

# SERVICE DATA MODEL S-120

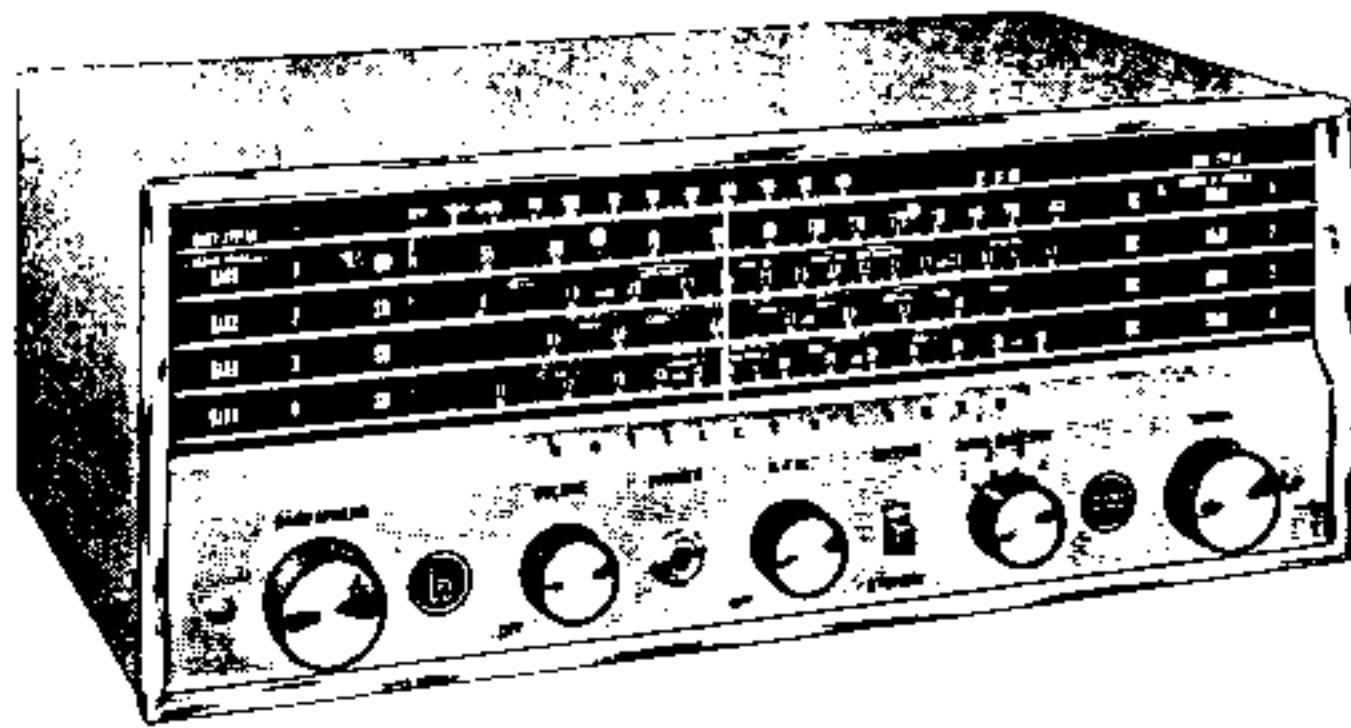


Figure 1. Hallicrafters Model S-120

## TECHNICAL SPECIFICATIONS

TUBES . . . . . Four, plus rectifier  
SPEAKER . . . . . 5 inch PM, 8 ohm voice coil  
ANTENNA . . . . . Broadcast - Self contained ferrite  
loopstick  
Short wave - 45" collapsible whip  
antenna and provision for single  
wire or 50-600 ohm line  
POWER SUPPLY 105-125 volts DC or AC (50-60 CPS )  
POWER CONSUMPTION . . . . . 30 watts  
INTERMEDIATE FREQUENCY . . . . . 455 KC  
FREQUENCY COVERAGE . . . . . 540 KC to 31 MC  
DIMENSIONS . 5-7/8" high, 13-1/2" wide, 8-3/4" deep  
WEIGHT . . . . . 10-1/4 lbs.  
SHIPPING WEIGHT . . . . . 12 lbs. approximately

## TUBE AND DIAL LAMP REPLACEMENT

For access to the tubes, remove the cabinet rear panel which is held in place by two screws. Care should be exercised so as not to damage the leads to the loopstick antenna mounted on the inside of the rear panel. For dial lamp replacement, remove the chassis from the cabinet (see CHASSIS REMOVAL).

## CHASSIS REMOVAL

To remove the chassis from the cabinet, remove the four screws (within the plastic feet) that secure the chassis to the cabinet. Slide the chassis out the rear of the cabinet.

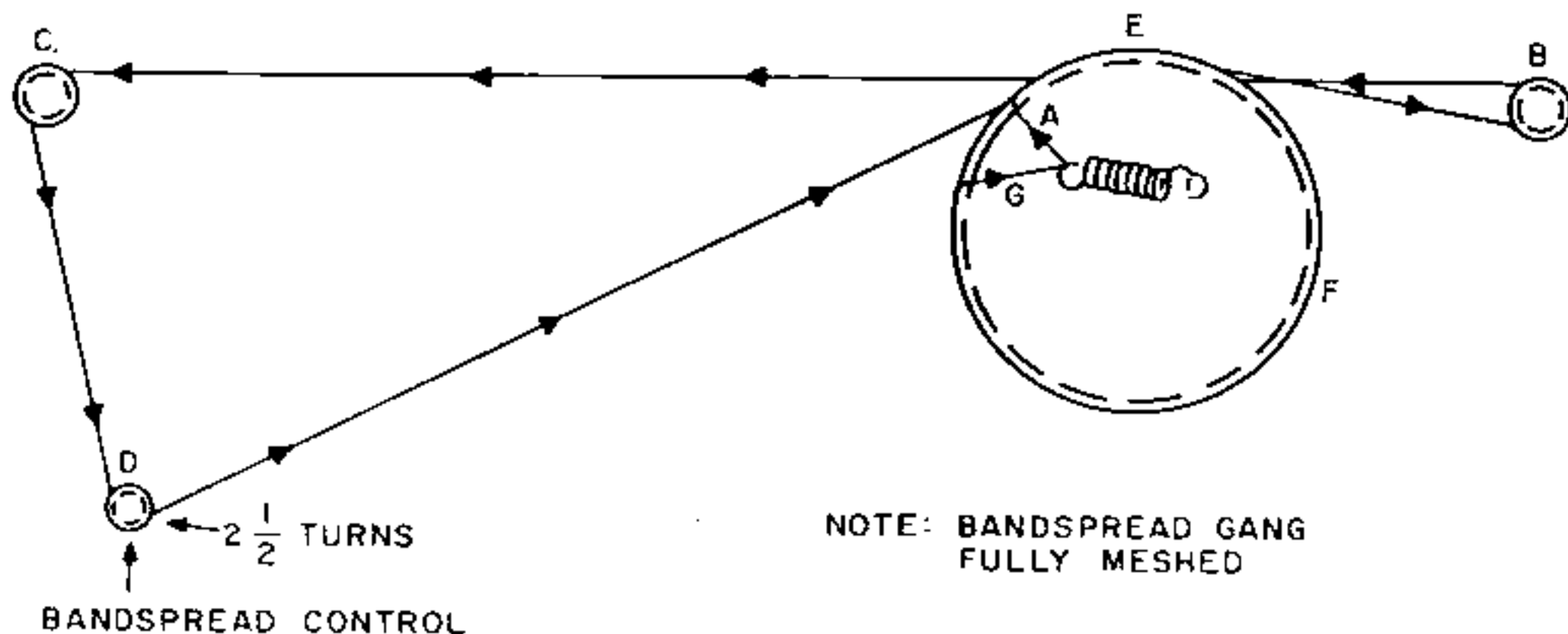
**CAUTION:** Just before removing the chassis from the cabinet rotate the MAIN TUNING and BAND SPREAD controls fully counterclockwise to prevent damage of the tuning capacitors.

## DIAL CORD RESTRINGING

Remove the chassis from the cabinet to restring either dial cord (see CHASSIS REMOVAL).

To restring the BAND SPREAD dial cord remove control knobs, phone jack retaining nut, escutcheon trim plate and clip on each end of plate (2 screws), insulation spacer, dial scale (two screws), and dial plate (four hex head screws). Care should be taken when removing the dial plate not to damage the pointers. Referring to figure 2, follow the arrows and letter sequence to string the dial cord. The dial cord spring should be expanded from 1/4" to 1/2". Place the BAND SPREAD pointer on the bottom of the dial rail and engage the dial cord with the pointer clips. Replace the dial plate, dial scale, escutcheon trim strip (replace clips on either end of plate), and control knobs. With BAND SPREAD control fully counterclockwise, align the pointer on "O" and apply a drop of cement to the dial cord and pointer clip. Replace chassis in the cabinet.

To restring the MAIN TUNING dial cord with the chassis removed from the cabinet, refer to figure 7 and follow the arrows and letter sequence. The dial cord spring should be expanded 1/4" to 1/2". Place the MAIN TUNING pointer on the dial rail and engage the dial cord with the pointer clips. With the MAIN TUNING control fully counterclockwise, align the pointer with "O" on the BAND SPREAD scale and apply a drop of cement to the dial cord and pointer clip. Replace the chassis in the cabinet.



092-009505

Figure 2. Band Spread, Stringing Diagram Front View



# ALIGNMENT PROCEDURE

- Use an amplitude modulated generator covering 455 KC to 30 MC.
- Connect the output meter across the speaker voice coil.
- Use a non-metallic alignment tool.
- Use a standard EIA dummy antenna as shown in figure 3.
- Set BFO control to OFF, VOLUME control maximum clockwise, RECEIVE/STANDBY control to RECEIVE, and the BANDSPREAD control to 100.
- Refer to figures 4 and 5 for location of adjustments.

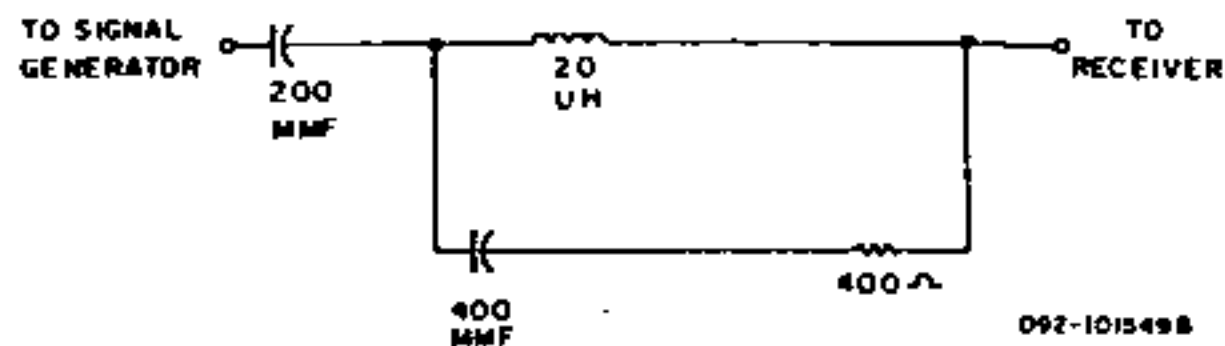


Figure 3. EIA Dummy Antenna

Step	Signal Generator Connections	Generator Frequency	Band Selector Setting	Receiver Dial Setting	Adjust
*1	High side through a .01 mfd capacitor to stator plates of rear section of TUNING capacitor.	455 KC (30% mod.)	1	1.0 MC	A, B, C and D for maximum output. Keep reducing the generator output to keep the output meter below 50 milliwatts.
2	High side through EIA antenna to terminal ANT on rear of chassis. Low side to chassis.	1400 KC (30% mod.)	1	1400 KC	C1 and C24 for maximum output as in step 1.
3	Same as step 2.	600 KC (30% mod.)	1	600 KC	L1 for maximum output as in step 1.
4	Same as step 2.	-	1	-	Repeat steps 2 and 3 until no increase in output can be obtained on either adjustment.
5	Same as step 2.	4.3 MC (30% mod.)	2	4.3 MC	C2 and C25 for maximum output as in step 1.
6	Same as step 2.	1.9 MC (30% mod.)	2	1.9 MC	T2 and L2 for maximum output as in step 1.
7	Same as step 2.	-	2	-	Repeat steps 5 and 6 until no increase in output can be obtained.
8	Same as step 2.	11 MC (30% mod.)	3	11 MC	C3 and C26 for maximum output as in step 1.
9	Same as step 2.	5 MC (30% mod.)	3	5 MC	T3 and L3 for maximum output as in step 1.
10	Same as step 2.	-	3	-	Repeat steps 8 and 9 until no increase in output can be obtained.
11	Same as step 2.	30 MC (30% mod.)	4	30 MC	C4 and C27 for maximum output as in step 1.
12	Same as step 2.	14 MC (30% mod.)	4	14 MC	T4 and L4 for maximum output as in step 1.
13	Same as step 2.	-	4	-	Repeat steps 11 and 12 until no increase in output can be obtained.

\*Before beginning IF procedure, rotate AM/CW ratio control to its full counterclockwise position.

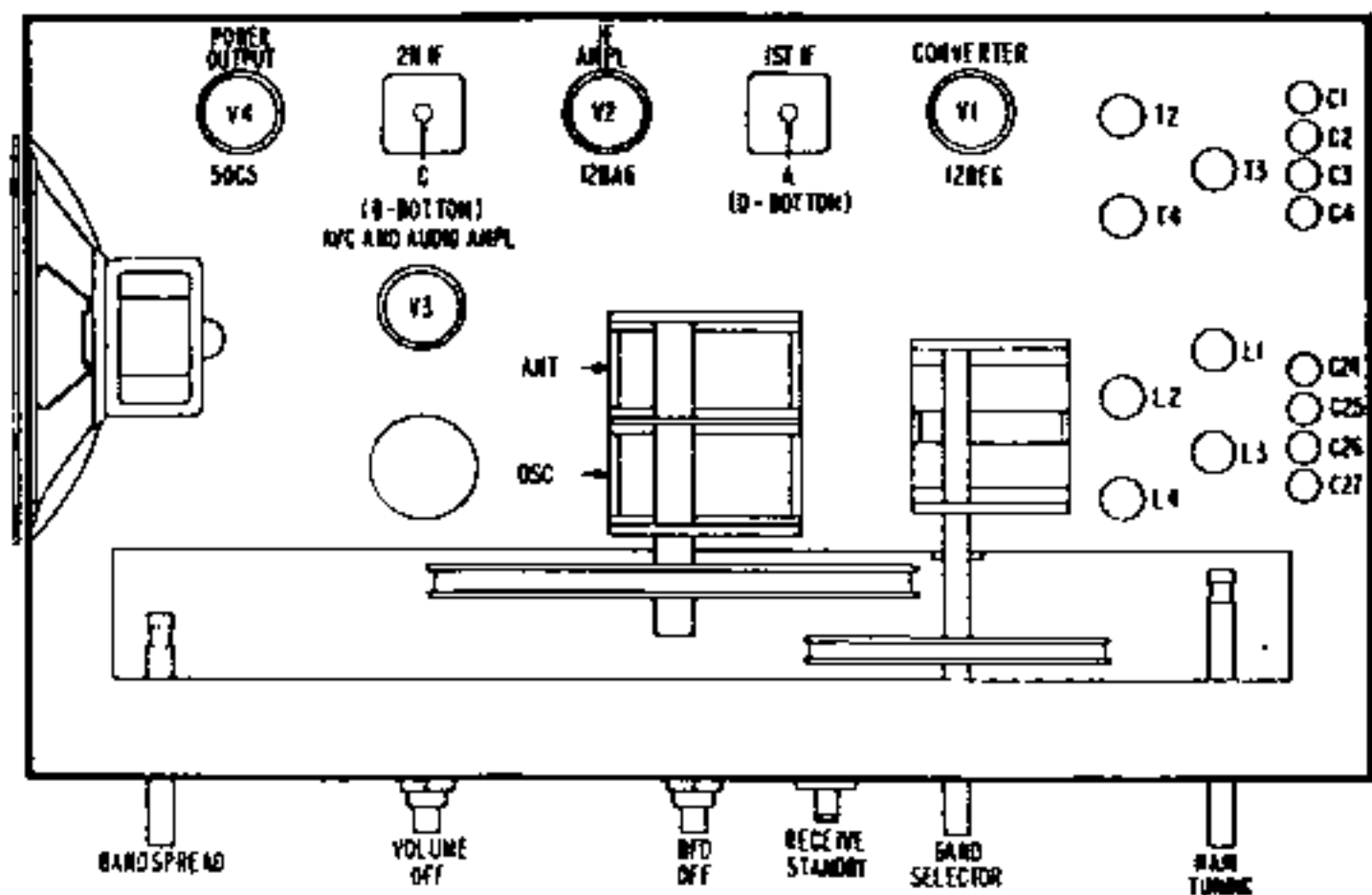


Figure 4. Chassis, Top View

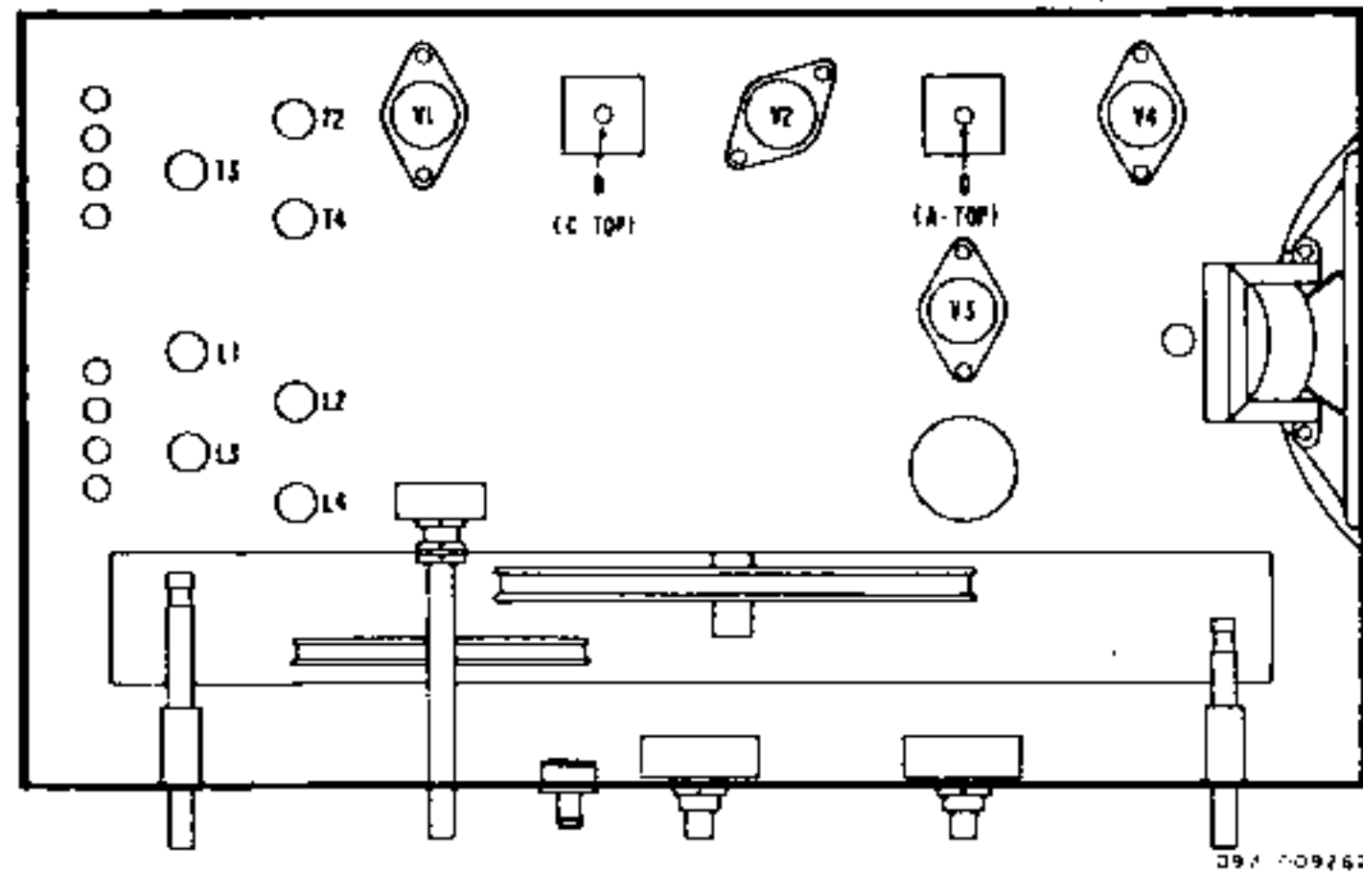


Figure 5. Chassis, Bottom View

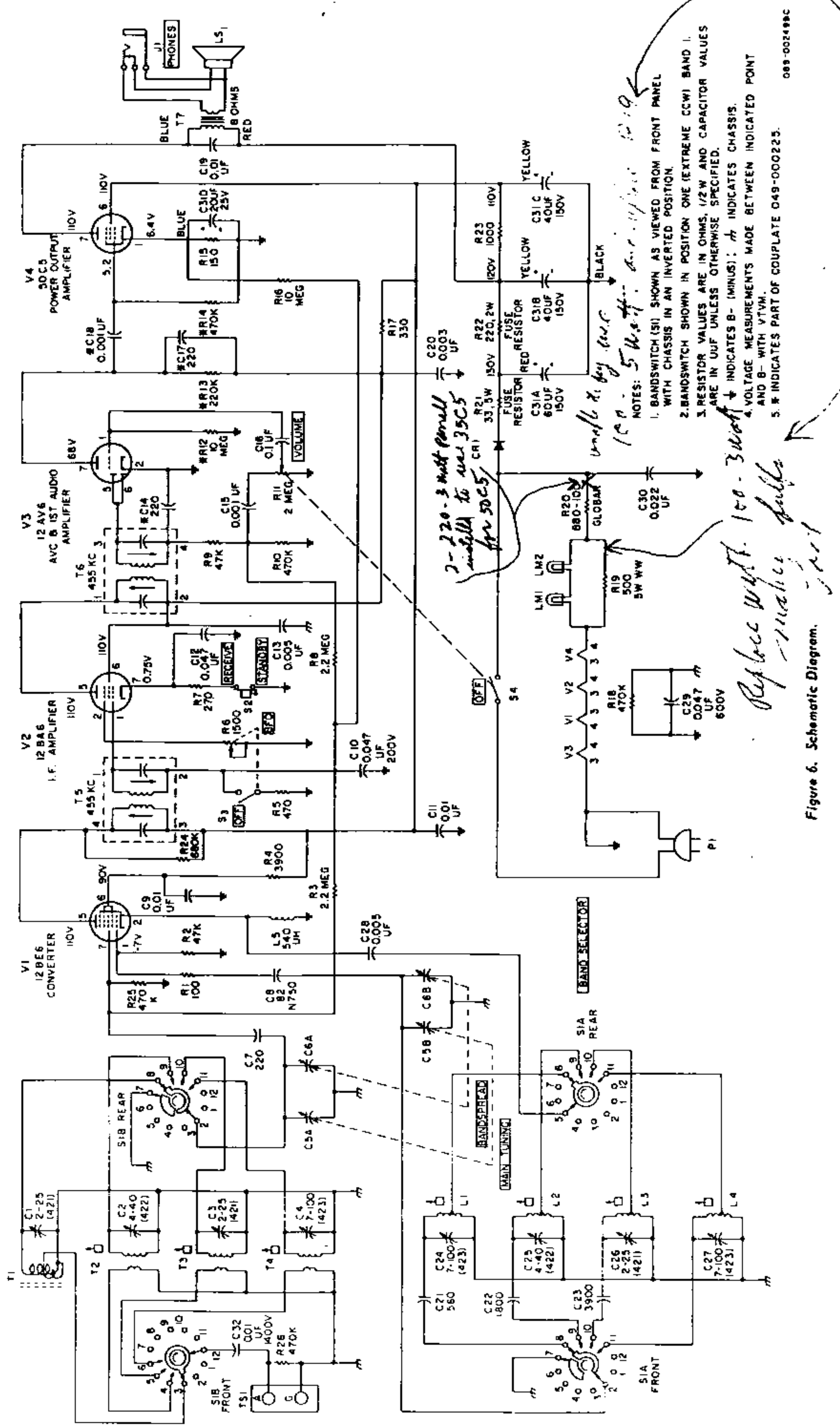
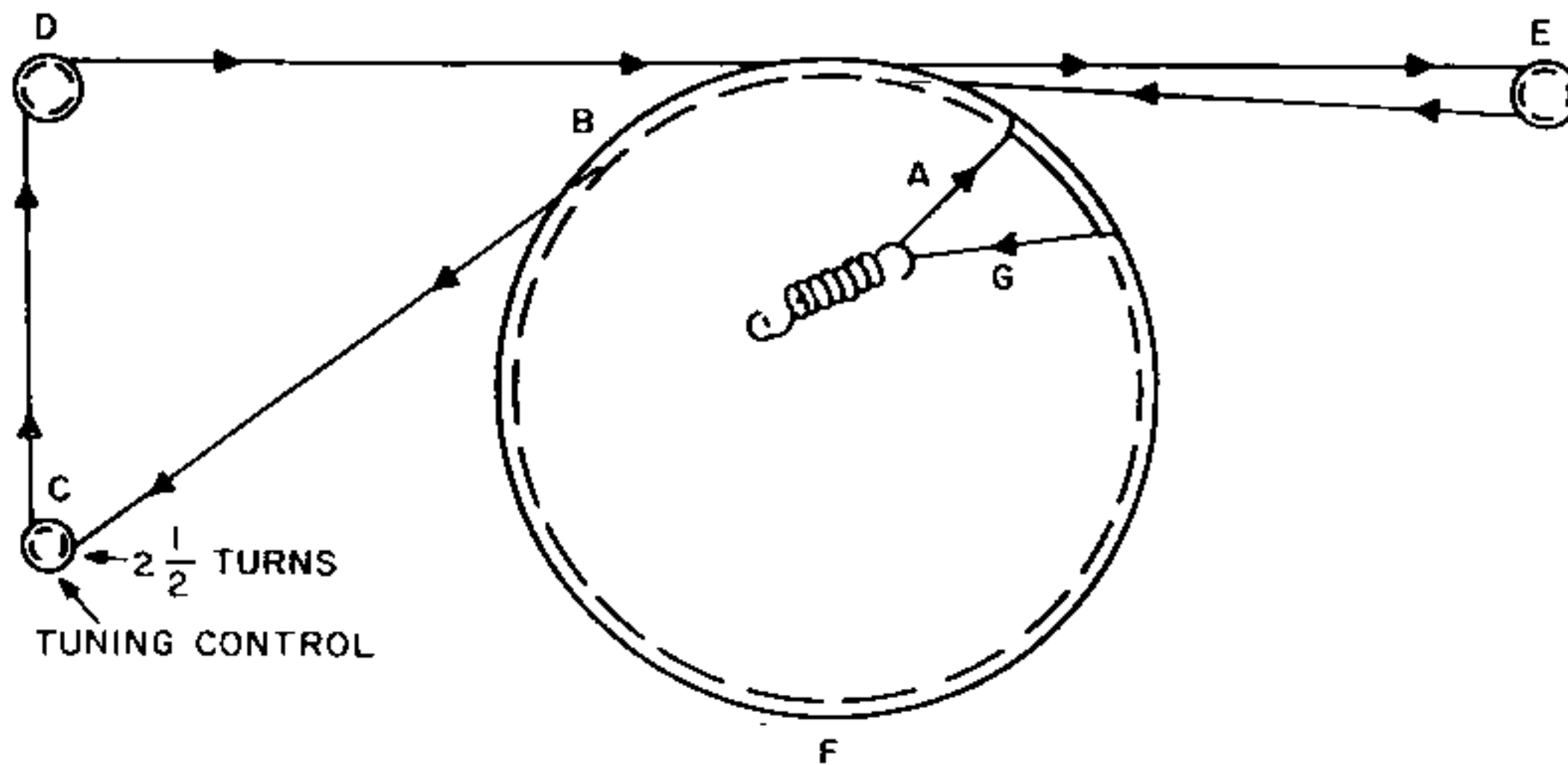


Figure 6. Schematic Diagram.

# SERVICE PARTS LIST

Schematic Symbol	Description	Hallcrafters Part Number	Schematic Symbol	Description	Hallcrafters Part Number	Schematic Symbol	Description	Hallcrafters Part Number
<b>CAPACITORS</b>			<b>*RESISTORS (cont.)</b>			<b>TUBES, LAMPS AND RECTIFIERS</b>		
C1, 2, 3, 4	2-25, 4-40, 2-25, 7-100 mmf., Var. Quad Trimmer, Assy; Inc. mtg. bracket	044-000533	R6	1.5K ohm, 30%, 1/4 watt, Variable, BFO control; Inc. Switch S3	025-002024	CR1	Rectifier, Selenium Lamp, Dial type #47	027-000290
C5A, B	MAIN TUNING; Var. Cap.	048-000479	R7	270 ohm	451-252271	LM1, 2	Lamp, Dial type #47	039-100004
C6A, B	BAND SPREAD; Var. Cap.	048-000477	R10, 18, 25, 26	470K ohm	451-252474	V1	12 BE6; Converter	090-900040
C7	220 mmf., 500V, 20%; Cer. Tub.	483-021221	R11	2 megohm, 30%, 1/8 watt Variable, VOLUME Control; Inc. Switch S4	025-002025	V2	12 BA6; IF Amplifier	090-900039
C8	82 mmf., 500V, 10%, N750; Cer. Tub.	491-126820-95	R12, 13, 14	Part of Audio Couplate	-----	V3	12 AV6; AVC and 1st Audio Amplifier	090-901187
C9	.01 mfd., 500V, GMV; Cer. Disc	047-100224	R15	150 ohm	451-252151	V4	50C5; Power Output Amplifier	090-900541
C10	.047 mfd., 200V, 20%; Molded Paper	499-014473	R16	10 megohm	451-252106	<b>MISCELLANEOUS</b>		
C11	.01 mfd., 500V, +80-20%; Cer. Disc	047-100217	R17	330 ohm	451-252331	Antenna, Telescoping		057-000421
C12, 29	.047 mfd., 600V, 20%; Molded Paper	499-034473	R19	500 ohm, 5W, Wirewound	024-001328-06	Bracket, Antenna		067-009150
C13, 28	.005 mfd., 500V, 20%; Cer. Disc	047-100442	R20	880-100 ohm, Gohar	023-000327	Bracket, Dial Plate		087-008766
C14, 17, 18	Part of Audio Couplate	-----	R21	Resistor, Fuse, 33 ohm, 5W	024-001398	Cabinet (Inc. Trim Strip)		150-000981
C15	.001 mfd., 600V, 20%; Molded Paper	499-034102	R22	Resistor, Fuse, 220 ohm, 2W	024-001399	Clip, IF mtg.		076-100385
C16	0.1 mfd., 30%, 100V; Molded Paper	046-001259-05	R23	1K ohm	451-252102	Clip, fuse (antenna mtg.)		076-102724
C19	.01 mfd., 600V, 20%; Molded Paper	499-034103	R24	680K ohm	451-252684	Couplate, Audio		049-000225
C20	.003 mfd., 600V, 20%; Molded Paper	499-034302	<b>*ALL RESISTORS are 10%, 1/2 watt, carbon type, unless otherwise specified.</b>			Dial Scale, Calibrated		083-000982
C21	560 mmf., 5%, 125V; Plastic	505-102561	<b>COILS AND TRANSFORMERS</b>			Dial Cord		038-000049
C22	1800 mmf., 5%, 125V; Plastic	505-102182	T1	Antenna Loop Stick Assembly	150-001606	Escutcheon, trim plate		007-000793
C23	3900 mmf., 5%, 125V; Plastic	505-102392	T2	Coil, RF (band 2)	051-003473	Foot, Front		016-201072
C24, 25, 26, 27	7-100, 4-40, 2-25, 7-100 mmf., Var. Quad Trimmer, Inc. mtg. bracket	044-000534	T3	Coil, RF (band 3)	051-003474	Foot, Rear		016-201073
C30	.022 mfd., 600V, 20%; Molded Paper	499-034223	T4	Coil, RF (band 4)	051-003475	Grommet, nylon plastic (foot and rear panel mtg.)		002-202441
C31A, B, C, D	60-40-40 mfd., 150V; 20 mfd., 25V; Electrolytic	045-000711	T5	Transformer, 1st IF	050-300531	Grommet, nylon plastic (escutcheon mtg.)		002-102453
C32	.01 mfd., 1400V, Spark Gap type; Cer. Disc	047-001309	T6	Transformer, 2nd IF	050-300532	Grommet, nylon plastic (dial scale mtg.)		002-202445
<b>*RESISTORS</b>			T7	Transformer, Audio Output; Part of LS1	-----	Grommet (speaker and tuning capacitor mtg.)		018-100718
R1	100 ohm	451-252101	L1	Coil, Oscillator (band 1)	051-003476	Grommet (capacitor stabilizer plate)		016-100661
R2, 9	47K ohm	451-252473	L2	Coil, Oscillator (band 2)	051-003477	Iron Core		003-004564
R3, 8	2.2 megohm	451-252225	L3	Coil, Oscillator (band 3)	051-003478	Knob, MAIN TUNING and BAND SPREAD		015-001680
R4	3.9K ohm	451-252392	L4	Coil, Oscillator (band 4)	051-003479	Knob, VOLUME and BFO		015-001678
R5	470 ohm	451-252471	L5	540 UH, RF Choke	053-100107	Knob, BAND SELECTOR		015-001679
<b>*RESISTORS</b>			<b>SWITCHES</b>			LS1	Lock, Line Cord	076-200397
<b>*RESISTORS</b>			S1A, B	BAND SELECTOR	060-002526	Speaker, 8 ohm Voice Coil, Inc. T7		085-000210
<b>*RESISTORS</b>			S2	STANDBY - RECEIVE	060-002548	Plate, Dial		063-004908
<b>*RESISTORS</b>			S3	BFO - OFF, Part of R6	-----	Pointer, BAND SPREAD		082-000471
<b>*RESISTORS</b>			S4	VOLUME - OFF, Part of R11	-----	Pointer, MAIN TUNING		082-000472
<b>*RESISTORS</b>			<b>SOCKETS AND CONNECTORS</b>			Rear Panel		068-001250
<b>*RESISTORS</b>			J1	PHONES, jack	036-000339	Ring, Electrolytic mtg.		076-003384
<b>*RESISTORS</b>			TS1	Terminal Board, antenna	088-100020	Ring, Retaining		076-100683
<b>*RESISTORS</b>			PI	Line Cord	087-100078	Spacer, Insulation (escutcheon)		073-003679
<b>*RESISTORS</b>			<b>SOCKETS AND CONNECTORS</b>			Spring, dial cord		075-100012
<b>*RESISTORS</b>			<b>SOCKETS AND CONNECTORS</b>			Shield, Tube (V1)		089-100232
<b>*RESISTORS</b>			<b>SOCKETS AND CONNECTORS</b>			Shield, Base (V1)		076-100402
<b>*RESISTORS</b>			<b>SOCKETS AND CONNECTORS</b>			Shaft, BAND SPREAD		074-002606
<b>*RESISTORS</b>			<b>SOCKETS AND CONNECTORS</b>			Shaft, MAIN TUNING		074-002607



NOTE: TUNING GANG FULLY MESHED

092-009506

Figure 7. Main Tuning Stringing Diagram, Rear View.