R.C.A. Victor Co., Inc.

Model: Q103	Chassis:	Year: Pre 1948
Power:	Circuit:	IF:
Tubes:		
Bands:		

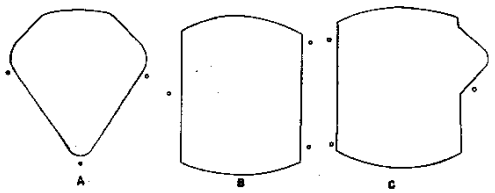
Resources
Riders Volume 17 - CHANGES 17-6
Riders Volume 16 - RCA 16-8
Riders Volume 16 - RCA 16-9
Riders Volume 16 - RCA 16-10
Riders Volume 16 - RCA 16-11
Riders Volume 16 - RCA 16-12
Riders Volume 16 - RCA 16-13

Noblitt-Sparks 558, Chassis RE-204

This model, which is on *pages 15-7 to 15-9 of Rider's Volume XV*, uses two different cutouts in the motor board of the cabinets; it is therefore necessary to use the correct part numbers when ordering replacement cabinet, motor, and turntable assembly or any part thereof.

Part E21004 Ballentine phono-motor and turntable assembly is used with part 19573-1 cabinet which has a cutout A, the outline being shown in the accompanying sketch. Part E19475 Alliance phono-motor and turntable assembly is used with part R19573 cabinet with cutout B or C.

C motor cutout is the result of reworking R19573-1 cabinets to be used as R19573 cabinets with E19475 motor and turntable assembly.

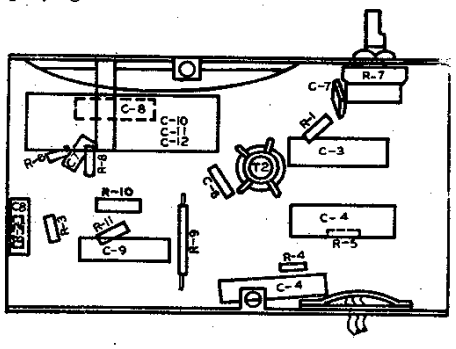


Sketch of different cutouts used in the motor board of the cabinet of model 558, chassis RE-204.

Noblitt-Sparks 444M, 444AM, Chassis RE-200M

The schematic for this model is the same as the 444,444A, chassis RE-200 shown on *page 15-1 of Rider's Volume XV* except for the substitution of miniature tubes for the regular metal and GT tubes. This set uses the 12BE6, 12AT6, 50B5, and 35W4 in place of the 12SA7, 12SQ7, 50L6GT, and 35Z5GT.

The location of parts under chassis has been reoriented as shown in the accompanying sketch.



Location of reoriented parts under chassis for Noblitt-Sparks model 444M, 444AM, chassis RE-200.

RCA 55F, 66-1

Service Hint: Failure of the 1A7GT converter to operate may be due to a short circuit in C21, the grid coupling capacitor. This will make itself evident as a high positive voltage on the signal grid of the 1A7GT tube.

RCA 5Q12

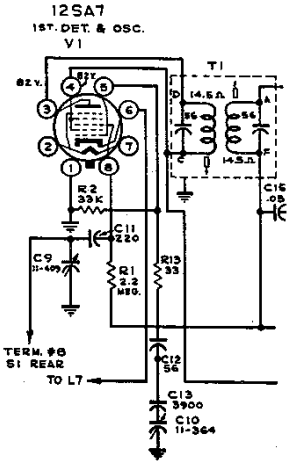
The RCA Model 5Q12 is the same as the Model 6Q8 except that in the 5Q12 the 6U5/6G5 tuning indicator tube and its associated resistance R11 are omitted. The schematic for Model 6Q8 is found on *page 11-33* of *Rider's Volume XI*.

RCA QU51C, QU51M, QU55

The value for capacitor C15 shown as 2-8 $\mu\mu$f, in the schematic found on *page 14-37* of *Rider's Volume XIV*, should be 2-12 $\mu\mu$f.

RCA Q103 Series, Chassis Nos. RC-1044, RC-1044 B

The following changes pertain to the Q103 series, chassis Nos. RC-1044 and RC-1044B appearing on *pages 16-8 to 16-13 of Rider's Volume XVI*. The capacitors in the 2d i-f transformer (T2) connected from A to F and D to C have been changed to 150 $\mu\mu$f. The capacitors connected from F-B and B to E have been changed to 105 $\mu\mu$f. A 33-ohm resistor (*R-13*) has been added to the oscillator circuit between the first grid of the 12SA7 pentagrid converter and *C12*. This is illustrated in the accompanying partial schematic.



Changes in the 1st Detector-Oscillator circuit of the RCA Q103 Series.

A felt pad is cemented to the side of the 1st i-f transformer next to the 12SA7 1st Det-Osc. tube. A rubber band around the tube and transformer holds the tube against the felt and reduces the tendency to howl on high volume.

Additional precautionary lead dress for these models is as follows:

5. Maintain flexible loop in ground straps of tuning capacitor. Allow slack in leads to tuning capacitor stators.
6. All leads to 12SA7 socket must be dressed to insure flexibility of the socket.
7. Oscillator grid coupling capacitor *C12* should be cemented to chassis with wax or glyptal cement.
8. Dress tracking capacitor *C13* outside of the range switch assembly and cement it to the range switch spacer bar with wax or glyptal cement.

RCA 56 SERIES, 61 — SERIES

On some models of these series, which appear in *Rider's Volume XV*, the 500,000-ohm volume control is not furnished with a stop 50,000 ohms from the high end of the control. Volume controls having no stop can be identified by a dot of red lacquer on the left side of the control, viewing the shaft end with terminals up. In models using this control, a 56,000-ohm ½-watt resistor, completely covered with spaghetti tubing, is connected between the high end of the control and the yellow lead on the second i-f transformer.

Replacement controls equipped with a stop do not need this external 56,000-ohm resistor, so when replacing a volume control, check the resistance between the arm and the high end of the replacement control with the arm turned fully clockwise. A reading of 50,000 ohms will indicate that the control is equipped with a stop, and that the 56,000-ohm resistor in the set should be removed before installing the new control.

RCA 56X5, 56X10, 61-5, 61-10

Changes in the schematic should be made on RCA Model 56X5, *page 15-32;* Models 56X10, *page 15-35;* and Models 61-5 and 61-10, *page 15-51, all in Rider's Volume XV*.

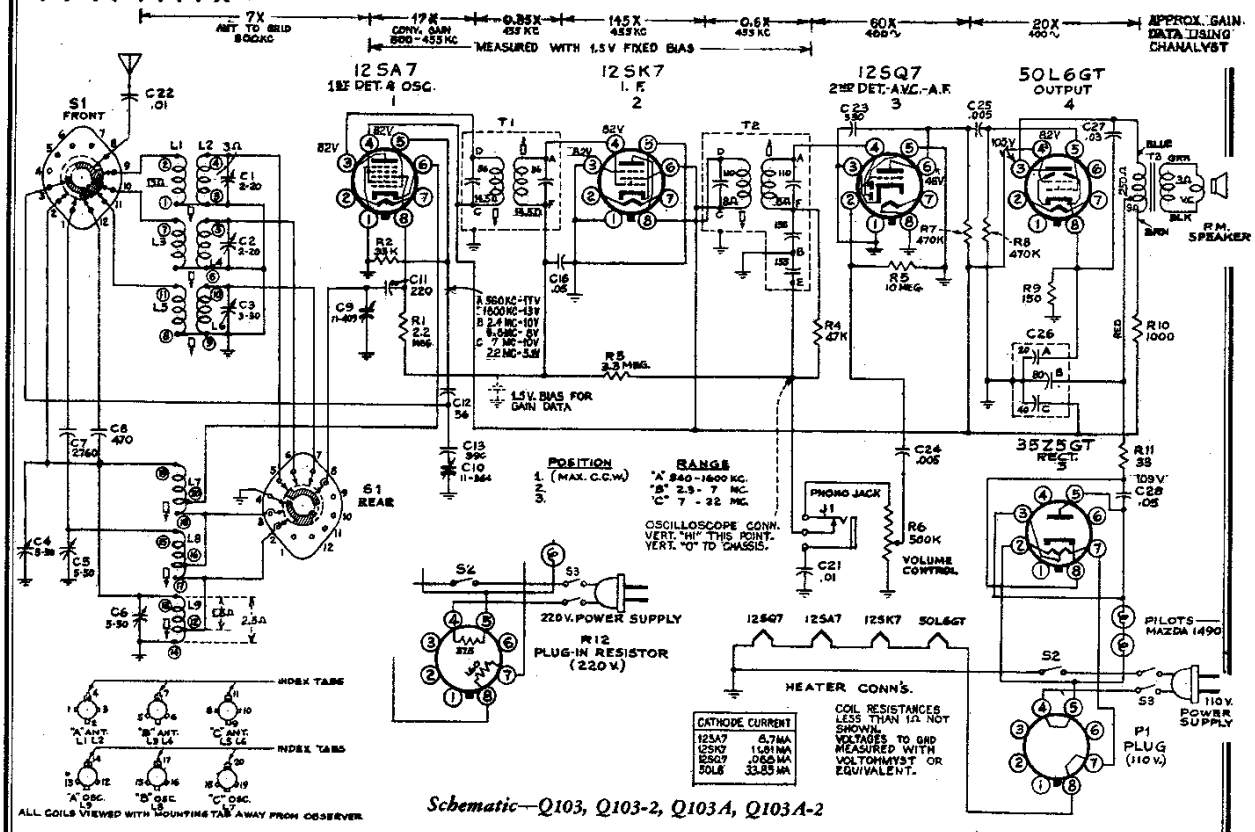
Change the location of C9 from the grid of the 12SQ7 to ground, so that it is connected from the plate of the 12SQ7 to ground.

Earlier models may still have C9 connected from grid to ground; in these sets an increase in sensitivity will be obtained by reconnecting C9 in accordance with the above change in the schematic.

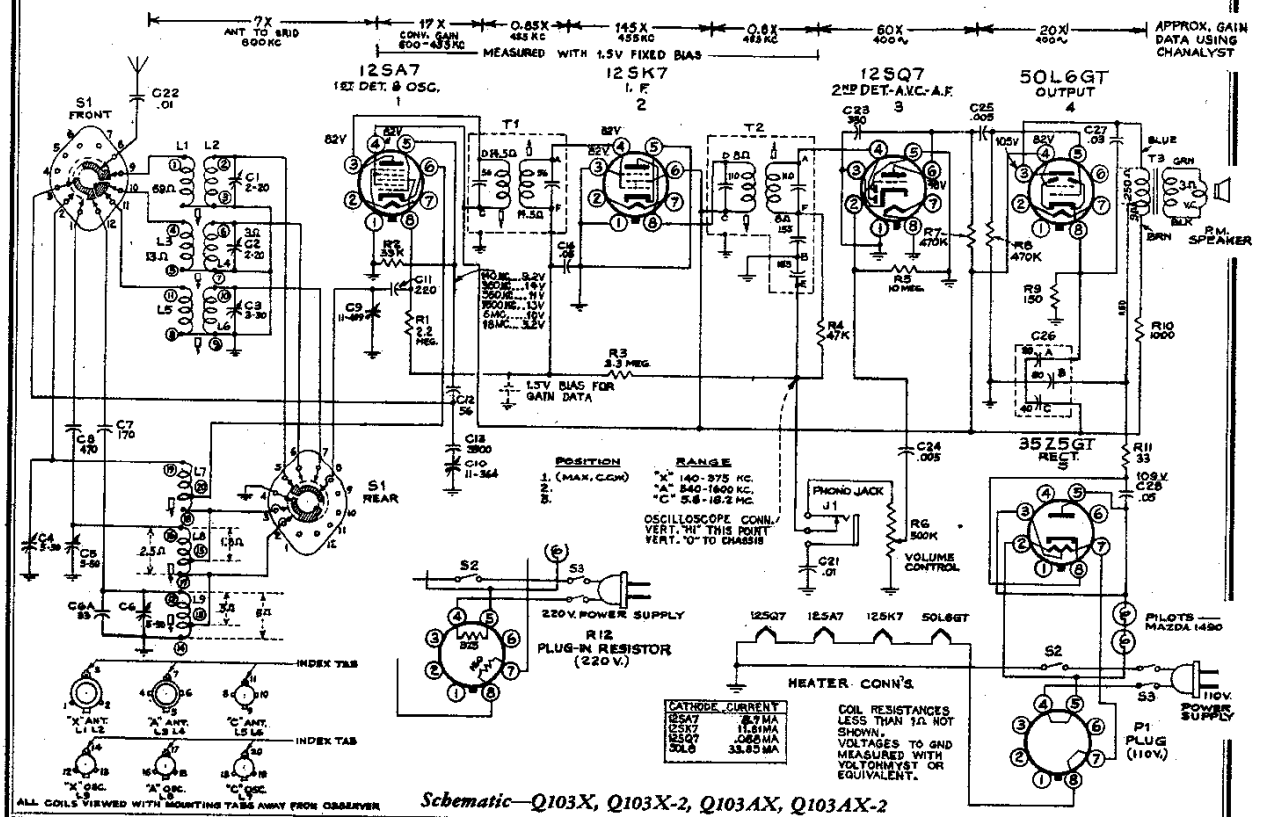
R6 has been changed from 3.3 to 2.2 megohms.

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

RCA MFG. CO.

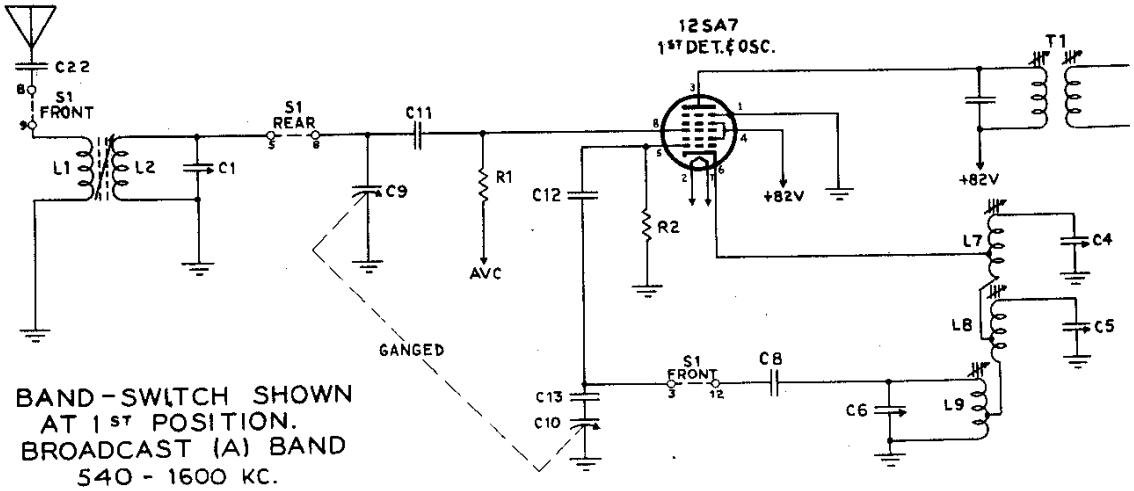


Schematic—Q103, Q103-2, Q103A, Q103A-2

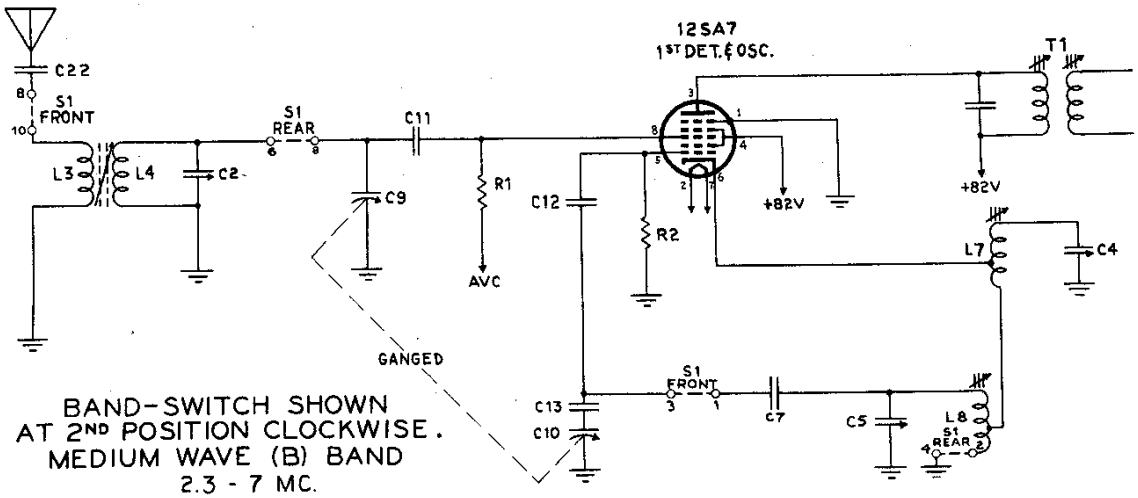


Schematic—Q103X, Q103X-2, Q103AX, Q103AX-2

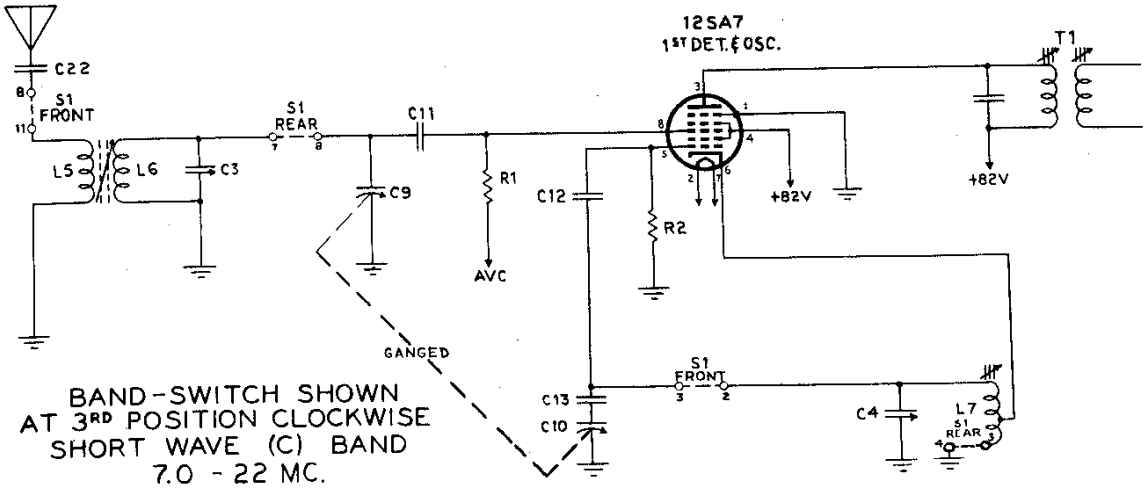
RCA MFG. CO.



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.

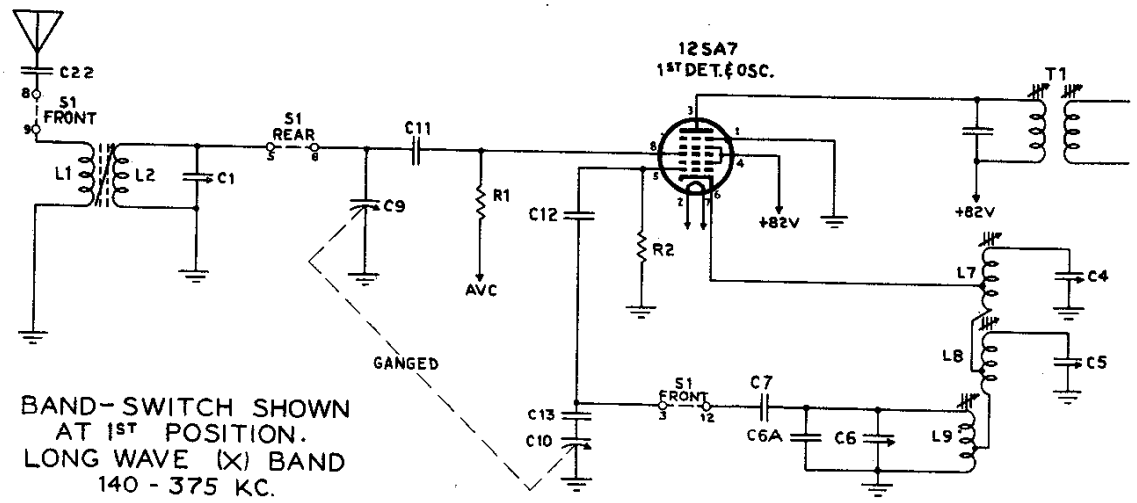


BAND-SWITCH SHOWN AT 3RD POSITION CLOCKWISE SHORT WAVE (C) BAND 7.0 - 22 MC.

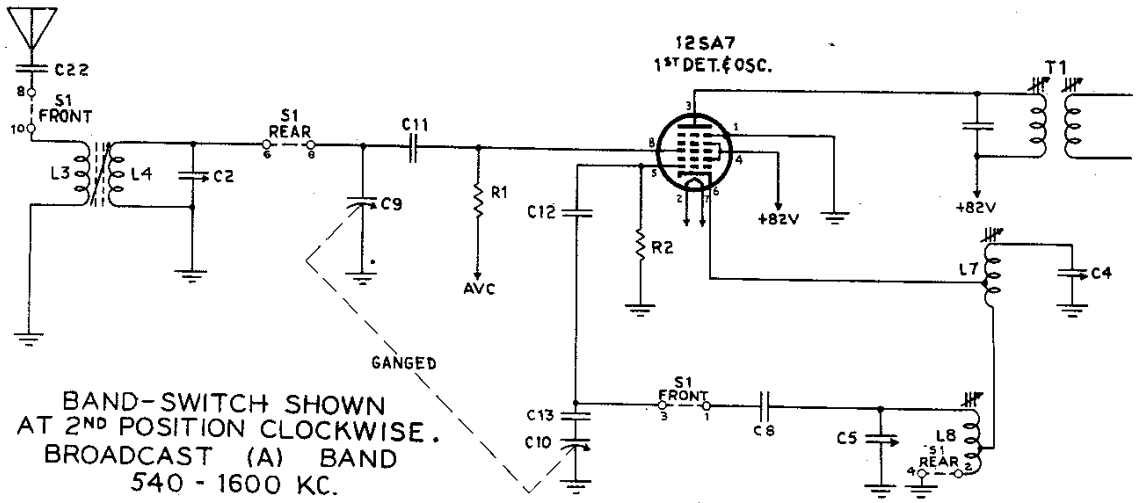
"clarified schematics"

MODELS Q103X,-2,AX,AX-2

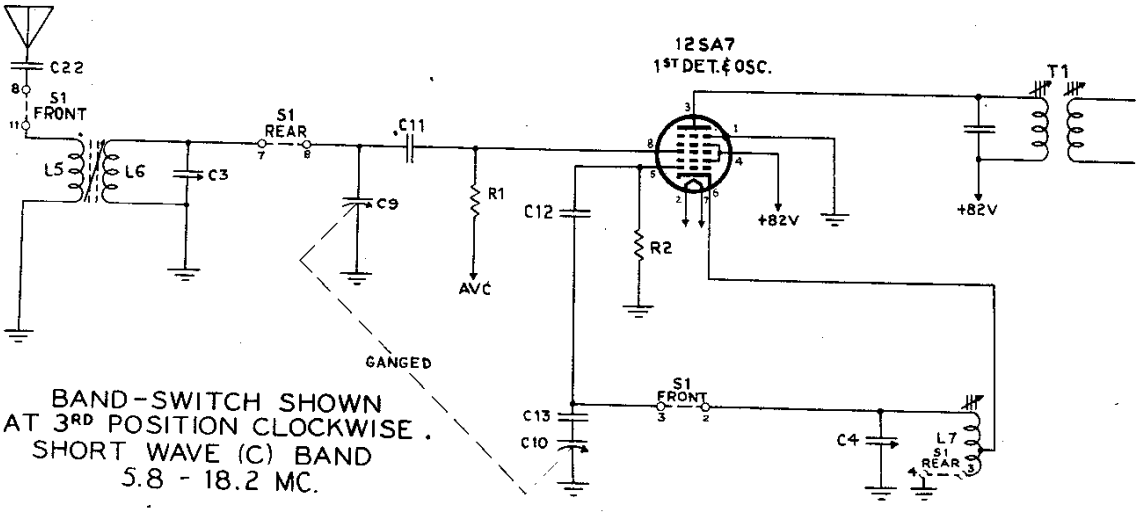
RCA MFG. CO.



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



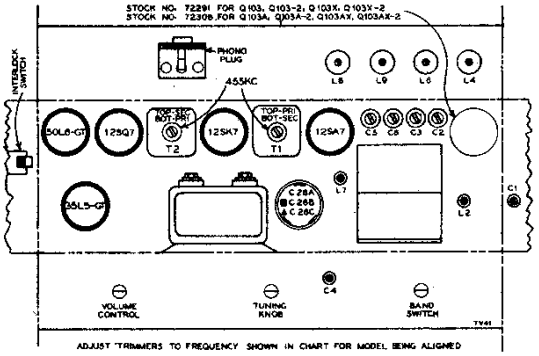
BAND-SWITCH SHOWN AT 2ND POSITION CLOCKWISE. BROADCAST (A) BAND 540 - 1600 KC.



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

RCA MFG. CO.

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



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 7¾" 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	9¾	7
Chassis Base (Outside)	13	2⅝	4⅛
Chassis Overall	13	9¾	4⅛

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

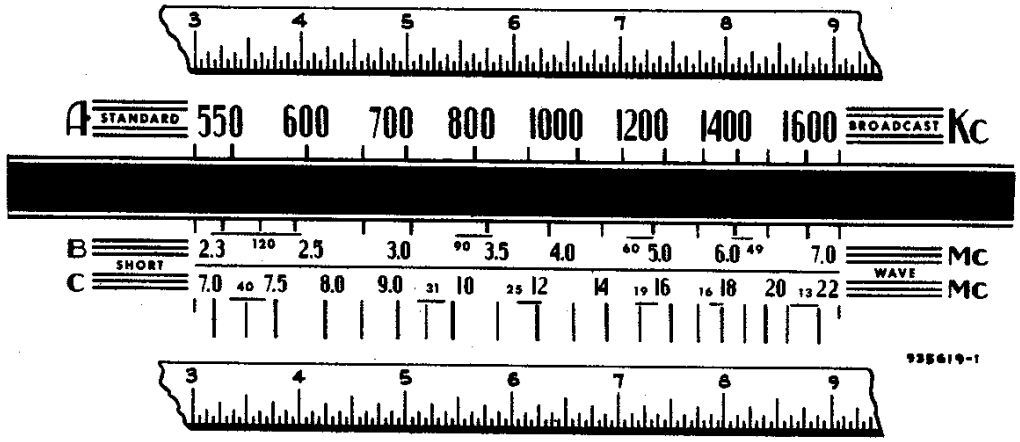
Phonograph Attachment.—A jack is provided on the bottom of the chassis for connection to a phonograph. The cable from the attachment should be terminated in a Stock No. 31048 plug. Plug must be removed when radio is in use.

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

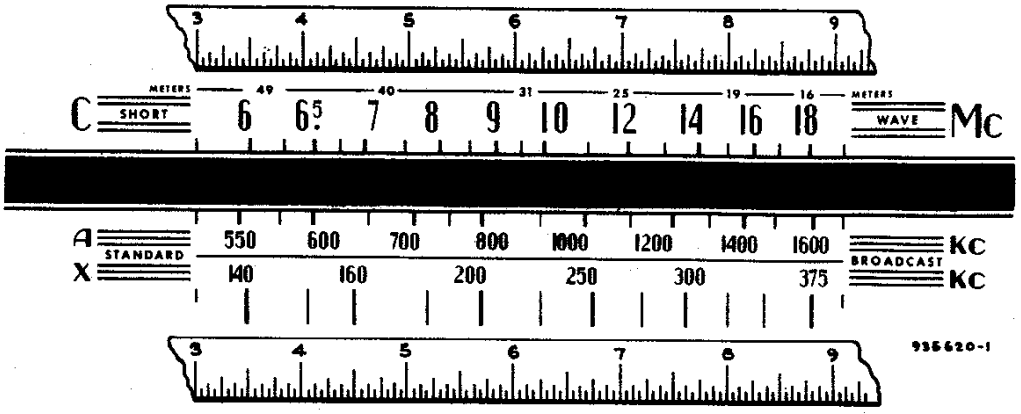
Plug-In Resistor.—Either a plug-in resistor or a shorting plug is used with these sets. The plugs are physically interchangeable and may be used to convert the set from 110 to 220 volts or from 220 to 110 volts. DANGER—Do not attempt to use these sets on 220 volts unless the plug-in RESISTOR is used. 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 4⅛" from the left hand edge of the dial plate, etc. Read instructions under "Alignment Procedure."

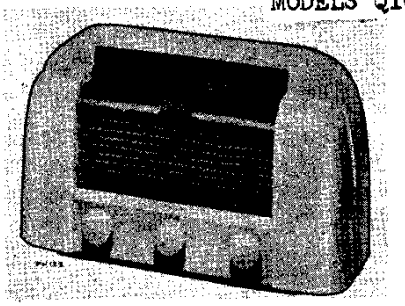
RCA MFG. CO.

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

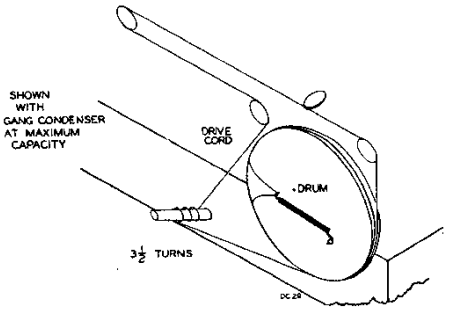
PRECAUTIONARY LEAD DRESS

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.

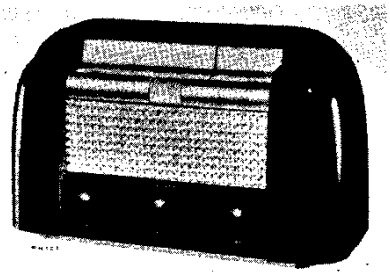


Q103-2, Q103A-2
Q103X-2, Q103AX-2



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.