MODEL G-167

Sixteen-Tube, Seven-Band, Keyboard Touch Tuning, A-C Superheterodyne Receiver

Electrical Specifications

FREQUENCY RANGES

"Standard Broadcast"	(A)	540-1,720 kc
"Medium Wave"	(B)	2,300-7,000 kc
"Short Wave"	(C)	7,000-22,000 kc
"49 Meter" Band		5,920-6,230 kc
"31 Meter" Band		9,480-9,700 kc
"25 Meter" Band		11,680-11,940 kc
"19 Meter" Band		15,080-15,390 kc

R-F ALIGNMENT FREQUENCIES

"A" Band	600 kc (osc.); 1,500 kc (osc., ant., det.)
"B" Band	2,400 kc (osc.); 6,100 kc (osc., ant.)
"C" Band	9,600 kc (osc.); 20,000 kc (osc., ant.)
31M	9,600 kc (osc., ant., det.)
49M	6,100 kc (osc.)
25M	11,800 kc (osc.)
19M	15,200 kc (osc.)

Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT

(1)	6K7	R-F Amplifier
(2)	6L7	First Detector
(3)	6J7	Oscillator
(4)	6J7	Oscillator Control
(5)	6K7	First I.F.
(6)	6K7	Second I.F.
(7)	6H6	Second Detector and Muting
(8)	6H6	Discriminator and AVC
(9)	6U5	Tuning Tube
(10)	6J5	First Audio
(11)	6J5	Second Audio
(12)	6J5	Inverter
(13)	6L6	Power Output
(14)	6L6	Power Output
(15)	5T4	Rectifier
(16)	5T4	Rectifier

Pilot Lamps (3) ..... Radio: (2) 6.3 volts, 0.25 ampere Mazda No. 44; (1) 6.3 volts, 0.15 ampere Mazda No. 47
Fuse (Motor) ..... 3 Amperes

POWER SUPPLY RATINGS

Rating A—105-125 volts, 50-60 cycles ..... 180 watts
Rating B—105-125 volts, 25 cycles ..... 180 watts

POWER OUTPUT

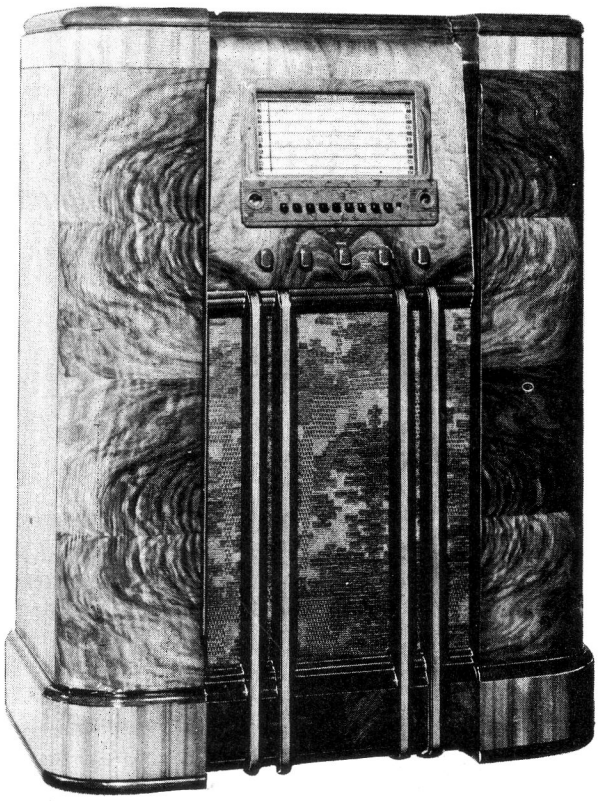
Undistorted ..... 20 watts Maximum ..... 24 watts

LOUDSPEAKER

Type ..... 12-inch Electrodynamic (Triple Cone)
Voice Coil Impedance ..... 11.3 ohms at 400 cycles

Mechanical Specifications

Height (inches) 43
Width (inches) 29
Depth (inches) 19
Weight (Net lbs.) 149
Weight (Shipping lbs.) 176
Chassis dimensions (inches) ..... 4 x $12\frac{5}{16}$ x $22\frac{3}{16}$
Maximum chassis height (inches) ..... $11\frac{3}{8}$
Tuning drive ratio ..... 18 to 1



Model G-167

General Description

Model G-167 is a sixteen-tube superheterodyne receiver mounted in a console cabinet of handsomely matched veneers. Features of design include: "Electric Tuning" for eight broadcast stations; Record Player attachment jack and key switch; magnetite-core tuned, i-f and oscillator coils; temperature stabilized capacitors; four short-wave broadcast spread bands; complete short-wave coverage with two complete short-wave bands; automatic volume control; aurally compensated volume control; "local," "distance," seven point high-fidelity and high frequency tone, control; low frequency tone control; 12 inch, triple-cone, high fidelity speaker; remote control armchair attachment; automatic frequency control with "Electric Tuning" and manual tuning; illuminated band indicator; noise reducing adjustment on "A" band; wave trap; "Tuning Eye" tuning tube; 10 kc whistle filter; audio phase inverter; push-pull beam power output; and "Electrical Harmonic Balancer."

With the unusual characteristics of the instrument described above, naturally, as with other high quality, high fidelity instruments, proper operation is important for maximum satisfaction. The proper use of the Fidelity and tuning controls insures the ultimate in radio entertainment. The Fidelity control has seven positions, the purpose of which is fully explained in the table. In the full range position the reproduction is faithful from 40 to 7,500 cycles. A special filter is employed in the plate circuit of the first audio amplifier to reduce 10 kc whistle.

In the majority of cases, the high fidelity positions of the control, positions 5, 6, and 7, may be used on local stations to give true response of the broadcast program. However, on distant broadcast, or short wave stations, the receiver should be operated with the Fidelity control in 1, 3, or 4 position to eliminate cross talk, monkey chatter, and any other adjacent-channel interference.

The tuning control has a special function used in conjunction with the Fidelity control. When the tuning knob is pushed in, and the Fidelity control is in position No. 2, the i-f response of the receiver will return to its maximum selectivity position. Releasing the tuning knob will broaden the i-f channel as shown in the table. When the Fidelity control is in position No. 3 or 4, and Tuning control is pushed in, the AFC system will be rendered inoperative. With Fidelity control in No. 5, 6, or 7 position, pushing in Tuning control returns i-f channel to a sharp selectivity position, and renders AFC system inoperative. This function of the tuning control should be used when tuning in local, or medium-distant stations, manually. For distant stations, Fidelity control should be in No. 1 or No. 2 positions.

Purpose and Function of Positions of Fidelity Control

Position	Reception of—	I-F Channel*	Audio Channel	A. F. C.	"Electric Tuning"
No. 1	Distant Stations	Sharp (5)	Min. Highs	Off	Off
No. 2	Distant Stations	Med. Sharp (6)	Max. Highs	Off	Off
No. 3	Local and medium distant stations	Sharp (5)	Min. Highs	On	On
No. 4	Same as above	Sharp (5)	Max. Highs	On	On
No. 5	Local Stations	Med. Sharp (6)	Max. Highs	On	On
No. 6	Local Stations	Med. Broad (7)	Max. Highs	On	On
No. 7 Extreme Clockwise	Local Stations	Broad (8)	Max. Highs	On	On

* Numbers in this column refer to curves shown under Alignment Table.

ALIGNMENT PROCEDURE

Alignment using the Cathode Ray Oscillograph is much the preferable method because of the variable selectivity features of these instruments. The curves shown below, illustrate the general shape of the i f selectivity curves for different settings of the Fidelity control, when i-f channel is properly aligned. Connections for the oscillograph are shown in the top view of the receiver chassis. Use short, unshielded leads to oscillograph, and well-shielded leads from test oscillator. If possible, use 30 or 40 kc sweep frequency for i-f alignment.

Output Meter Alignment.—If this method is used, connect meter across voice coil, and turn receiver volume control to maximum. Disregard steps 4 and 7 of alignment table given below. However, a listening check should be made to check operation of Fidelity control, after receiver has been aligned.

Test Oscillator.—For all alignment operations connect the "Gnd" side of test oscillator to chassis, the high side as indicated in table, and keep 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 indicator-drive-cord drum which is mounted on the front 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 "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

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. The spring clip should then be securely fastened to the drive cable with household cement.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band 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 considerable inaccuracy on the spread-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 calibrator (G.E. Stock No. 9572), or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band 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 re-adjusted so that the stations come in at the correct points on the dial.

Using G.E. Stock No. 150 Test Oscillator.—When using this oscillator for spread-band alignment, insert an open-circuit plug in the "EXT. MOD." jack, and set the test-oscillator dial 800 kc lower than the desired frequency for the four lower frequency ranges, and 800 kc higher than the desired frequency for the two high ranges. This provides an unmodulated signal of the desired frequency and the magic eye may be used as an output indicator for this unmodulated signal.

Precautionary Lead Dress

1. C-31, C-32, C-33, C-35, C-36, C-40 should be connected with as short leads as possible.
2. "Osc. Control" grid lead should be dressed away from the high side of "A" Band Oscillator trimmer.
3. The lead from "A" Band R-F Coil to the R-F Tube should be dressed away from chassis and shield.
4. Lead from "A" to "C" Band Antenna Coils should be dressed away from the shield.
5. The antenna leads inside the chassis should go directly to the terminals to which they connect.
6. The lead from the rectifier tube to the first filter capacitor should be dressed away from the Record Player connection.
7. The leads to the Key switches should be dressed away from the Record Player switch, and its associated parts.
8. The output transformer primary leads should be dressed down to the chassis.
9. The 2nd Detector Diode lead should be dressed away from the lead to the discriminator diode. This latter lead should be dressed down to the chassis.

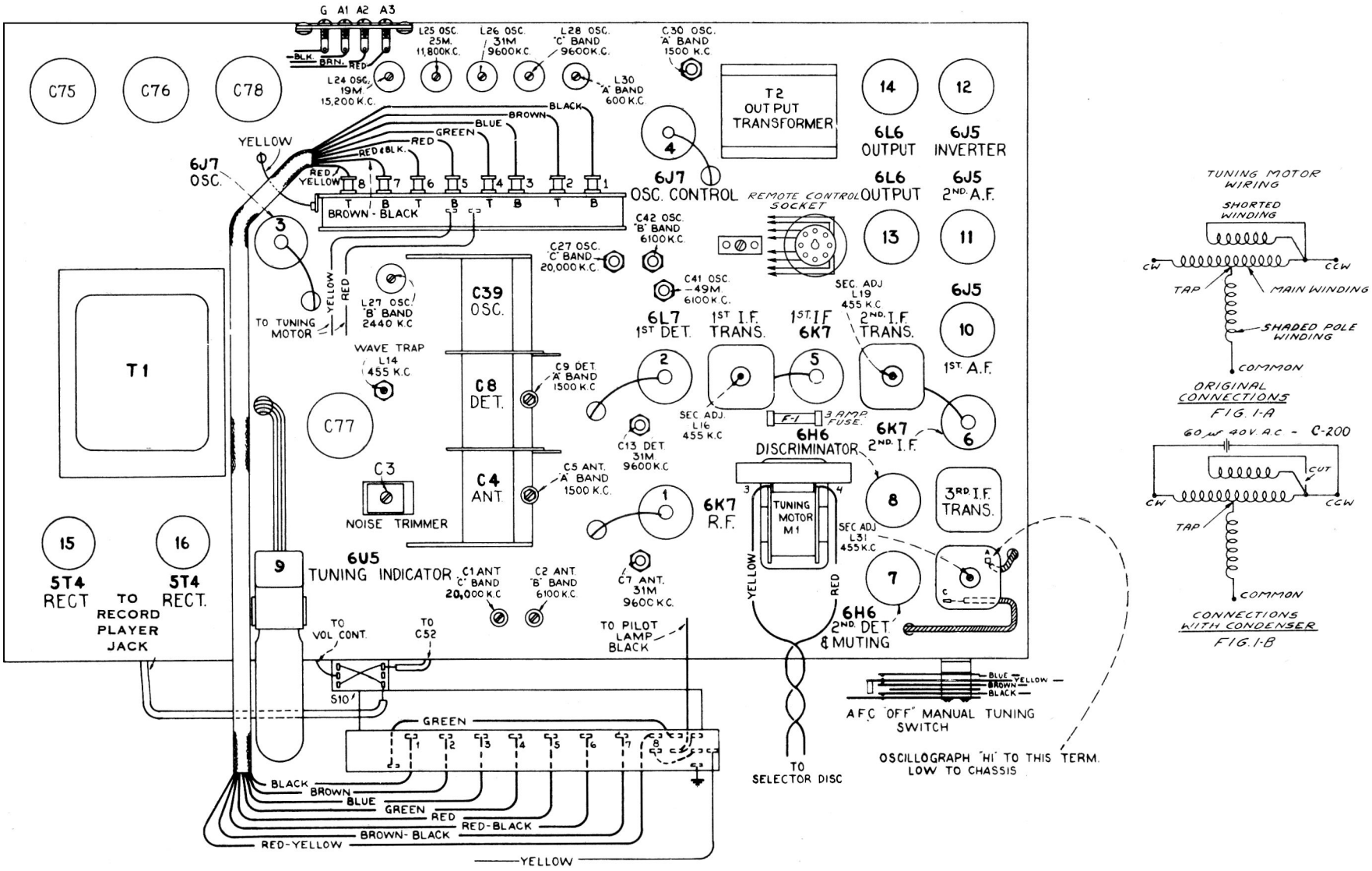
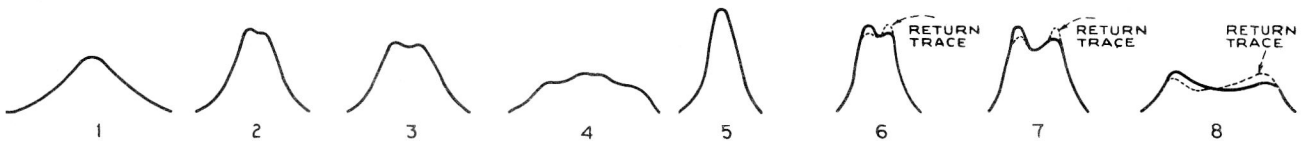


Figure 1—Top View—Model G. 167

Alignment Table

Step	Connect High Side of Test Oscillator to—	Tune Test Oscillator to—	Range Selector	Set Tuning Gang to—	Adjust following for maximum peak output	Check for Selectivity Curve No.
1	Turn fidelity switch to maximum counter-clockwise (No. 1) position.					
2	6K7 2nd I-F Grid Cap in series with .01 mfd.	455 KC	"A"	Quiet Point Between 550 and 750 KC	L21 3rd I-F Trans. L31-L32 4th I-F Trans.	1
3	6K7 1st I-F Grid Cap in series with .01 mfd.	455 KC	"A"		L18, L19 2nd I-F Trans.	2
4	6K7 1st I-F Grid Cap in series with .01 mfd.	455 KC	"A"		Turn Fidelity Control Clockwise to No. 6 position	3
					Turn Fidelity Control Clockwise to No. 7 position	4
5	Turn Fidelity Control to maximum counter-clockwise (No. 1) position.					
6	6L7 1st Det. Grid in series with 300 ohms *Remove Grid Lead*	455 KC	"A"	Quiet Point Between 550 and 750 KC	L15, L16, 1st I-F Trans.	5
7	6L7 1st Det. Grid in series with 300 ohms	455 KC	"A"		Turn Fidelity Control Clockwise to No. 5 position	6
					Turn Fidelity Switch Clockwise to position No. 6	7
					Turn Fidelity Switch Clockwise to position No. 7	8
8	Turn Fidelity Control to maximum counter-clockwise (No. 1) position.					
9	A2 in series with 100 mmf, A1 to Gnd.	600 KC	"A"	600 KC 29°	L30, osc.	
10	A2 in series with 100 mmf, A1 to Gnd.	1,500 KC	"A"	1,500 KC 152.5°	C30, osc.; C5, ant.; C9, det.	
11	A2 in series with 100 mmf, A1 to Gnd.	455 KC	"A"	600 KC 29°	L14, wave trap *Minimum output*	
12	A2 in series with 100 mmf, A1 to Gnd.	6,100 KC	"B"	6,100 KC 147°	C42, osc.; C2, ant.	
13	A2 in series with 100 mmf, A1 to Gnd.	2,440 KC	"B"	2,440 KC 15°	L27, osc.	
14	A2 in series with 100 mmf, A1 to Gnd.	6,100 KC	"B"	6,100 KC 147°	C42	
15	A2 in series with 47 ohms, A3 to Gnd.	20,000 KC	"C"	20,000 KC 156°	C27, osc.; C1, ant.	
16	A2 in series with 47 ohms, A3 to Gnd.	9,600 KC	"C"	9,600 KC 57°	L28, osc.	
17	A2 in series with 47 ohms, A3 to Gnd.	20,000 KC	"C"	20,000 KC 156°	C27, osc.	
18	A2 in series with 47 ohms, A3 to Gnd.	9,600 KC	"31M"	9,600 KC 99°	L26, osc.; C7, ant.; C13, det.	
19*	A2 in series with 47 ohms, A3 to Gnd.	6,100 KC	"49M"	6,100 KC 103°	C41, osc.	
20	A2 in series with 47 ohms, A3 to Gnd.	11,800 KC	"25M"	11,800 KC 90°	L25, osc.	
21	A2 in series with 47 ohms, A3 to Gnd.	15,200 KC	"19M"	15,200 KC 79°	L24, osc.	
22	Proceed to A.F.C. discriminator adjustments.					

*NOTE: In Step 19 only, oscillator tracks on low side of signal; use maximum inductance peak (plunger in) if two peaks can be obtained. All other oscillator trimmers use minimum, inductance or capacity peak (plunger out), if two peaks can be obtained.



I-F Selectivity Curves

A. F. C. Alignment.—After receiver has been fully aligned, turn Fidelity control to No. 1 position, tune in a station of medium signal strength in the neighborhood of 550-650 kc, or, if it is necessary to use a local station for this signal, cut down length of antenna so that signal is about medium strength. Carefully tune in the station using the "Tuning Eye" as an indicator. Tune test oscillator to 455 kc, turn output to maximum, and "Modulation" off. Connect "Gnd" side of test oscillator to chassis, and bring the lead from the high side of test oscillator near the grid lead of 1st detector, 6L7 tube, until a beat note can be heard in the loudspeaker. Do not bring lead any closer than 1 inch to grid lead of 6L7, or detuning of circuit will result, and the adjustment will not be accurate.

Adjust frequency of test oscillator till beat-note heard in loudspeaker is at zero-beat. Turn Fidelity control to No. 3 position, and a beat note will again be heard. Adjust trimmer, L32, bottom of 4th i-f transformer, till beat note heard is again at zero-beat. Turn Fidelity control to No. 1 position, and check for zero-beat. When properly adjusted turning Fidelity control from No. 1 to No. 3 position should not affect zero-beat.

With Fidelity control in No. 1 position, tune receiver off resonance. Turn Fidelity control to No. 3 position —station should "fall" into resonance due to A. F. C. aciton. Push in Tuning Control Shaft without turning it—station should again be off resonance as originally tuned.

Miscellaneous Service Data

Antenna Connections

G.E. Counterpoise Antenna Kit.—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counterpoise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

Noise-Reducing Adjustment.—After the G.E. Counterpoise Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C3 to a point where this noise is reduced to a minimum.

Adjustment of the noise reducing trimmer C3 should be made in the customer's home, with the G.E. Counterpoise Antenna connected to the receiver.

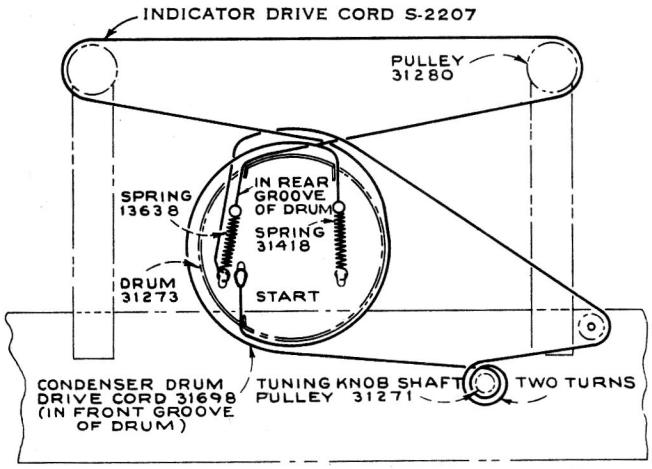
This adjustment is effective only when the G.E. Counterpoise Antenna is used. For all other types of antenna, the noise-adjustment trimmer should be screwed all the way down.

Other Antennas.—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

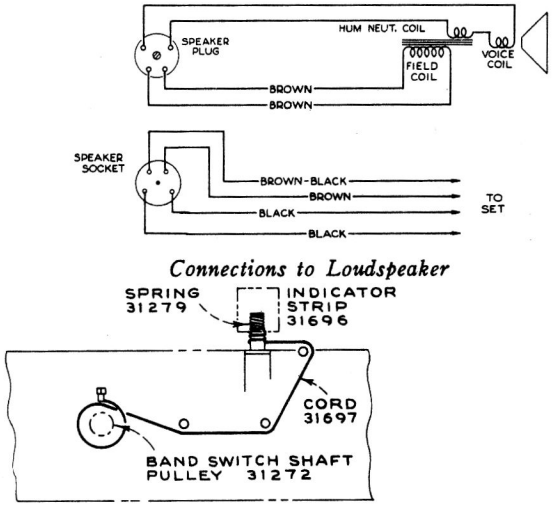
Loudspeaker.—No attempt should be made to remove the aluminum cone cap of the loudspeaker cone. This is securely cemented to the cone, and any attempt to remove it may result in serious damage to the cone assembly. The cone must be centered by moving the cone in and out and getting the "feel" of the cone to find where it is rubbing against the pole pieces. The two screws holding the spider support are accessible from the rear of the speaker. By loosening these screws and moving the cone by hand, it is possible to center the cone satisfactorily. Another method, which may be used, is to connect speaker to receiver, feed a low frequency note of from 40-60 cycles into the audio input of the set, and turning up the volume control—move the spider support until no rattle is heard in speaker, with about 10 watts output. Replacement cones will have to be centered in the same manner, as the cone will be supplied with cone cap fastened securely in position.

NOTE.—Due to inverse feedback used on these models, it is very important to connect output transformers exactly as shown in the schematic diagram.

Record Player Attachment.—A jack located on one side of the chassis is provided for connecting a Record Player Attachment into the audio-amplifying circuit on the Model G-167. The cable running from the Record Playing Attachment should be terminated in a Stock No. 31048 plug to fit the jack.



TUNING CONDENSER IN FULL MESH POSITION

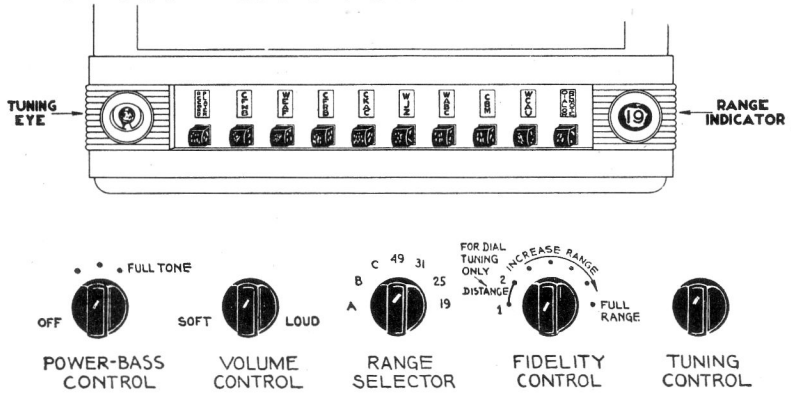


BAND INDICATOR DRIVE CORD

Details of Tuning Mechanism Model G-167

Connections to Loudspeaker

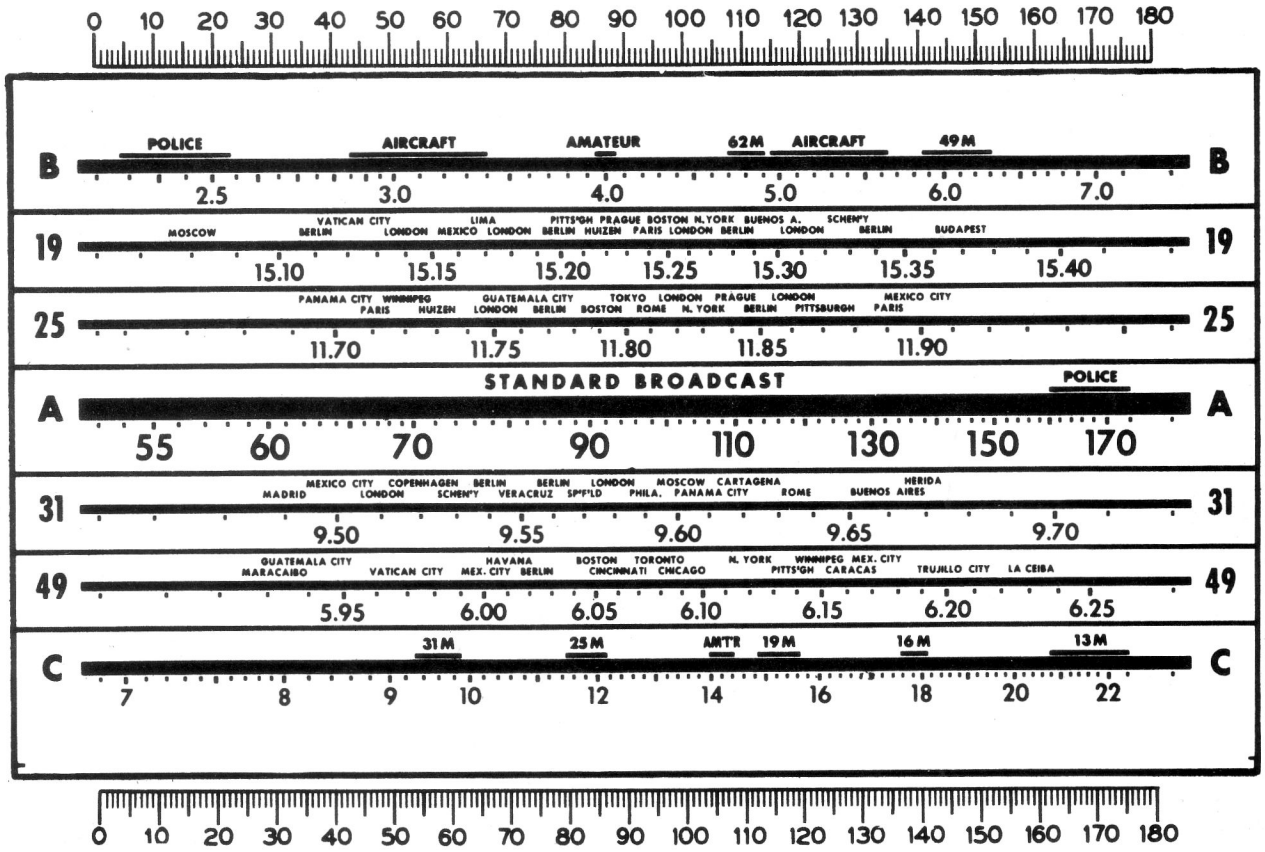
ADJUSTMENTS FOR ELECTRIC TUNING



Location of Controls

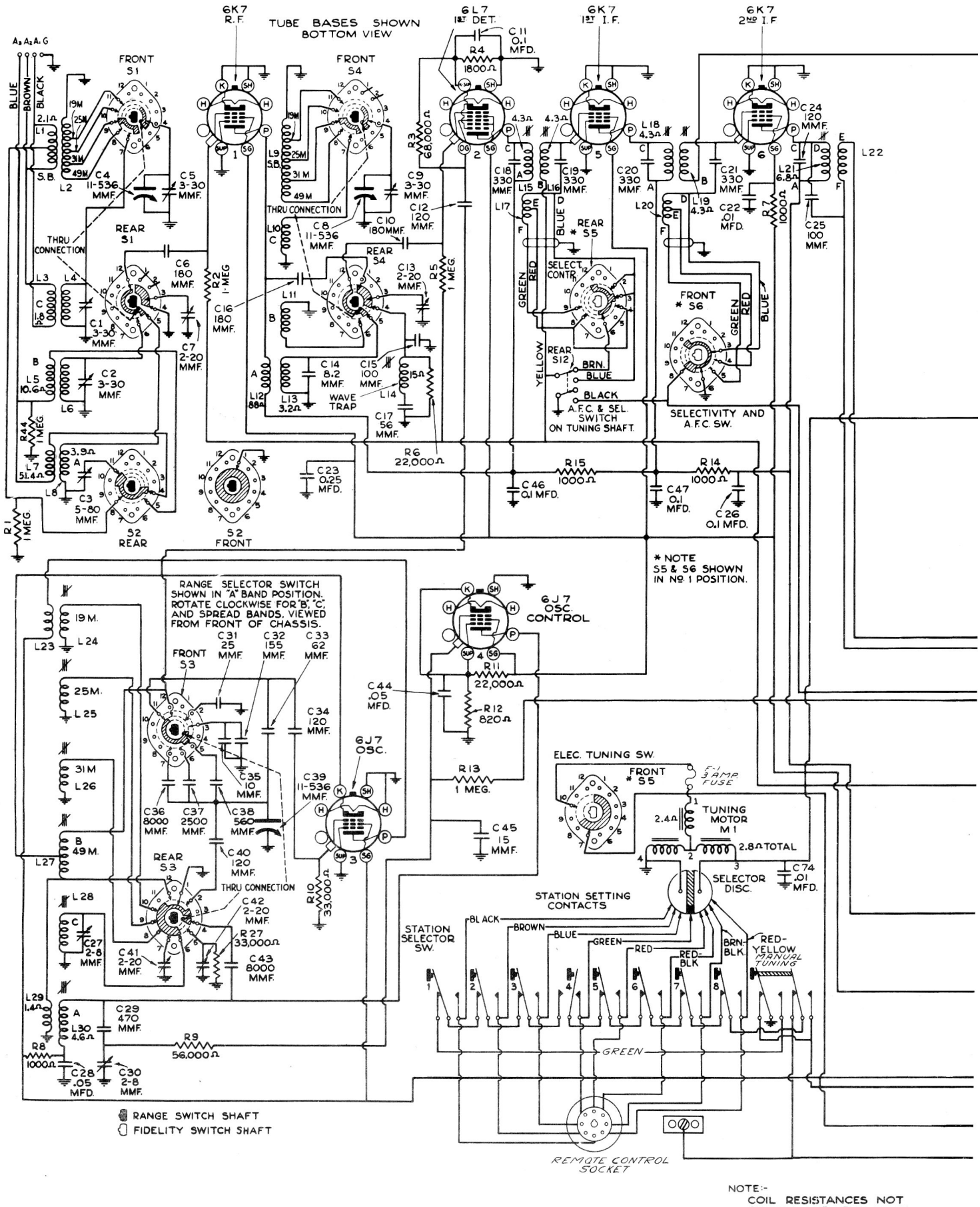
The left-hand Key is a Record Player-Attachment switch.
The right-hand Key is for Manual tuning.

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.
2. **Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.**
3. Turn Fidelity Control maximum counter-clockwise.
4. Press down the "manual-tuning" (right hand) key.
5. Manually tune in the first station on the list, using the "Tuning Eye" for accurate tuning.
6. Hold down the "manual-tuning" key, and press down station key No. 1 (second from left). Both keys will stay down, central dial lamp will light brightly or dully, depending on which side of disc, the contact is. Move station-setting contract No. 1 to the insulating line on the disc at rear of gang. When the contact is correctly centered on the insulating line, the central dial lamp will go out.
7. Press down any other key in order to release the manual-tuning key and station key No. 1. Then press down station key No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
8. Repeat this process for the remaining stations.



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

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 90° on the calibration scale corresponds approximately to 11.8 mc on the 25-meter band, and 940 kc on "A" band, etc. Read instructions under "Alignment Procedure."



NOTE:-
COIL RESISTANCES NOT SHOWN ARE LESS THAN ONE OHM.

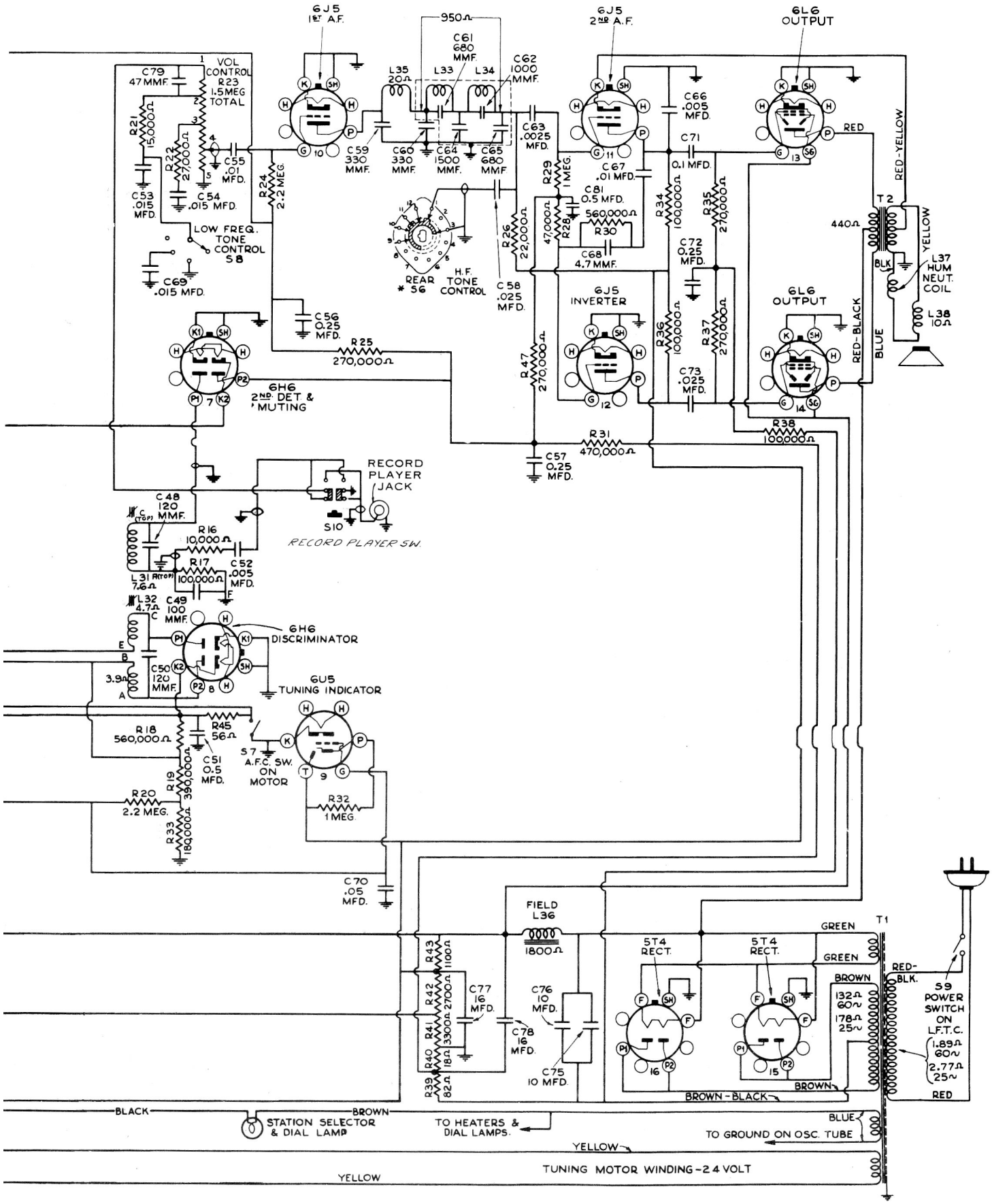


Figure 2—Schematic Circuit Diagram—Model G. 167

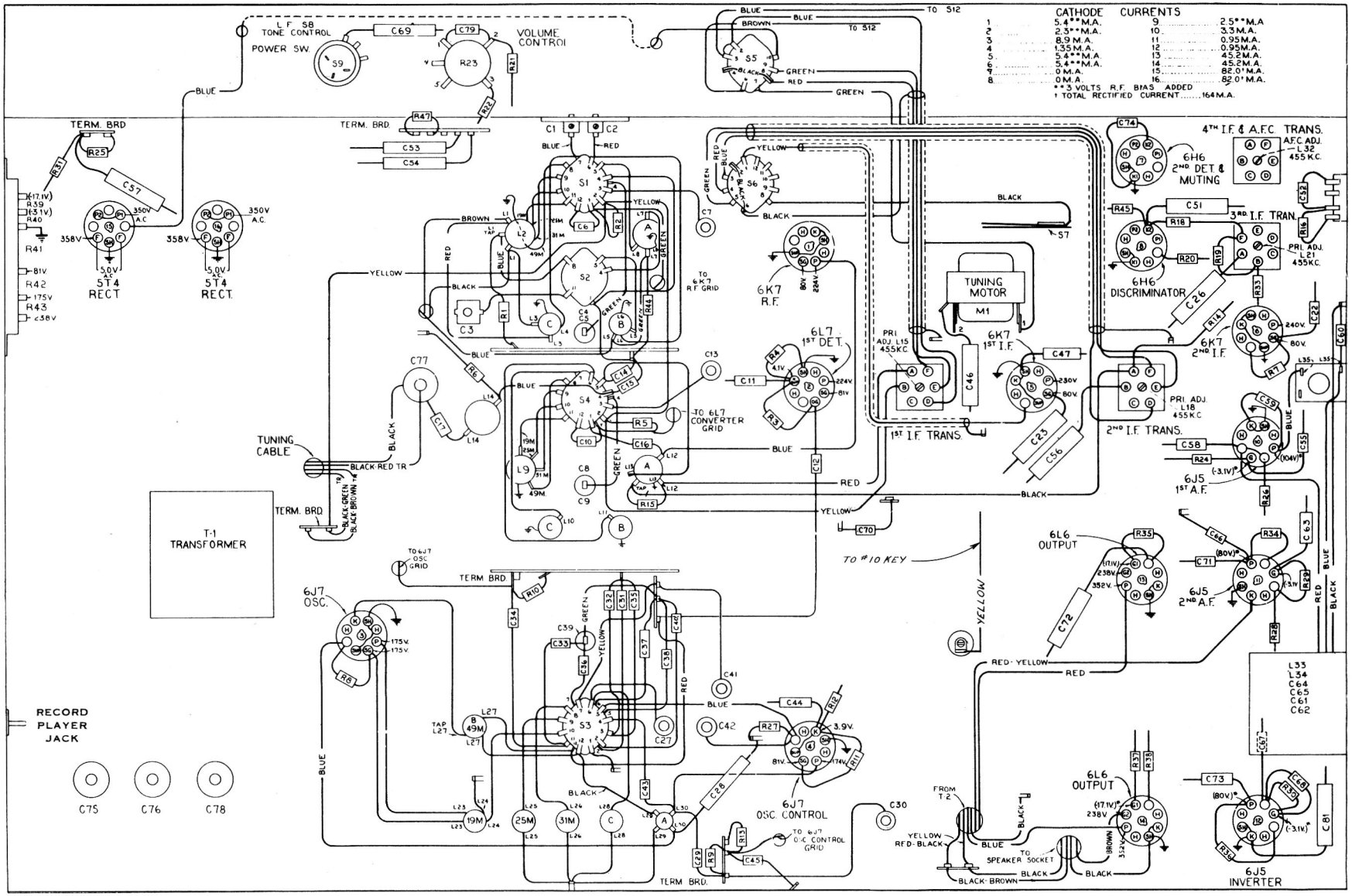


Figure 3—R-F. Wiring, Parts Location and Socket Voltage Diagram—Model G. 167

* **NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

Electric Tuning Mechanism

The circuit of the electric tuning mechanism is shown in the schematic diagram, and the mechanical details are illustrated below.

The action can be understood by following a cycle of operation:

When a station key is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken. Inertia carries the insulation line past the station-setting contact which then makes contact to the other half of the disc: This completes the circuit to the other side of the motor field coil, causing the motor to reverse. The floating flywheel is still turning in the original direction and therefore slows down the reversal movement of the motor; as a result the selector disc is moved slowly back until the insulation line is under the station-setting contact, when the circuit is broken and the mechanism stops.

Muting Circuit

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to last I-F tube, 1st audio, 2nd audio and inverter tubes. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

Adjustment of Flywheel Friction

In normal operation, the motor drives the tuning condenser and selector disc until the insulation line just passes the particular station-setting contact: The motor then reverses and moves the disc slowly in the opposite direction until the insulation line is under the contact, and the mechanism stops.

In some cases, particularly with high line-voltage, the disc may make two or three reversals before stopping.

The flywheel friction adjustment screw should be set to give the least number of reversals with the chassis in normal operating position.

Adjustment of Selector Disc

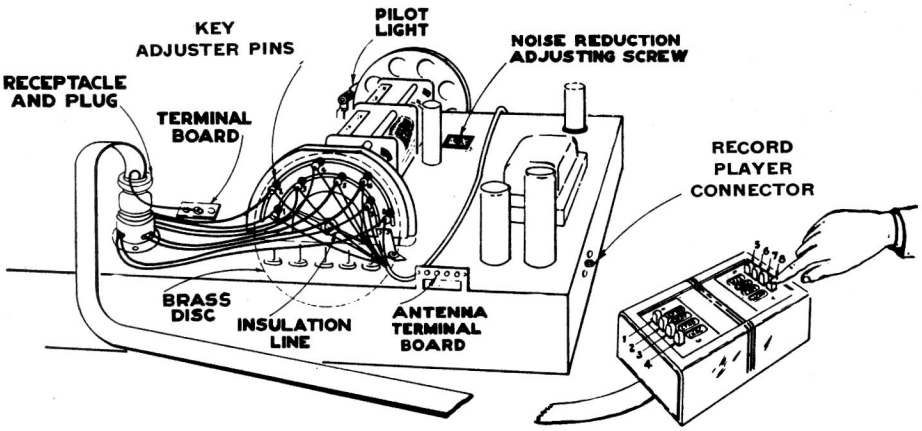
The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The operating-end has dark insulating material and the brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

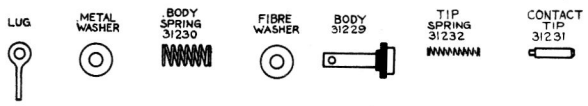
Remote Control Unit

When a Model RK67 Remote Control is connected to the Receiver, as shown, it duplicates the action of the keys on the front panel, when Dial or Remote Key is pushed in. The centre lead of the remote control cable is connected to the terminal on the chassis, and its plug is inserted in the socket provided for it.

In operating the RK67 Remote Control, the key must be held down until the station has been tuned in. Care must be taken not to hold two of the keys down at one time as both windings of the motor may be engaged simultaneously, causing the motor to be inoperative and overheated.



Remote Control Connections



Component Parts of Station Setting Contacts

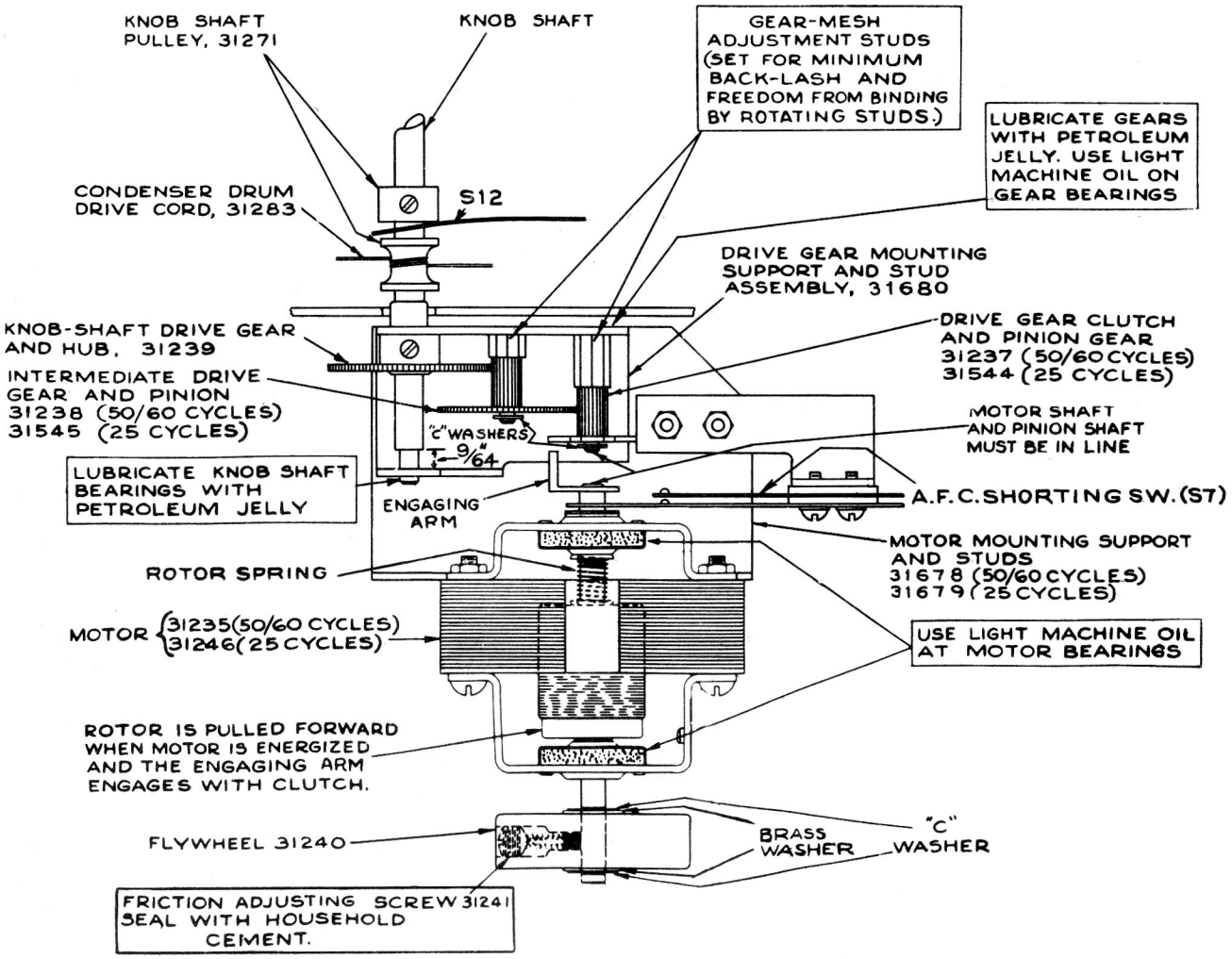


Figure 4— Motor and Gear Mechanism

There must be 1/32-inch clearance between the end of the engaging arm and the face of the intermediate gear when the motor is in its full forward position.

Lubrication

Motor bearings and **gear bearings;** use light machine oil.

Gear faces; use "Pure Oil No. 611" or petroleum jelly.

Dial-indicator pulleys and **rails;** use "Castordag" or petroleum jelly.

Selector disc; apply ***thin*** film of petroleum jelly.

Friction leather on flywheel; apply "neats-foot" oil. When replacing leather, soak it for at least 24 hours in neats-foot oil, and insert in flywheel while dripping.

Adjustments

To adjust S12, loosen knob shaft pulley, and adjust it so that when shaft is pushed all the way in, the ends of the leaves of S12 will be deflected 1/32-inch from their original position. When tuning shaft is released, distance between contacts of S12 should be 1/32-inch.

S7 should be adjusted so that when motor is in its full forward or upward position, the ends of the leaves should be deflected 1/32-inch from their original position.

REPLACEMENT PARTS-MODEL G-167

STOCK No.	DESCRIPTION
	RECEIVER ASSEMBLIES
31253	Board-Antenna-ground terminal board....
31276	Bracket-Band indicator mounting bracket less band indicating strip,cord and tension spring.....
31282	Bracket-Tuning Eye bracket and clip....
31712	Cable-3-conductor shielded fidelity switch cable.....
31711	Cable-4-conductor shielded fidelity switch cable.....
31710	Cable-Low capacity phono. cable.....
31715	Cable-Push-button switch-to-selector contacts cable.....
12607	Cap-Top shield cap for first,second,or fourth i-f transformer.....
12807	Capacitor-Adjustable trimmer,2-8 mmfd. (C27,C30).....
12884	Capacitor-Adjustable trimmer,2-20 mmfd. (C7,C13,C41,C42).....
31292	Capacitor-Dual adjustable trimmer,3-30 mmfd. each section (C1,C2).....
14392	Capacitor-4.7 mmfd. (C68).....
31252	Capacitor-Adjustable trimmer,5-80 mmfd. (C3).....
13001	Capacitor-8.2 mmfd. (C14).....
31709	Capacitor-10 mmfd. (C35).....
12896	Capacitor-15 mmfd. (C45).....
31707	Capacitor-25 mmfd. (C31).....
13141	Capacitor-47 mmfd. (C79).....
12723	Capacitor-56 mmfd. (C17).....
31705	Capacitor-62 mmfd. (C33).....
31270	Capacitor-100 mmfd. (C25,C49).....
12720	Capacitor-100 mmfd. (C15).....
31706	Capacitor-120 mmfd. (C40).....
12724	Capacitor-120 mmfd. (C12,C34).....
31757	Capacitor-120 mmfd. (C24,C48,C50).....
31708	Capacitor-155 mmfd. (C32).....
13003	Capacitor-180 mmfd. (C6,C10,C16).....
12952	Capacitor-330 mmfd. (C59,C60).....
31756	Capacitor-330 mmfd. (C18,C19,C20,C21)..
30433	Capacitor-470 mmfd. (C29).....
31702	Capacitor-560 mmfd. (C38).....
31703	Capacitor-2,500 mmfd.(C37).....
31704	Capacitor-8,000 mmfd.(C36,C43).....
5107	Capacitor-.0025 mfd. (C63).....
4838	Capacitor-.005 mfd. (C52,C66).....
14393	Capacitor-.01 mfd. (C22,C55,C67,C74).
11315	Capacitor-.015 mfd. (C53,C54,C69).....
30938	Capacitor-.025 mfd. (C58,C73).....
4886	Capacitor-.05 mfd. (C28).....
30882	Capacitor-.05 mfd. (C70).....
4839	Capacitor-0.1 mfd. (C26,C46,C11,C47).
30899	Capacitor-0.1 mfd. (C71).....
30965	Capacitor-0.25 mfd. (C56,C72,C23,C57).
31701	Capacitor-0.5 mfd. (C51,C81).....
11203	Capacitor-10 mfd. (C75,C76).....
14377	Capacitor-16 mfd. (C77).....
5212	Capacitor-16 mfd. (C78).....
31544	Clutch-Variable condenser drive gear clutch and pinion gear-for 25-cycle models only.....
31237	Clutch-Variable condenser drive gear clutch and pinion gear-for 50/60 cycle models only.....
31669	Coil-"A" Band antenna coil (L7,L8).....
31689	Coil-"A" Band oscillator coil (L29,L30)
31672	Coil-"A" Band r-f coil (L12,L13).....
31670	Coil-"B" band antenna coil (L5,L6).....
31690	Coil-"B" and 49-meter band oscillator coil (L27).....
14952	Coil-"B" band r-f coil (L11).....
31671	Coil-"C" band antenna coil (L3,L4).....
31255	Coil-"C" or 31 meter band oscillator coil (L26,L28).....
14953	Coil-"C" band r-f coil (L10).....
12819	Coil-Choke coil (L35).....
31688	Coil-19 meter band oscillator coil (L23, L24).....
31254	Coil-25 meter band oscillator coil (L25)
31673	Coil-49-,31-,25-,and 19-meter bands antenna coil (L1,L2).....
14954	Coil-49-,31-,25-,and 19-meter bands r-f coil (L9).....
31676	Condenser-3-gang variable (C4,C5,C8,C9, C39).....
31231	Contact-contact tip for selector plunger (Pkg.of 2).....
31345	Contact-Key switch contacts,comprising 10-contacts riveted on insulating strip.....
31344	Contact-Key switch contacts,comprising 13 contacts riveted on insulating strip.....
31697	Cord-Band indicator drive cord.....
S-2207	Cord-Pointer drive cord.....
31698	Cord-Variable condenser drive cord....
31273	Drum-Variable condenser drive cord drum.....
31686	Filter-10-kc filter (133,L34,C61,C62, C64,C65).....
31240	Flywheel-Variable condenser drive motor flywheel.....
31239	Gear-Variable condenser knob shaft drive gear and hub.....
31545	Gear-Variable condenser intermediate drive gear and pinion gear-for 25-cycle models only.....
31238	Gear-Variable condenser intermediate drive gear and pinion gear-for 50/60 cycle models only.....
31696	Indicator-Band indicator strip.....
31480	Lamp-Electric tuning adjustment indicator lamp.....
11891	Lamp-Dial lamp.....
31243	Leather-Friction leather for flywheel (Pkg.of 2).....
31346	Lock Plate-Key switch lock plate,comprising 10 contact locks in one strip
31246	Motor-Variable condenser drive motor-for 25 cycle models only (M1).....
31235	Motor-Variable condenser drive motor-for 50/60 cycle models only (M1).....
12471	Plate-Mounting plate and rubber for cushion socket-less socket.....
31227	Plate-Selector mounting plate and spacers-mounts on rear of variable condenser.....
31228	Plate-Selector contact plate-less plungers.....
31229	Plunger-Selector plunger-less contact tip and Tip Spring.....
5040	Plug-4 contact female plug for speaker cable.....
14697	Pulley-Variable condenser drive cord intermediate pulley.....
31280	Pulley-Indicator pointer drive cord pulley.....
31272	Pulley-Range switch shaft pulley.....
31271	Pulley-Station selector knob shaft pulley.....
31693	Resistor-Voltage divider,comprising one 82 ohm, one 18 ohm, one 3,300 ohm, one 2,700 ohm, one 1,100 ohm sections (R39,R40,R41,R42,R43).....
13220	Resistor-56 ohms, ½ watt (R45).....
14076	Resistor-820 ohms,½ watt (R12).....
14720	Resistor-1,000 ohms,½ watt (R7,R8,R14, R15).....
12194	Resistor-1,800 ohms, ½ watt (R4).....
14559	Resistor-10,000 ohms, ½ watt (R16)....
12695	Resistor-15,000 ohms,½ watt (R21).....
13998	Resistor-22,000 ohms,½ watt (R6).....
30492	Resistor-22,000 ohms,½ watt (R11,R26).
12738	Resistor-27,000 ohms,½ watt (R22).....
12454	Resistor-33,000 ohms,½ watt (R10,R27).
12412	Resistor-47,000 ohms,½ watt (R28).....
12286	Resistor-56,000 ohms,½ watt (R9).....
13715	Resistor-68,000 ohms,½ watt (R3).....
14560	Resistor-100,000 ohms,½ watt (R17,R34, R36,R38).....
13698	Resistor-180,000 ohms,½ watt (R33)....
12199	Resistor-270,000 ohms,½ watt (R25, R35,R37,R47).....
13479	Resistor-390,000 ohms,½ watt (R19)....
12285	Resistor-470,000 ohms,½ watt (R31)....
12486	Resistor-560,000 ohms,½ watt (R18,R30)
12013	Resistor-1 meg.1/10 watt (R32).....
13730	Resistor-1 meg., ½ watt (R1,R2,R5,R13, R29,R44).....
12679	Resistor-2.2 meg.,½ watt (R20,R24)....
14887	Retainer-Pointer drive cord pulley (Pkg.of 20).....

REPLACEMENT PARTS —— MODEL G-167

STOCK No.	DESCRIPTION	
31233	Rotor-Selector rotor disc-mounts on rear of variable condenser shaft.....	
31241	Screw-¼-20 x 3/16-in. headless, cone point set screw for fly-wheel(Pkg.of 20).....	
14350	Screw-No.8-32 square head set screw for rotor,Stock No.31233 (Pkg.of 10).	
4669	Screw-No.8-32x3/8 in.square head set screw for pulley,Stock No.31272 and 31271 and drum, Stock No.31273 (Pkg. of 10).....	
4119	Screw-No.8-32x¼-in.headless set screw for gear,Stock No.31239 (Pkg.of 20)..	
31681	Shaft-Variable condenser drive knob shaft.....	
31364	Socket-Dial lamp socket.....	
31365	Socket-Electric Tuning adjustment indicator lamp socket.....	
13871	Socket-"Tuning Eye" socket.....	
14278	Socket-Phono. input socket.....	
31251	Socket-Tube socket.....	
31232	Spring-Contact tip spring for selector plunger (Pkg.of 10).....	
13638	Spring-Pointer drive cord tension spring (Pkg.of 5).....	
31230	Spring-Selector plunger body spring (Pkg.of 10).....	
31279	Spring-Tension spring for band indicator (Pkg.of 10).....	
31313	Spring-Tension spring for Key Switch.. switch latch bar (Pkg.of 5).....	
31242	Spring-Tension spring for flywheel (Pkg.of 10).....	
31418	Spring-Variable condenser drive cord tension spring(Pkg.of 3).....	
31680	Support-Variable condenser drive gear mounting support and studs.....	
31679	Support-Variable condenser motor mounting support and studs-for 25 cycle models only.....	
31678	Support-Variable condenser motor mounting support and studs-for 50/60 cycle models only.....	
31677	Switch-Electric Tuning A.F.C. suppression switch (S7).....	
31684	Switch-Fidelity switch (S5,S6).....	
31683	Switch-L.f tone and power switch(S8,S9)	
31700	Switch-Manual tuning A.F.C. and selectivity switch (S12).....	
31360	Switch-Record Player Switch for mounting on key switch assembly (S10).....	
31695	Switch-Key switch and bracket complete.	
31668	Switch-Range switch only-less coils (S1,S2,S3,S4).....	
31746	Transformer-First i-f transformer (L15,L16,L17,C18,C19).....	
31749	Transformer-Second i-f transformer (L18,L19,L20,C20,C21).....	
31747	Transformer-Third i-f transformer (L21,L22,C24,C25).....	
31748	Transformer-Fourth i-f transformer (L31,L32,C48,C49,C50,R17).....	
31685	Transformer-Output transformer (T2)...	
31675	Transformer-Power transformer,105-120 volts,25-60 cycle (T1).....	
31674	Transformer-Power transformer, 105-120 volts,50-60 cycle (T1).....	
12654	Trap-Wave trap (L14).....	
31682	Volume Control (R23).....	
	SPEAKER ASSEMBLIES	
	Speaker RL76B-1	
14604	Coil-Hum neutralizing coil(L37).....	
31723	Coil-speaker field coil (L36).....	
31721	Cone-Speaker cone and voice coil (L38)	
5039	Plug-4-contact male plug for speaker..	
14358	Screw-Cap screw and washer to hold core (Pkg.of 5).....	
31718	Speaker complete.....	
	MISCELLANEOUS ASSEMBLIES	
S-2199	Key-Station selector key.....	
31286	Carriage-Indicator pointer carriage and clip.....	
31456	Cover-Protective covers for key markers	
S-2200	Escutcheon-Station selector dial escutcheon.....	
S-2155	Knob-Range switch,tone control, volume control knob.....	
S-2205	Knob-Station selector knob.....	
S-2206	Marker-Dial-Remote Key marker Pkg.of 10.....	
S-2185	Marker-"Record Player" key marker Pkg.of 10.....	
S-2183	Marker-Station call letter key markers	
12993	Screw-No. 8-32 x 3/8 in. headless set screw for knob, Stock No.S-2205 Pkg. of 10.....	
31287	Shaft-Slide shaft for indicator pointer carriage.....	
14270	Spring-Retaining Spring for knob, Stock No. S-2155 (Pkg.of 10).....	
S-2204	Dial-Station selector dial scale.....	
S-2209	Fuse-3 ampere motor fuse.....	
S-2208	Capacitor-60 mfd. (C200).....	
	ANTENNA ASSEMBLIES	
31426	Counterpoise Line-Additional length 60-ft. long.....	
12426	Insulator-Strain and counterpoise insulator (Pkg.of 5).....	
9816	Transmission Line-Additional length 60 ft. long.....	