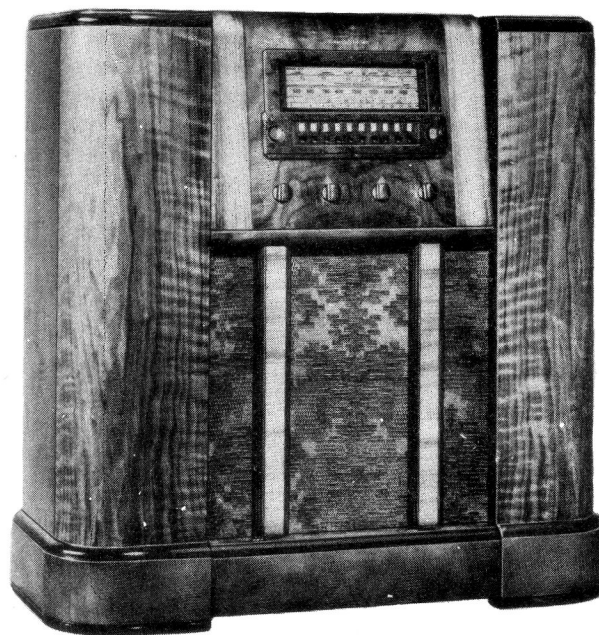


MODEL G-88K

Eight-Tube, Three-Band, Touch Tuning,
A-C Superheterodyne Receiver



Electrical Specifications

TUBE COMPLEMENT

(1) Type 6K7	R.F. Amplifier
(2) Type 6L7	First Detector
(3) Type 6J7	Oscillator
(4) Type 6K7	I. F. Amplifier
(5) Type 6Q7	Second Det., A.V.C. Muting, Audio Amplifier
(6) Type 6F6	Power Amplifier
(7) Type 6U5	Cathode Ray Tuning Tube
(8) Type 5W4	Full Wave Rectifier
Pilot Lamps (3)	one 6-8 volts, .15 amp., and two Mazda 44, 6.3 volts, .25 amp.

POWER SUPPLY RATINGS

Rating A	105-125 volts, 50-60 cycles, 90 watts
Rating B	105-125 volts, 25 cycles, 90 watts

Mechanical Specifications

Height	36 $\frac{1}{8}$ inches
Width	35 $\frac{3}{8}$ inches
Depth	13 $\frac{3}{4}$ inches
Weight (net)	77 pounds
Weight (shipping)	92 pounds
Chassis Base Dimensions	15 $\frac{5}{8}$ inches x 8 $\frac{1}{2}$ inches x 3 $\frac{1}{8}$ inches
Over-all Chassis Height	9 $\frac{1}{2}$ inches
Operating Controls .. (1) Power Switch-Tone; (2) Volume; (3) Tuning; (4) Range Selector, left to right, "A," "B," "C"; Ten Keys; left to right, Record Player Switch, Eight Station Keys, Dial-Tuning Key.	
Tuning Drive Ratio	18 to 1

General Description

This receiver employs an eight-tube, three-band, superheterodyne circuit, the arrangement of which is shown in the Schematic Circuit Diagram. Features of design include touch tuning for eight broadcast stations; magnetite-core i-f transformers and magnetite-core "A" band oscillator coil; automatic volume

control; jack and switch for Record Player Attachment; "Cathode Ray" tuning tube; 12-inch, dust-proof electrodynamic loudspeaker; aural-compensated audio volume control; continuously variable high-frequency tone control; new straight-line dial; band indicator; temperature-stabilized capacitors.

Service Data

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place upon completion of adjustment.

Record Player Attachment.—A jack located near the tuning tube is provided for connecting a Record Player Attachment into the audio-amplifying circuit. The cable running from the Record Player Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Calibration Scale

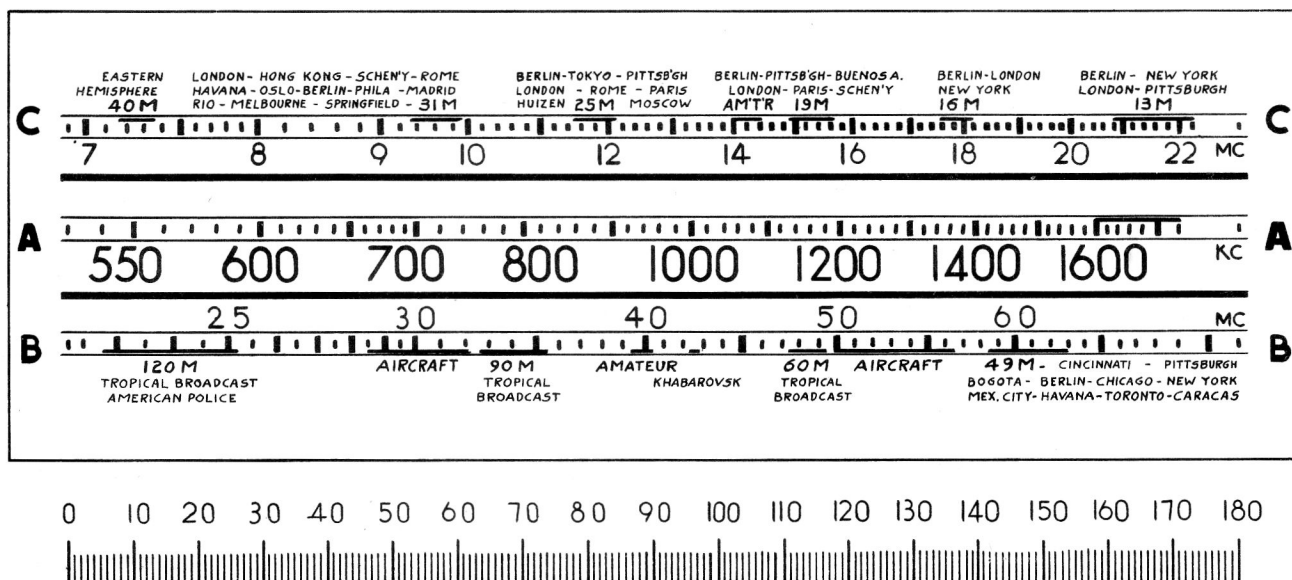


Figure 1—Model G88K Dial, and Corresponding 0-180° Calibration Scale

The corresponding dial setting for any reading of the calibration scale can be determined by drawing a line straight from this point; for example, 151.5° on the calibration scale corresponds to a dial reading of 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

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 receiver chassis, 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 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.

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

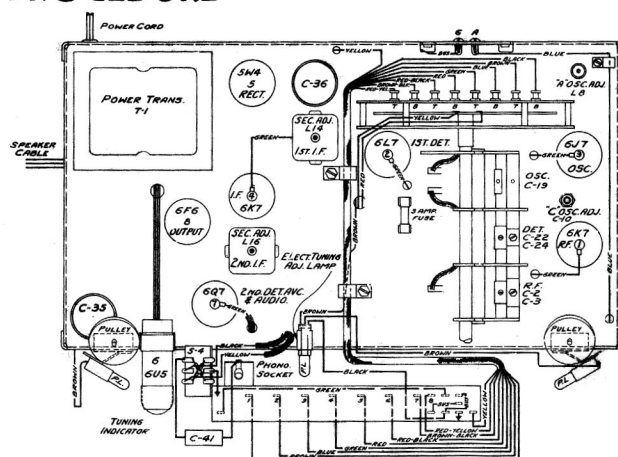


Figure 2—Tube and Trimmer Locations

"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-oscillator to —	Tune test-oscillator to —	Range Selector	Set tuning gang to—	Adjust the following for max. peak output
No. 1	6K7 I-F grid cap in series with .01 mfd.	455 kc	"A"	Quiet point between 550-750 kc	L15, L16 (2nd I-F Transformer)
No. 2	6L7 Det. grid cap in series with .01 mfd.	455 kc	"A"		L13, L14 (1st I-F Transformer)
No. 3	Ant. Terminal	20 mc	"C"	20 mc (147.5°)	C10 (osc.)* C2 (ant.) C24 (det.)†
No. 4	"A" in series with 100 mmfd.	6,100 kc	"B"	6,100 kc (145.5°)	C13 (osc.):**
No. 5	"A" in series with 100 mmfd.	1,500 kc	"A"	1,500 kc (151.5°)	C16 (osc.)
No. 6	"A" in series with 100 mmfd.	600 kc	"A"	600 kc (29.5°)	L8 (osc.)

* Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 141.5° (19,090 kc), at which point a weaker signal should be received.

** Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 124° (5,190 kc), at which point a weaker signal should be received.

† Rock gang condenser and use maximum capacity peak if two peaks can be obtained with C24.

ADJUSTMENTS FOR ELECTRIC TUNING

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.

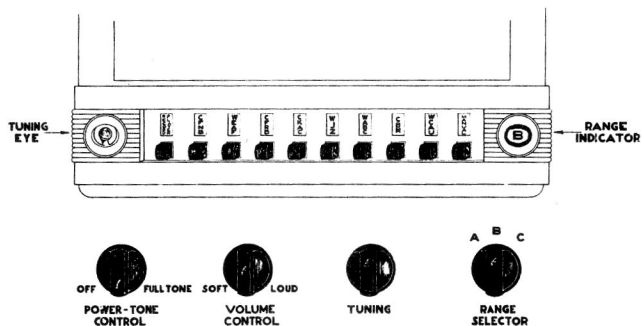


Figure 3—Location of Controls

The left-hand key is a Record Player switch.
The right-hand key is for dial tuning.

2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) key.
4. Manually tune in the first station on the list, using the "Tuning Tube" for accurate tuning.
5. Hold down the "dial-tuning" key, and press down station key No. 1 (second from left). Both keys will stay down. Move adjusting pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go out.
6. Press down any other key in order to release the dial-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.
7. Repeat this process for the remaining stations.

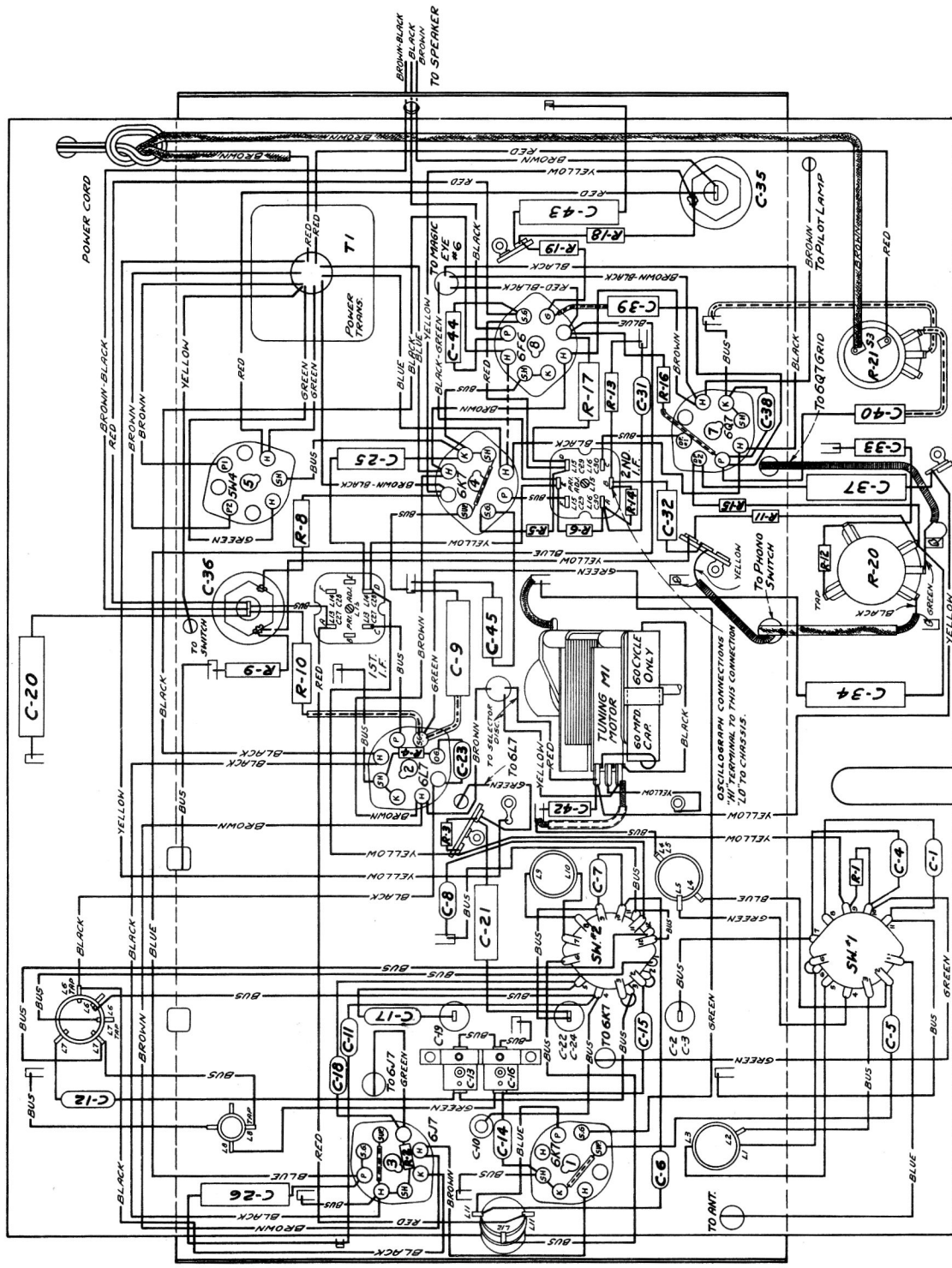


Fig. 3 Wiring Diagram

RANGE
SELECTOR

VOLUME
CONTROL

TONE CONTROL
& POWER SWITCH

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.

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 horizontal 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.

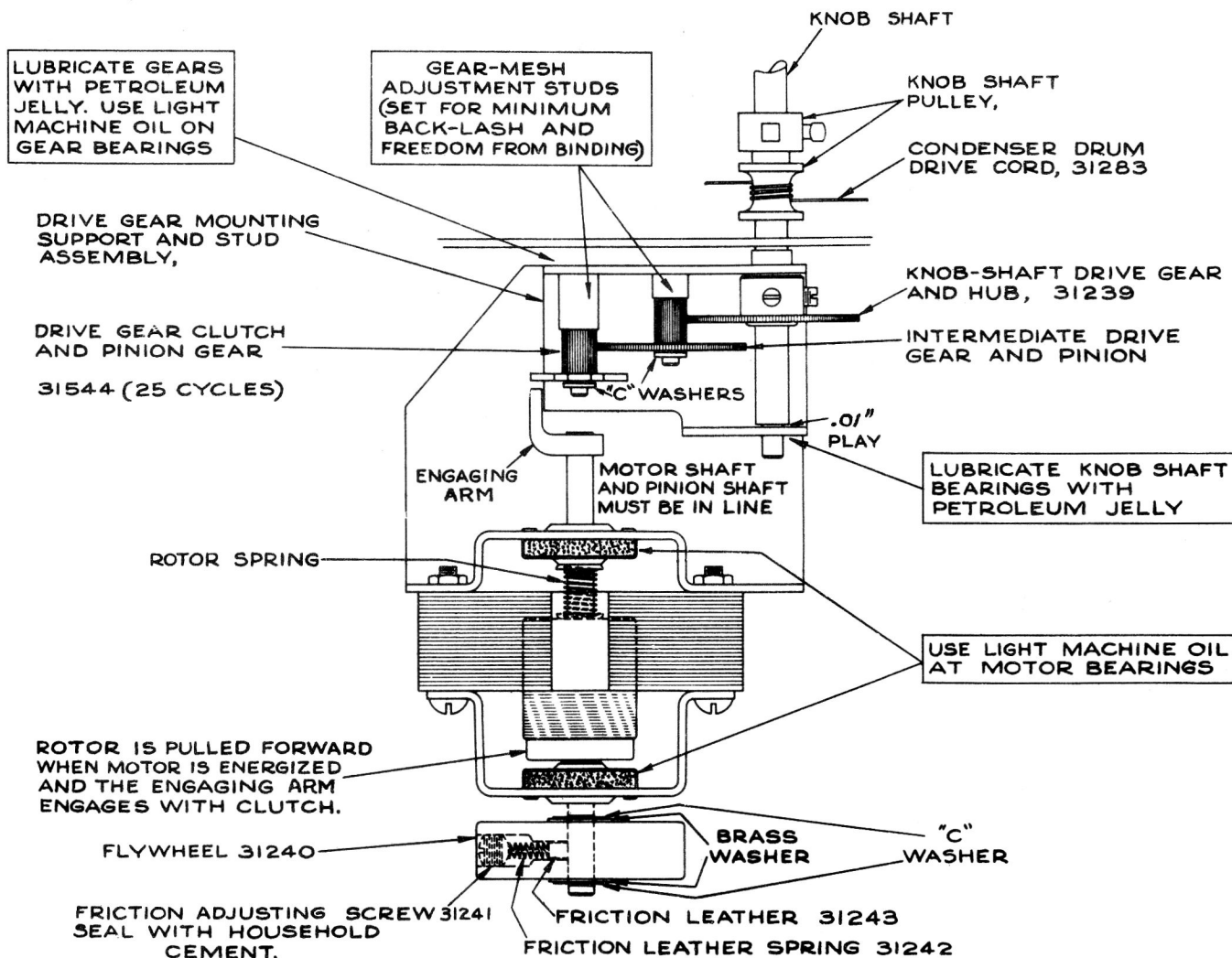


Figure 6—Motor and Gear Mechanism (25 cycle)

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.

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 the first-audio tubes. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.



Figure 8—(Above) Component Parts of Station-Setting Contact

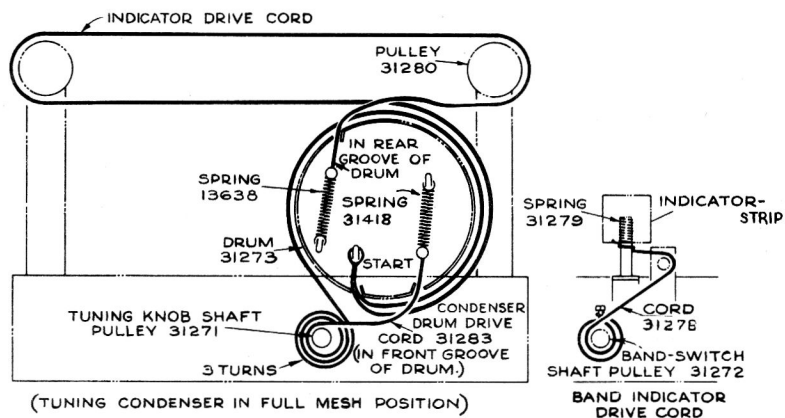


Figure 9—(At Right) Drive Cord Arrangement for Tuning Condenser, Dial Indicator, and Band Switch

REPLACEMENT PARTS FOR MODEL G88K

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
RECEIVER ASSEMBLIES			
31863	Board-Antenna and ground terminal board	31296	Coil-"A" Band Oscillator Coil (L8).....
31282	Bracket-Tuning tube bracket and holder	S-2251	Coil-"B" and "C" Band Antenna Coil (L1,L2,L3).....
31229	Body-Station setting plunger body, less plunger contact and spring.....	S-2252	Coil-"B" and "C" Band Detector Coil (L9,L10).....
S-2254	Cable-Tuning tube cable and socket.....	S-2253	Coil-"B" and "C" Band Oscillator Coil (L6,L7).....
12884	Capacitor-Adjustable trimmer,2-20 mmfd. (C10).....	S-2242	Condenser - 3 gang variable condenser (C2,C3,C19,C22,C24).....
31292	Capacitor-Dual adjustable trimmer 3-30 mmfd (C13,C16).....	31260	Core-Adjustable core and stud for osc. coil.....
S-2255	Capacitor-7.5 mmfd. (C1,C11).....	12006	Core-Adjustable core and stud for I.F. Transformers.....
13001	Capacitor-8.2 mmfd. (C7).....	32093	Damper-Variable condenser tuning motor damper (60 cycle only).....
12896	Capacitor-15 mmfd. (C14).....	32096	Disc-Friction disc engaging roller on motor shaft (60 cycle).....
12723	Capacitor-56 mmfd. (C5).....	31273	Drum-Indicator drive cord drum.....
12813	Capacitor-82 mmfd. (C8).....	31240	Flywheel-Variable condenser drive motor flywheel (25 cycle).....
12720	Capacitor-100 mmfd. (C27,C28,C29,C30,C38).....	31239	Gear-Variable condenser knob shaft drive gear and hub assembly.....
12724	Capacitor-120 mmfd. (C18,C23).....	31238	Gear-Variable condenser intermediate gear and pinion (25 cycle).....
12725	Capacitor-180 mmfd. (C4,C6,C31).....	11891	Lamp-Dial lamp.....
12537	Capacitor-560 mmfd. (C15).....	31480	Lamp-Electric tuning adjustment lamp.....
13763	Capacitor-3900 mmfd. (C12).....	31243	Leather-Friction leather for flywheel (25 cycle) (Package of 2).....
S-2250	Capacitor-6000 mmfd. (C17).....	31246	Motor-Variable condenser drive motor (M1) (25 cycle).....
4793	Capacitor-.005 mfd. (C32,C40,C44).....	32095	Motor-Variable condenser drive motor (M1) (60 cycle).....
5148	Capacitor-.007 mfd. (C33).....	31228	Plate-Station setting contact plate-less contacts.....
4883	Capacitor-.01 mfd. (C42,C45).....	31231	Plunger-Station setting contact plunger (Package of 2).....
14393	Capacitor-.01 mfd. (C39,C41).....	5119	Plug-3 contact female plug for speaker cable.....
4836	Capacitor-.05 mfd. (C25).....		
4839	Capacitor-0.1 mfd. (C21).....		
11414	Capacitor-0.1 mfd. (C20).....		
12484	Capacitor-0.25 mfd. (C37,C43).....		
5170	Capacitor-0.25 mfd. (C26).....		
12741	Capacitor-0.5 mfd. (C34).....		
S-2249	Capacitor-10 mfd. (C35).....		
5212	Capacitor-16 mfd. (C36).....		
31237	Clutch-Variable condenser drive gear clutch.....		
31263	Coil-"A" Band Antenna coil (L4,L5).....		
31264	Coil-"A" Band Detector Coil (L11,L12).....		

REPLACEMENT PARTS — MODEL G88K

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
31271	Pulley-Station selector knob shaft pulley.....		MISCELLANEOUS ASSEMBLIES
31272	Pulley-Range switch pulley.....	S-2243	Bracket-Band indicator bracket complete less strip, cord and spring.....
S-2248	Resistor-18 ohms, 1/2 watt (R9).....	S-2260	Bracket-Window mounting bracket assembly complete.....
S-2247	Resistor-220 ohms, 2.5 watts (R8).....	31345	Contact-Electric tuning switch contacts comprising 10 contacts riveted on insulating strip.....
13204	Resistor-8,200 ohms, 2 watts (R17).....	31344	Contact-Electric tuning switch contacts comprising 13 contacts riveted on insulating strip.....
14284	Resistor-22,000 ohms, 1/10 watt (R14)...	31278	Cord-Band indicator drive cord.....
14167	Resistor-27,000 ohms, -2 watts (R10)....	S-2207	Cord-Indicator pointer drive cord.....
11300	Resistor-33,000 ohms, 1/10 watt (R2, R4, R12).....	31283	Cord-Variable condenser drum drive cord.
13715	Resistor-68,000 ohms, 1/4 watt (R18)....	31456	Cover-Protective covers for key markers.
14560	Resistor-100,000 ohms, 1/4 watt (R5).....	S-2244	Dial-Station selector dial scale.....
11281	Resistor-100,000 ohms, 1/10 watt (R15)...	S-2246	Escutcheon-Station selector dial escutcheon only, less window and keys...
11398	Resistor-220,000 ohms, 1/10 watt (R13)...	S-2209	Fuse-Motor protection fuse-three ampere.
12264	Resistor-220,000 ohms, 1/4 watt (R16)....	31304	Indicator-Band indicator strip.....
11452	Resistor-470,000 ohms, 1/10 watt (R3, R11).	32031	Key-Station selector key.....
12013	Resistor-1 Meg., 1/10 watt (R1, R7).....	S-2155	Knob-Range switch, tuning, volume control or tone control knob.....
S-1840	Resistor-2.2 meg., 1/10 watt (R6).....	S-2186	Marker-"Manual" key marker- (Package of 10).....
14983	Resistor-330,000 ohms, 1/4 watt (R19)...	S-2185	Marker-Record Player key marker (Package of 10).....
32086	Roller-Friction roller mounted on tuning motor shaft (60 cycle only).....	S-2183	Marker-Station call letter markers... ..
31233	Rotor-Selector rotor disc-mounted on rear of condenser shaft.....	31227	Plate-Selector mounting plate-mounts on rear of variable capacitor
31241	Screw- $\frac{1}{4}$ x 20 headless - cone point set screw for flywheel (Package of 20).....	31989	Pointer-Station selector indicator pointer and clip assembly.....
14350	Screw-No. 8/32 Square head set screw for selector disc Stock No. 31233.....	31280	Pulley-Indicator pointer drive cord pulley.....
4669	Screw-No. 8/32 Square head set screw for pulley Stock No. 31272 and Drum Stock #31273 - Package of 10.....	14887	Retainer-Indicator pointer drive cord pulley retainer (Pkg. of 20)....
31364	Socket-Dial lamp socket.....	S-2261	Rivet-Dial strip mounting rivet (Package of 20).....
31365	Socket-Insulated lamp socket for adjustment lamp.....	S-2025	Screw-Escutcheon mounting screw (Package of 20).....
13871	Socket-Magic eye socket.....	31287	Shaft-Slide shaft for indicator pointer carriage.....
31251	Socket-Radiotron socket (8 prong).....	31681	Shaft-Variable condenser drive knob shaft.....
31232	Spring-Station setting contact tip spring (Package of 10).....	14278	Socket-Record Player pickup socket.....
12007	Spring-Retaining spring for core-Stock #31267 - (Package of 10).....	31279	Spring-Band indicator tension spring (Package of 10).....
31230	Spring-Station setting contact body spring (Package of 10).....	13638	Spring-Indicator pointer drive cord tension spring (Package of 5).....
31262	Spring-Tension spring for core-Stock #31260 (Package of 10).....	31970	Spring-Tension spring for key switch latch bar (Package of 5).....
31242	Spring-Tension spring for flywheel - 25 cycle - (Package of 10).....	31418	Spring-Variable condenser drive cord tension spring (Package of 10)....
14270	Spring-Retaining spring for knob (Package of 10).....	31312	Switch-Station selector key switch assembly complete.....
S-2239	Switch-Range switch (S1, S2).....	31360	Switch-Victrola switch mounted on switch assembly (S4).....
31248	Tone Control-H.F. Tone Control and power switch (R21, S3).....	32094	Washer-Spring tension washer for motor damper (60 cycle).....
31267	Transformer-First I.F. transformer (L13, L14).....	S-2241	Window-Dial Escutcheon window.....
31268	Transformer-Second I.F. transformer (L15, L16).....		
31299	Transformer-Power transformer 105/120 volts, 25-60 cycle (T1).....		
31298	Transformer-Power transformer 105/120 volts, 50-60 cycle (T1).....		
31249	Volume Control (R20).....		
	SPEAKER ASSEMBLIES (102901-1)		
13866	Cap-Dust Cap for cone centre (Package of 5).....		
12012	Coil-Field coil (L17).....		
11469	Coil-Hum neutralizing coil (L18).....		
31275	Cone-Speaker cone and voice coil (L19)...		
5118	Plug-3 contact male plug.....		
S-2240	Reproducer-Reproducer complete.....		
14355	Transformer-Output transformer (T2).....		
14357	Washer-Spring washer to hold field coil (Package of 5).....		
14358	Screw-Screw, washer and lockwasher to hold core in yoke (Package of 2).....		