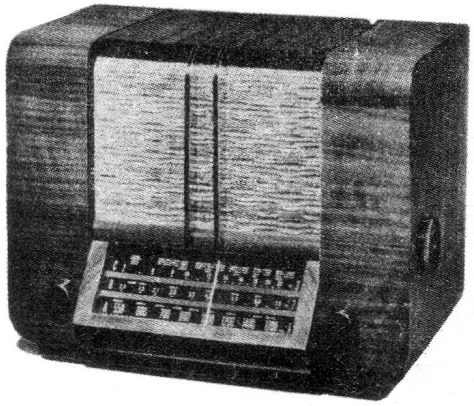
RCA Victor

MODEL A-20 (Globe Trotter)

Five-Tube, Three-Band, A-C Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA VICTOR COMPANY LIMITED • MONTREAL



Electrical and Mechanical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A)	540-1,720 kc (555-174 m)
"Medium Wave" (B)	2.3-7.0 mc (130-42.8 m)
"Short Wave" (C)	7.0-22.0 mc (42.8-13.6 m)
Intermediate Frequency	455 kc

TUBE COMPLEMENT

(1) TYPE-6SA7	First Detector—Oscillator
(2) TYPE-6SK7	Intermediate Amplifier
(3) TYPE-6SQ7	Second-Detector, A.V.C., and A-F Amplifier
(4) TYPE-6F6-G	Power Output
(5) TYPE-5Y4-G	Full-Wave Rectifier
Pilot Lamp (1)	Mazda 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING

Undistorted	1.5 watts
Maximum	3.3 watts

LOUDSPEAKER

Type RL-78-2	5-inch Electrodynamic
Voice-Coil Impedance	3.4 ohms at 400 cycles

POWER SUPPLY RATINGS

Rating A	105-125 volts, 50-60 cycles, 70 watts
Rating B	105-125 volts, 25-60 cycles, 70 watts

CABINET DIMENSIONS

Height	10½ inches
Width	13½ inches
Depth	8⅞ inches
Weight (net)	18½ pounds
Chassis Base Dimensions	12 in. wide, 5¼ in. deep, 2¾ in. high
Overall Chassis Height	7 inches
Tuning Drive Ratio	18 to 1

General Description

Model A-20 is a three-band, table type superheterodyne receiver designed to cover the standard broadcast range of 540 to 1,720 kilocycles, and the short-wave range from 2.3 to 22 megacycles. The cabinet is designed in the Continental manner. Features of design include;—magnetite-core I.F. transformers; magnetite-core "A" band oscillator coil; automatic volume control; continuously variable high frequency tone control; edge-lighted straight-line dial, Phono input socket, A.C. outlet socket, Radio-Phono transfer switch, and a dust-proof electrodynamic loudspeaker.

Miscellaneous Service Data

Precautionary Lead Dress

1. Lead from 2nd I.F. (E) to volume control should be kept close to chassis.
2. R.F. coil leads should be kept short and away from coil.
3. Leads to 6,000 mmf. (C25) should be as short as possible and condenser dressed away from chassis, bearing against 10 ohm (R3) resistor.

Victrola Attachment.—A jack is provided on the rear of chassis for connection to a Victrola Attachment. The cable from the attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment. — If this method is used, connect the meter across the 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 ground terminal, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency is given in the alignment table.

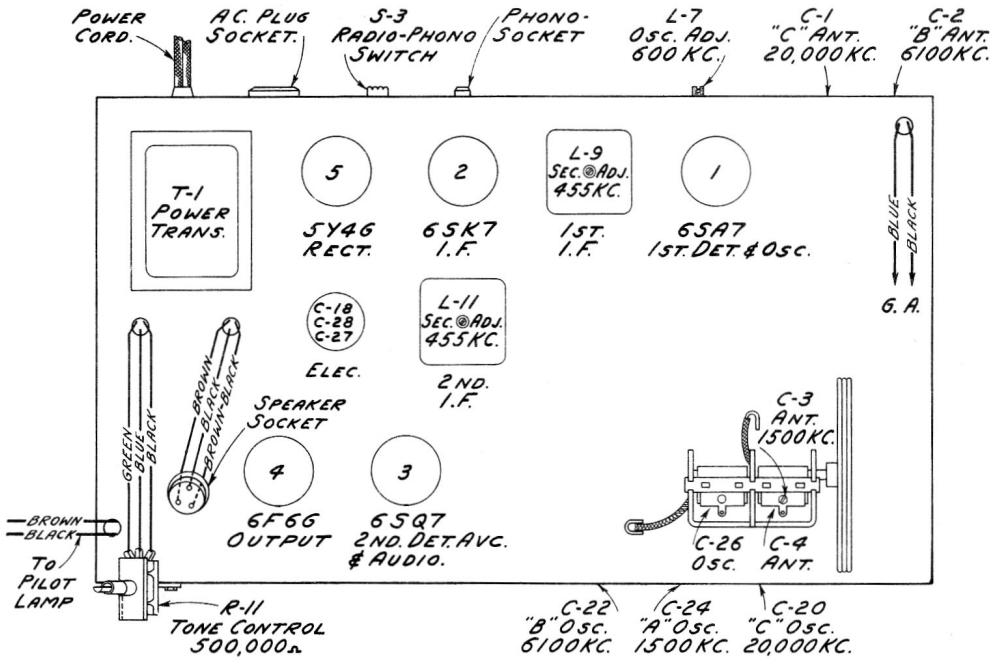
As the first step in r-f alignment, check the position of the drum. The 45 degree mark on the drum scale must be in a horizontal position when the plates are fully meshed. The distance from the edge of the chassis to the drum must not exceed ⅜-inch. The drum is held to the shaft by means of a set screw, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

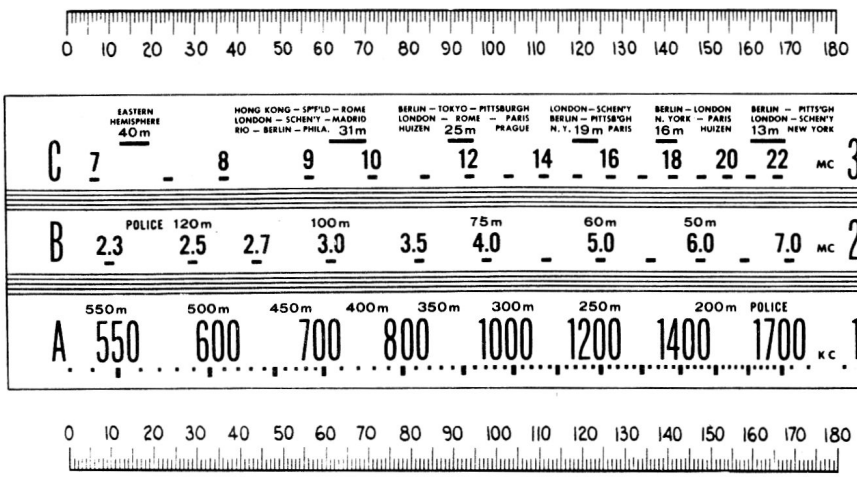
Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"A" Band quiet point between 550-750 kc	L10 and L11 (2nd I.F. trans.)
2	Tuning condenser stator (osc.) in series with .01 mfd. **	455 kc		L8 and L9 (1st I.F. trans.)
3	Antenna lead (blue) in series with 200 mmfd.	600 kc	600 kc (33°) "A" Band	L7†
4		1,500 kc	1,500 kc (152.4°) "A" Band	C3 (ant.) C24 (osc.)
5	Repeat steps 3 and 4			
6	Antenna lead (blue) in series with 400 ohms	20 mc	20 mc (155.4°) "C" Band	C20 (osc.)* C1 (ant.)
7		6 mc	6 mc (149°) "B" Band	C22 (osc.)* C2 (ant.)
8	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C24 (osc.)

* Use minimum capacity peak if two peaks can be obtained.
† Rock gang condenser slightly while adjusting L7.
** Make test-oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.
Note.—Oscillator tracks 455 kc above signal on all bands.



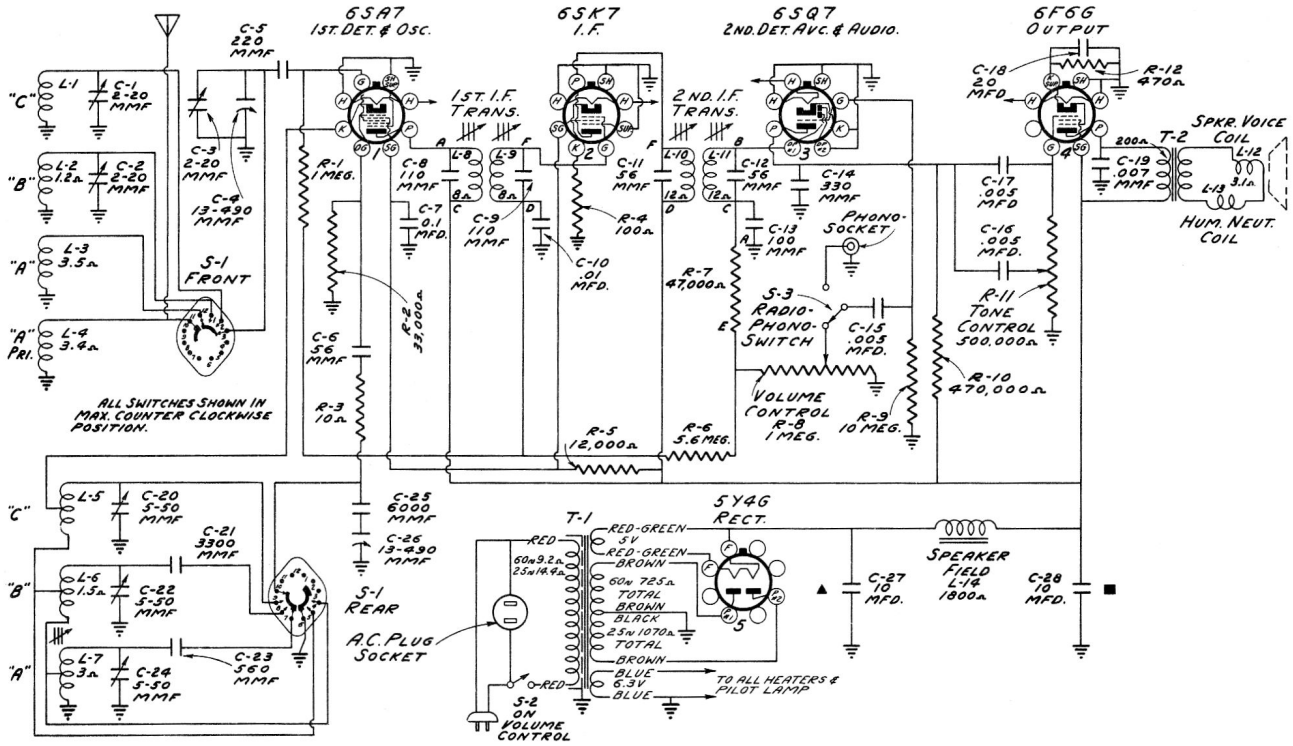
Tube and Trimmer Locations



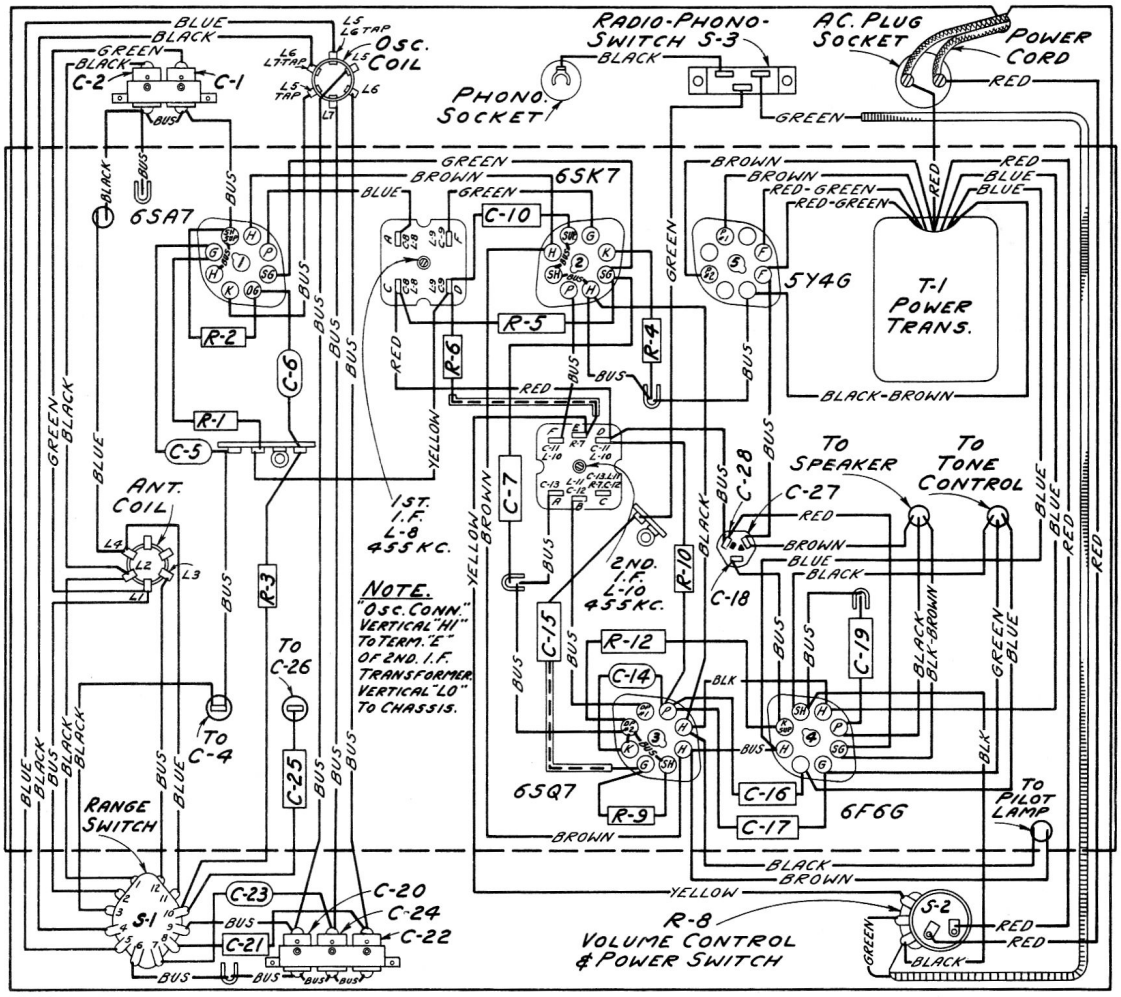
Calibration Scale

Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."



Schematic Circuit Diagram.



Chassis Wiring Diagram.

Radiotron Socket Voltages

TYPE	PLATE	SCREEN GRID	CATHODE	HEATER
6SA7	230V	100V	—	6.3V
6SK7	230V	100V	—	6.3V
6SQ7	98V*	—	—	6.3V
6F6-G	220V	230V	15V	6.3V
5Y4-G	OUTPUT VOLTAGE 335V			5.0V

*NOTE: Values marked with a star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.
Above values hold within plus or minus 20% when measured with a 1000 ohm-per-volt meter.

REPLACEMENT PARTS

Insist on genuine factory tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK NO.	DESCRIPTION
	RECEIVER ASSEMBLIES
32830	Capacitor-Trimmer capacitor bank two sections (C1,C2).....
32829	Capacitor-Trimmer capacitor bank three sections (C20,C22,C24.).....
12723	Capacitor-56 mmfd. (C6).....
12694	Capacitor-220 mmfd.(C5).....
12952	Capacitor-330 mmfd.(C14).....
12537	Capacitor-560 mmfd.(C23).....
31403	Capacitor-3,300 mmfd.(C21).....
31405	Capacitor-6,000 mmfd.(C25).....
4838	Capacitor-.005 mfd.(C15,C16,C17).....
5148	Capacitor-.007 mfd.(C19).....
14393	Capacitor-.01 mfd.(C10).....
4839	Capacitor-0.1 mfd.(C7).....
32240	Capacitor-Electrolytic,2 sections 10 mfd;one section 20 mfd.(C18,C27, C28).....
32821	Coil-Antenna coil (L1,L2,L3,L4).....
32824	Coil-Oscillator coil (L5,L6,L7).....
32817	Condenser-2 gang variable condenser (C3,C4,C26).....
S-2670	Control-Tone control (R11).....
S-2671	Control-Volume control and power switch (R8,S2).....
32634	Cord-Station selector pointer drive cord (47" long).....
32835	Drum-Drive cord drum assembly.....
11891	Lamp-Pilot lamp Mazda #44.....
5119	Plug-3 contact female speaker plug....
13988	Resistor-10 ohm,1/4 watt (R3).....
S-2575	Resistor-100 ohm,1/4 watt(R4).....
30681	Resistor-470 ohm, 1 watt (R12).....
31389	Resistor-12,000 ohm,2-1/2 watt (R5)...
12454	Resistor-33,000 ohm,1/4 watt (R2).....
12285	Resistor-470,000 ohm,1/4 watt (R10)...
13730	Resistor-1 meg.,1/4 watt (R1).....
11668	Resistor-5.6 meg.,1/4 watt (R6).....
13601	Resistor-10 meg., 1/4 watt (R9).....
S-2446	Retainer-A.C. socket retaining ring (Pkg.3).....
S-2497	Retainer-Drive shaft retainer(Pkg.10).
32848	Screw-Drum set screw (Pkg.5).....
S-2676	Shaft-Station selector drive shaft...
31364	Socket-Pilot lamp socket.....
14278	Socket-Phono input socket and plate..
31251	Socket-Tube socket.....
S-2447	Socket-A.C. outlet socket.....
31418	Spring-Drive cord tension spring (Pkg.2).....
S-2678	Switch-Range switch (S1).....
33634	Switch-Radio-phono set-up switch(S3).
S-2679	Transformer-1st I.F.transformer (L8,L9,C8,C9).....
32825	Transformer-2nd I.F.transformer (L10,L11,C11,C12,C13,R7).....
32911	Transformer-Power transformer 105/125 volts 50/60 cycles (T1).....
32910	Transformer-Power transformer 105/125 volts,25/60 cycles (T1).....
	REPRODUCER ASSEMBLIES (RL 78-2)
32907	Cap-Dust cap for cone centre (Pkg.5).
32903	Coil-Field coil (L14).....
32906	Coil-Hum neutralizing coil (L13).....
32904	Cone-Reproducer cone and dust cap(L12)
5118	Plug-3 prong speaker plug.....
32902	Reproducer complete.....
32905	Transformer-Output (T2).....
	MISCELLANEOUS ASSEMBLIES
32837	Dial-Station selector dial scale.....
32847	Indicator-Station selector pointer & carriage.....
S-2680	Knob-Tuning knob.....
S-2681	Knob-Range switch knob.....
32839	Knob-Tone control knob.....
S-2682	Knob-Volume control knob.....
14270	Spring-Knob retaining spring (Pkg.3).