorted ..... .9 watts
Maximum ..... 1.5 watts

Loudspeaker

Type ..... 4 x 6 in. elliptical PM
Voice Coil Impedance ..... 3.4 ohms at 400 cycles

Tuning Drive Ratio ..... 20 to 1

Dimensions (Inches)	Width	Height	Depth
Cabinet (Outside)	15	9⅝	7
Chassis Base (Outside)	13	2⅝	4⅛
Chassis Overall	13	9¾	4⅛

Weight Net ..... 9 lbs.
Weight Shipping ..... 11 lbs.

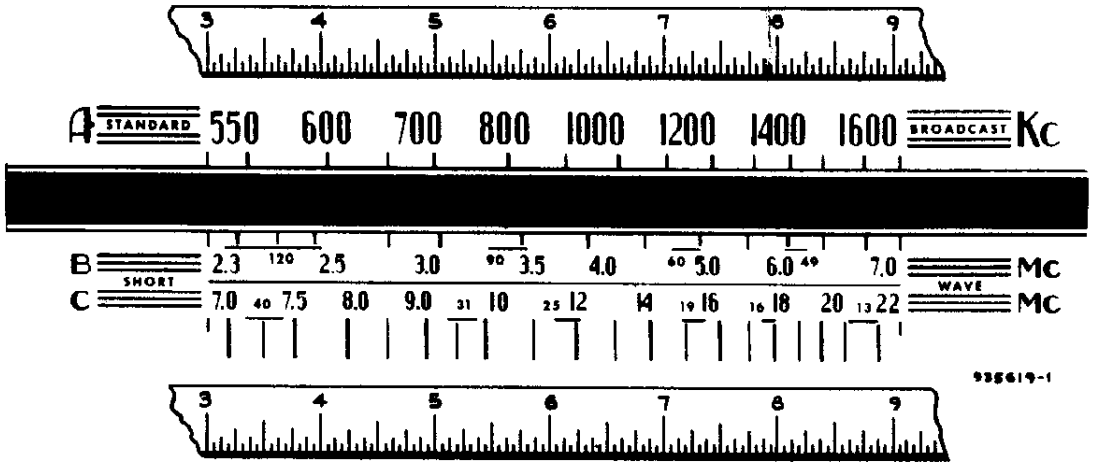
Phonograph Attachment.—A jack is provided on the bottom of the chassis for connection to a phonograph. The cable from the attachment should be terminated in a Stock No. 31048 plug. Plug must be removed when radio is in use.

When the phonograph is in use the volume control on the radio should be at minimum.

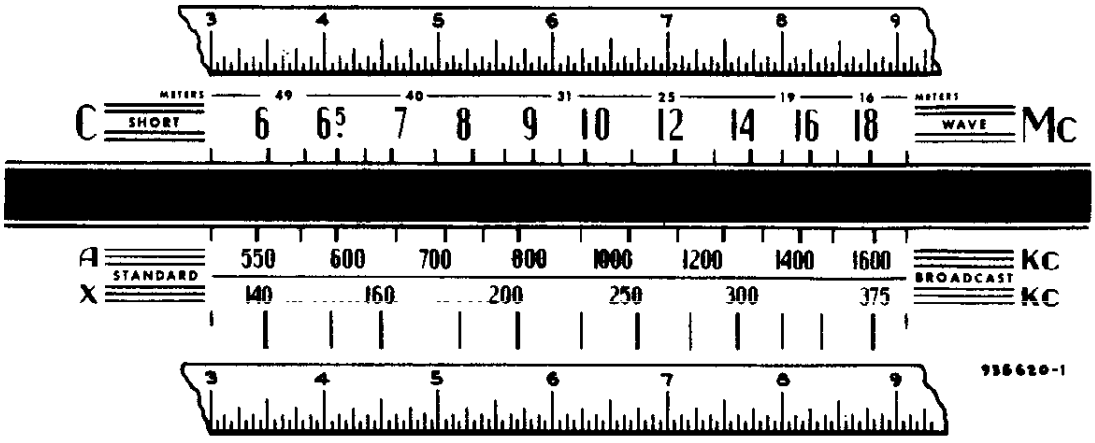
Plug-In Resistor.—Either a plug-in resistor or a shorting plug is used with these sets. The plugs are physically interchangeable and may be used to convert the set from 110 to 220 volts or from 220 to 110 volts. DANGER—Do not attempt to use these sets on 220 volts unless the plug-in RESISTOR is used. If the shorting plug is in place, serious damage will result. Consult the instrument label for original rating.

Disassembly.—Remove the screws holding the chassis bottom plate to the cabinet. Remove the chassis from the cabinet by removing the knobs and tilting the cabinet so that the chassis will slide back and out. Looking at the chassis from the front, a switch is visible on the left apron in the rear. This is an interlock switch. The set will not function out of the cabinet unless this switch is closed. A small screw through the interlock actuating arm and the hole in the chassis bottom plate will serve to keep the switch closed. When the chassis is replaced in the cabinet, remove the screw so that the switch will function.

Model	Bands	Power Supply	Cabinet
Q103	"A"-"B"-"C"	110V	Brown
Q103A	"A"-"B"-"C"	220V	Brown
Q103-2	"A"-"B"-"C"	110V	Ivory
Q103A-2	"A"-"B"-"C"	220V	Ivory
Q103X	"X"-"A"-"C"	110V	Brown
Q103AX	"X"-"A"-"C"	220V	Brown
Q103X-2	"X"-"A"-"C"	110V	Ivory
Q103AX-2	"X"-"A"-"C"	220V	Ivory



Reduced Reproduction of Receiver Dial, RC-1044, and Corresponding Rule Scales



Reduced Reproduction of Receiver Dial, RC-1044B, and Corresponding Rule Scales

The corresponding position of the dial indicator in inches, from the left hand edge of the dial plate, for any frequency can be determined by drawing a line from the frequency to a point on the bottom rule scale passing through the same point on the top rule scale. For example 600 kc on the dial scale corresponds to a dial indicator setting of 4¼" from the left hand edge of the dial plate, etc. Read instructions under "Alignment Procedure."

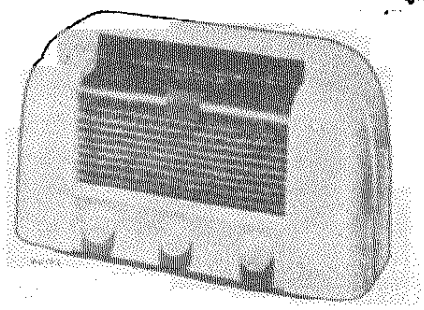
RCA MFG. CO.

MODELS Q103,-2,A,A-2
MODELS Q103X,-2,AX,AX-2

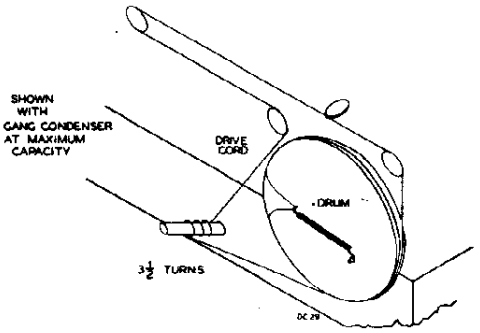
PRECAUTIONARY LEAD DRESS

1. Dress output plate capacitor and output transformer leads down next to chassis.
2. Dress 12SQ7 grid resistor down next to chassis, and away from power ground wire to switch.
3. Dress lead from 2nd I-F transformer to volume control down to chassis and away from adjacent parts.
4. Keep grid end of R1 as short as possible.

POWER SUPPLY POLARITY.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

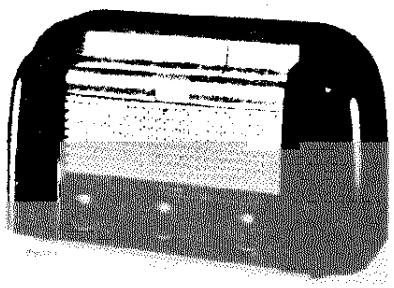


Q103-2, Q103A-2
Q103X-2, Q103AX-2



Dial-Indicator and Drive Mechanism

Q103, Q103A
Q103X, Q103AX



Replacement Parts

STOCK NO.	DESCRIPTION
	CHASSIS ASSEMBLIES **RC-1044—Q103, Q103-2, Q103A, Q103A-2** **RC-1044B—Q103AX, Q103AX-2, Q103X, Q103X-2**
*72306	Capacitor—Mica trimmer, 3-30 mmf. (C3)
*72307	Capacitor—Mica trimmer, 5-50 mmf. (C4)
39616	Capacitor—Mica, 33 mmf. (C6A for Q103AX, Q103AX-2, Q103X, Q103X-2)
39622	Capacitor—Mica, 56 mmf. (C12)
*72794	Capacitor—Ceramic, 170 mmf. (C7 for Q103AX, Q103AX-2, Q103X, Q103X-2)
39636	Capacitor—Mica, 220 mmf. (C11)
72571	Capacitor—Mica, 330 mmf. (C23)
*72814	Capacitor—Ceramic, 470 mmf. (C8)
*72305	Capacitor—Mica trimmer, comprising 2 sections of 2-20 mmf. and 2 sections of 5-50 mmf. (C1, C2, C5, C6)
*72795	Capacitor—Mica, 2760 mmf. (C7 for Q103, Q103-2, Q103A, Q103A-2)
*72637	Capacitor—Mica, 3900 mmf. (C13)
*71699	Capacitor—Molded paper, .005 mfd., 400 volts (C24, C25)
71770	Capacitor—Molded paper, .01 mfd., 400 volts (C21, C22)
*72815	Capacitor—Molded paper, .03 mfd., 400 volts (C27)
*71702	Capacitor—Molded paper, .05 mfd., 400 volts (C16, C28)
*72281	Capacitor—Electrolytic, comprising 1 section of 80 mfd., 150 volts, 1 section of 40 mfd., 150 volts and 1 section of 20 mfd., 25 volts (C26)
*72576	Coil—Antenna coil, "A" band (L1, L2 for Q103 and Q103A, Q103-2, Q103A-2; L3, L4 for Q103AX, Q103X, Q103X-2, Q103AX-2)
*72298	Coil—Antenna coil, "B" band for Q103, Q103-2, Q103A, and Q103A-2 (L3, L4)
*72299	Coil—Antenna coil, "C" band for Q103, Q103-2, Q103A, and Q103A-2 (L5, L6)
*72276	Coil—Antenna coil, "C" band for Q103AX, Q103AX-2, Q103X, Q103X-2 (L5, L6)
*72297	Coil—Antenna coil, "X" band for Q103AX, Q103AX-2, Q103X, Q103X-2, (L1, L2)
*72575	Coil—Oscillator coil, "A" band (L9 for Q103, Q103A, Q103-2, Q103A-2, L8 for Q103AX, Q103X, Q103X-2, Q103AX-2)
*72302	Coil—Oscillator coil, "B" band for Q103, Q103-2, Q103A, and Q103A-2 (L8)
*72303	Coil—Oscillator coil, "C" band for Q103, Q103-2, Q103A, and Q103A-2 (L7)
*72274	Coil—Oscillator coil, "C" band for Q103AX, Q103AX-2, Q103X, Q103X-2 (L7)
*72300	Coil—Oscillator coil, "X" band for Q103AX, Q103AX-2, Q103X, Q103X-2 (L9)
*72294	Condenser—Variable tuning condenser (C9, C10)
38410	Control—Volume control and power switch (R6, S2)
34662	Cord—Drive cord (approx. 56" overall length)
70384	Drum—Drive drum
72283	Grommet—Rubber grommet for mounting tuning condenser and speaker
70429	Grommet—Rubber grommet for mounting tube socket
*72547	Indicator—Station selector indicator
71116	Lamp—Dial lamp, Mazda No. 1490
*72548	Plate—Dial back plate complete with drive cord pulleys
36230	Pulley—Drive cord pulley
71290	Resistor—33 ohms, 1 watt (R11)
30880	Resistor—150 ohms, ½ watt (R9)
71916	Resistor—1000 ohms, 1 watt (R10)
30685	Resistor—33,000 ohms, ½ watt (R2)
30787	Resistor—47,000 ohms, ½ watt (R4)
30648	Resistor—470,000 ohms, ½ watt (R7, R8)
30649	Resistor—2.2 megohms, ½ watt (R1)
31417	Resistor—3.3 megohms, ½ watt (R3)
30992	Resistor—10 megohms, ½ watt (R5)
*72577	Shaft—Tuning knob shaft
71115	Socket—Lamp socket
*72295	Socket—Phono-input socket (J1)
37605	Socket—Tube socket
31319	Socket—Tube socket
70390	Spring—Drive cord spring
*72745	Switch—Interlock switch, slide type, D.P.D.T. (S3)
*72304	Switch—Range switch (S1)
*72545	Transformer—First I. F. transformer (T1)
70918	Transformer—Second I. F. transformer (T2)
*72296	Transformer—Output transformer (T3)
33726	Washer—"C" washer for tuning shaft
	SPEAKER ASSEMBLIES **922258-2**
71058	Speaker—4" x 6" P.M. speaker complete with cone and voice coil. **NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.**
	MISCELLANEOUS
71122	Baffle—Speaker baffle
*71123	Bottom—Case bottom
Y1354	Cabinet—Brown plastic cabinet for Q103, Q103A, Q103X, Q103AX
Y1355	Cabinet—Ivory plastic cabinet for Q103-2, Q103A-2, Q103X-2, Q103AX-2
*72578	Clamp—Dial clamp (2 required)
*72686	Decal—Power switch decal
*72687	Decal—Range switch decal for Q103AX, Q103AX-2, Q103X, Q103X-2
*72747	Decal—Range switch decal for Q103, Q103-2, Q103A and Q103A-2
*72609	Dial—Glass dial scale for Q103, Q103A, Q103-2, Q103A-2
*72610	Dial—Glass dial scale for Q103AX, Q103X, Q103X-2, Q103AX-2
71127	Foot—Cabinet foot (walnut) for Q103, Q103A, Q103AX, Q103X (4 required)
71128	Foot—Cabinet foot (ivory) for Q103-2, Q103A-2, Q103AX-2, Q103X-2 (4 required)
70473	Knob—Tuning knob (walnut) for Q103, Q103A, Q103AX, Q103X
70474	Knob—Tuning knob (ivory) for Q103-2, Q103A-2, Q103AX-2, Q103X-2
*72549	Knob—Volume control or range switch knob (walnut) for Q103, Q103A, Q103AX, Q103X
*72550	Knob—Volume control or range switch knob (ivory) for Q103-2, Q103A-2, Q103AX-2, Q103X-2
71126	Nut—Speed nut to fasten hand grip screen (4 required)
*72291	Plug—Shorting plug for Q103, Q103-2, Q103X, Q103X-2
*72308	Resistor—Plug-in resistor for Q103A, Q103A-2, Q103AX and Q103AX-2 (R12)
71125	Screen—Protective screen for hand grip
*72746	Slide—Interlock switch actuating slide
30900	Spring—Retaining spring for knobs
71130	Spring—Retaining spring for front strip
71129	Strip—Finished strip for cabinet front
34373	Washer—"C" washer to hold interlock actuating

*This is the first time this Stock No. has appeared in Service data.