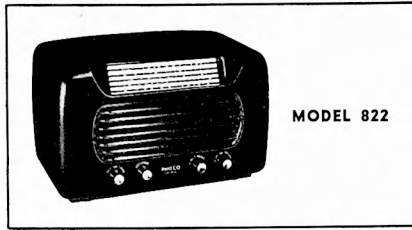


PHILCO-TROPIC RADIO MODEL 822



MODEL 822

SPECIFICATIONS

CABINET Bakelite
 CIRCUIT 5-tube superheterodyne

FREQUENCY RANGES

Broadcast 540—1,60 mc.
 Short Wave 1 (SW1) 2.9—6.0 mc.
 Short Wave 2 (SW2) 5.9—9.3 mc.
 Short Wave 3 (SW3) 9.2—12.0 mc.
 Short Wave 4 (SW4) 11.6—22.0 mc.

AUDIO OUTPUT Battery input, .85 watt; 117v input, 1.8 watts; 234v input, 2.1 watts

OPERATING VOLTAGE Battery, 6.3v; a.c. or d.c., 115v or 230v

POWER CONSUMPTION Battery, 2.8 amperes at 6.3v; 117v, 28 watts; 234v, 60 watts

AERIAL Outdoor, 100-foot, such as Philco Part No. 45-1494

INTERMEDIATE FREQUENCY 455 kc.

BATTERY TYPE 6-volt storage battery

PHILCO TUBES (5) 1457, 7B7, 7C6, 6G6, 70L7

TP-3699

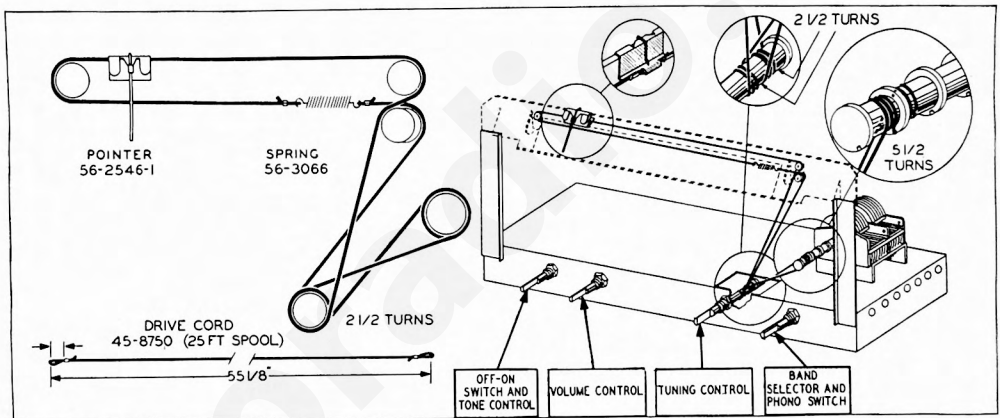


FIGURE 1. DRIVE-CORD INSTALLATION DETAILS

TP-5646B

CALIBRATING DIAL BACKPLATE

Dial calibration and alignment points may be marked on the dial backplate below the pointer.

Hold a ruler against the scale backplate (see figure 2), with the start of the ruler at the reference line shown, and mark pencil dots at the proper points for the required frequency set-

tings. The index mark is approximately $3\frac{1}{2}$ " from extreme edge of the backplate.

With the tuning gang fully meshed, the pointer should be adjusted on the dial drive cord to coincide with the index mark.

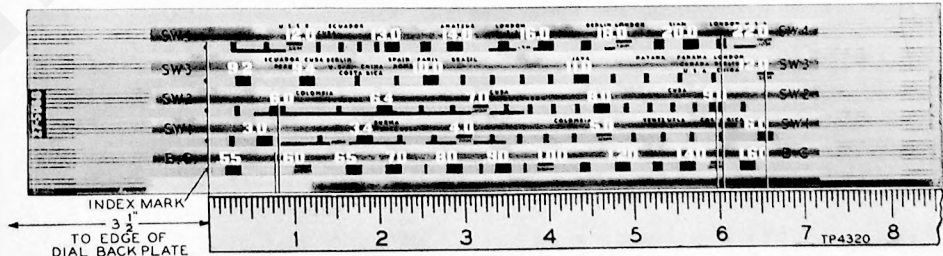


FIGURE 2. DIAL-BACKPLATE CALIBRATION MEASUREMENTS

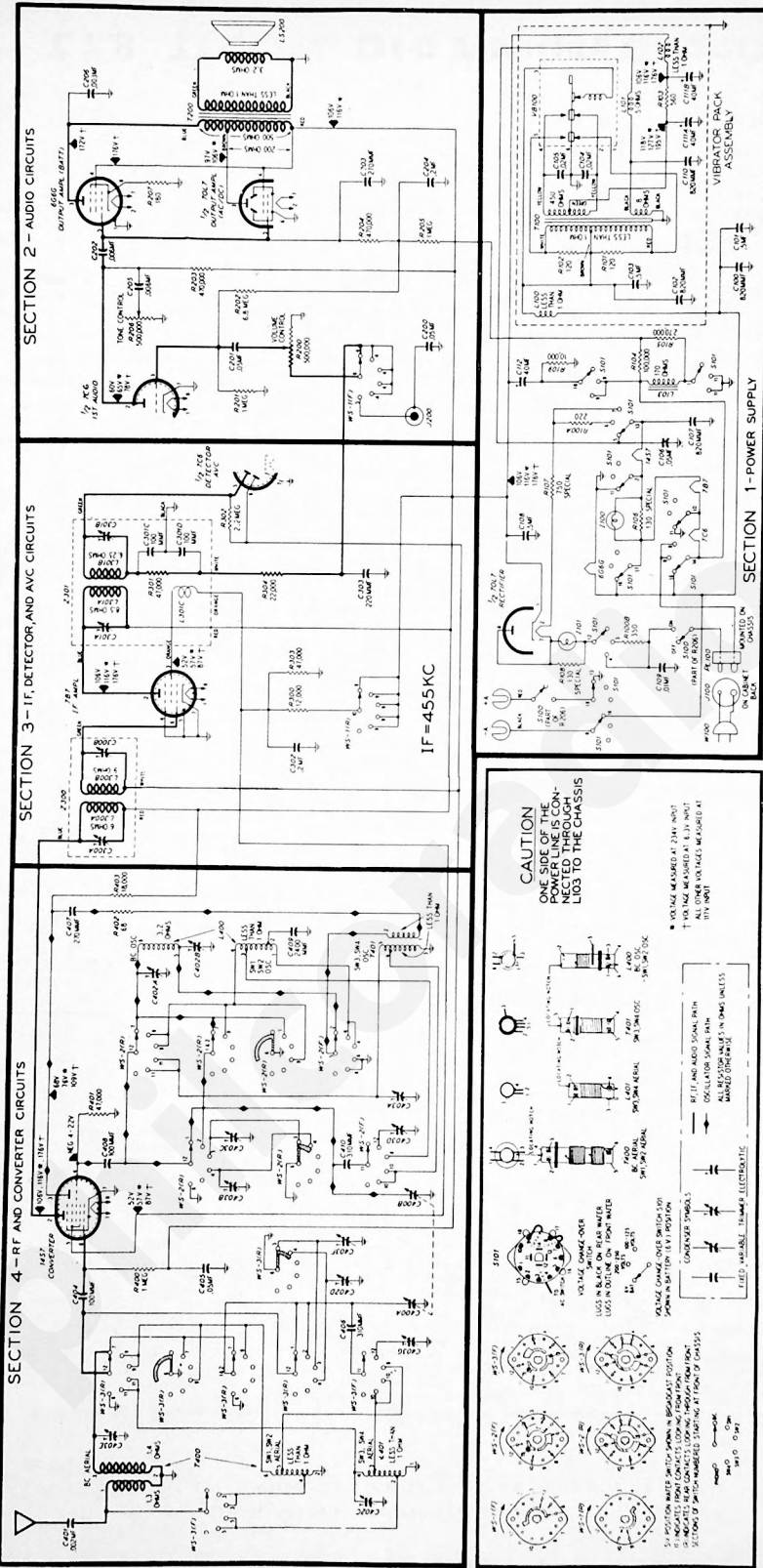


FIGURE 2. PHILCO-TROPIC RADIO MODEL 822. SECTIONALIZED SCHEMATIC DIAGRAM

ALIGNMENT PROCEDURE

CAUTION: Before turning on the radio, make certain that the voltage change-over switch, located on the rear of the chassis, is correctly set for the line voltage.

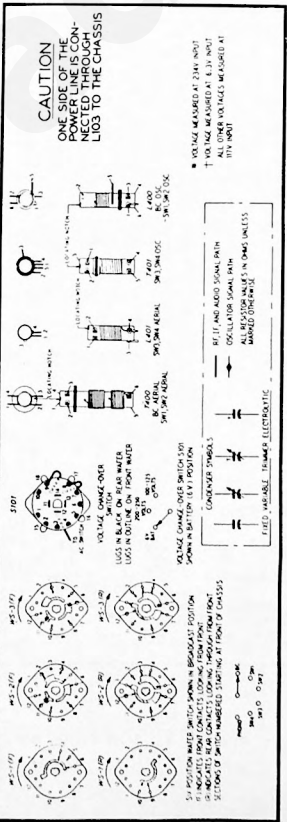
ONE SIDE OF THE POWER LINE IS CONNECTED TO THE RADIO CHASSIS (THROUGH THE FILTER CHOKE).

OUTPUT METER: Connect between speaker voice-coil terminals.

SIGNAL GENERATOR: Connect ground lead to chassis; connect output lead as indicated in chart. Use modulated output.

RADIO CONTROLS: Set volume control to maximum, and tone control fully clockwise.

OUTPUT LEVEL: During alignment, adjust signal-generator output to hold output-meter indication below 1.5 volts.



ALIGNMENT CHART

STEP	SIGNAL GENERATOR		RADIO			ADJUST
	CONNECTIONS TO RADIO	FRE. QUENCY	BAND SWITCH	TUNING	SPECIAL INSTRUCTIONS	
1	Through .05-mf. condenser to mixer grid (pin 6) of 14S7.	455 kc.	BC	.58 mc.	Adjust, in order given, for maximum output, then repeat.	C401B—2nd i-f sec. C401A—2nd i-f pri. C300B—1st i-f sec. C300A—1st i-f pri.
2	Through 400-ohm non-inductive resistor to aerial lead.	21 mc.	SW4	21 mc.	Adjust for maximum output. Image should be heard when radio is tuned to 20.1 mc.	C403A—SW4 osc.
3	Same as step 2.	21 mc.	SW4	21 mc.	Adjust for maximum output.	C402C—SW4 aerial
4	Same as step 2.	12 mc.	SW3	12 mc.	Adjust for maximum output. Image should be heard when radio is tuned to 11.1 mc.	C403B—SW3 osc.
5	Same as step 2.	12 mc.	SW3	12 mc.	Adjust for maximum output.	C402D—SW3 aerial
6	Same as step 2.	9 mc.	SW2	9 mc.	Adjust for maximum output. Image should be heard when radio is tuned to 8.1 mc.	C403C—SW2 osc.
7	Same as step 2.	9 mc.	SW2	9 mc.	Adjust for maximum output.	C403F—SW2 aerial
8	Same as step 2.	6 mc.	SW1	6 mc.	Adjust for maximum output. Image should be heard when radio is tuned to 5.1 mc.	C403D—SW1 osc.
9	Same as step 2.	6 mc.	SW1	6 mc.	Adjust for maximum output.	C403G—SW1 aerial
10					Set trimmer 1/2 turn from tight position.	C402B—BC osc. (series)
11	Through 200-mmf. condenser to aerial lead.	1520 kc.	BC	1.52 mc.	Adjust for maximum output.	C402A—BC osc. (shunt)
12	Same as step 11.	1520 kc.	BC	1.52 mc.	Adjust for maximum output.	C403E—BC aerial
13	Same as step 11.	580 kc.	BC	.58 mc.	Adjust for maximum output.	C402B*—BC osc. (series)
14	Repeat steps 11, 12, 13, and 12.					

* Rock tuning arm while adjusting this trimmer.

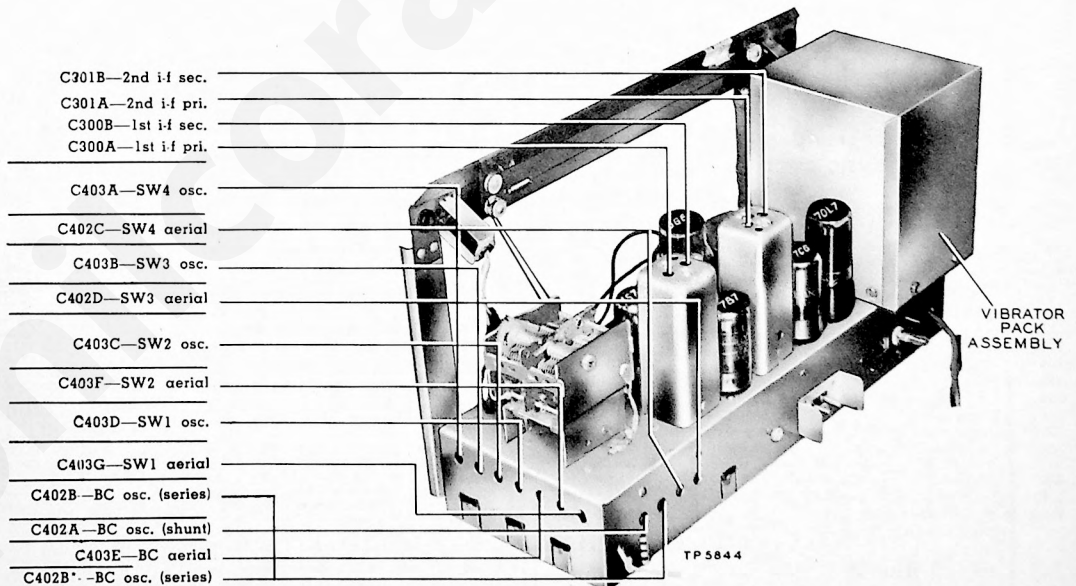


FIGURE 4. TOP VIEW, SHOWING TRIMMER LOCATIONS

REPLACEMENT PARTS LIST

NOTE: Part numbers identified by an asterisk (*) are general replacement items. These numbers may not be identical with those on factory parts; also, the electrical values of some replacement items may differ from the values indicated in the schematic diagram and parts list. The values substituted in any case are so chosen that the operation of the radio will be either unchanged or improved. When ordering replacements, use only the "Service Part No."

SECTION 1 POWER SUPPLY

Reference Symbol	Description	Service Part No.
C100	Condenser, hash filter, 820 mmf.	60-10825401*
C101	Condenser, hash filter, .5 mf.	45-3500-4*
C102	Condenser, hash filter, 820 mmf.	60-10825401*
C103	Condenser, hash filter, .5 mf.	45-3500-4*
C104	Condenser, spark suppressor, .02 mf.	61-0108*
C105	Condenser, spark suppressor, .02 mf.	61-0108*
C106	Condenser, hash filter, .05 mf.	61-0122*
C107	Condenser, hash filter, 820 mmf.	60-10825401*
C108	Condenser, filter, .5 mf.	45-3500-4*
C109	Condenser, line filter, .01 mf.	30-1226-1
C110	Condenser, hash filter, 820 mmf.	60-10825401*
C111	Condenser, electrolytic, 2-section	30-2570-28
C111A	Condenser, filter, 40 mf., 200v	Part of C111
C111B	Condenser, filter, 40 mf., 200v	Part of C111
C112	Condenser, electrolytic, 40 mf.	45-6252*
I100	Lamp, pilot	34-2068
I101	Lamp, pilot	34-2068
J100	Socket and shell, a-c connector	
	Socket	27-6217
	Shell	56-4346
L100	Coil, hash filter	32-4170
L101	Coil, hash filter	32-2925
L102	Coil, hash filter	32-4170
L103	Coil, choke	32-8312-1
PL100	Plug, a-c connector	54-4426
R100	Resistor, 2-section	33-3440-2
R100A	Resistor, line dropping, 220 ohms	Part of R100
R100B	Resistor, filament dropping, 350 ohms	Part of R100
R101	Resistor, damping 120 ohms	66-1123340*
R102	Resistor, damping 120 ohms	66-1123340*
R103	Resistor, filter, 560 ohms	66-1565340*
R104	Resistor, bias divider, 100,000 ohms	66-4103340*
R105	Resistor, bias divider, 270,000 ohms	66-4273340*
R106	Resistor, pilot-lamp shunt (negative temperature coefficient), 130 ohms	33-1343
R107	Resistor, current limiting (negative temperature coefficient), 750 ohms	33-1343-1
R108	Resistor, pilot-lamp shunt (negative temperature coefficient), 130 ohms	33-1343
R109	Resistor, bleeder, 10,000 ohms	66-3104340*
S100	Switch, on-off	Part of R206
S101	Switch, voltage change-over	42-1858
T100	Transformer, power	32-8369
VB100	Vibrator, synchronous	41-3553-3
W100	Line cord	L2183*

SECTION 2 AUDIO CIRCUITS

C200	Condenser, isolating, .05 mf.	61-0122*
C201	Condenser, d-c blocking, .05 mf.	30-1226-4
C202	Condenser, d-c blocking, .006 mf.	30-1226-2
C203	Condenser, r-f by-pass, 270 mmf.	60-10275407*
C204	Condenser, bias filter, 2 mf.	45-3500-3*
C205	Condenser, tone control, .006 mf.	30-1226-2
C206	Condenser, tone compensation, .003 mf.	30-1226-3
J200	Socket, phono	27-6186*
LS200	Speaker	36-1615-2
R200	Volume control, 500,000 ohms	33-5539-26
R201	Resistor, grid return, 1 megohm	66-5103340*
R202	Resistor, bias filter, 6.8 megohms	66-5683340*
R203	Resistor, bias filter, 470,000 ohms	66-4473340*
R204	Resistor, bias divider, 470,000 ohms	66-4473340*
R205	Resistor, bias divider, 1 megohm	66-5103340*
R206	Tone control (with on-off switch), 500,000 ohms	33-5538-33
R207	Resistor, cathode bias, 180 ohms	66-1183340*
T200	Transformer, output	32-8363
WS-1 (F)	Switch-wafer section	Part of 42-1809†

SECTION 1 (Continued) POWER SUPPLY

Reference Symbol	Description	Service Part No.
C300A	Condenser, trimmer	Part of Z300
C300B	Condenser, trimmer	Part of Z300
C301A	Condenser, trimmer	Part of Z301
C301B	Condenser, trimmer	Part of Z301
C301C	Condenser, filter (part of Z301), 100 mmf.	60-10105407*
C301D	Condenser, filter (part of Z301), 100 mmf.	60-10105407*
C302	Condenser, by-pass, .2 mf.	45-3500-3*
C303	Condenser, r-f by-pass, 220 mmf.	62-102200101*
R300	Resistor, screen voltage divider 12,000 ohms	66-3123340*
R301	Resistor, filter (part of Z301), 47,000 ohms	66-3473340*
R302	Resistor, a-v-c filter, 2.2 megohms	66-5223340*
R303	Resistor, screen voltage divider, 47,000 ohms	66-3473340*
R304	Resistor, tone compensation, 22,000 ohms	66-3223340*
WS-1 (R)	Switch-wafer section	Part of 42-1809†
Z300	Transformer, 1st i-f	32-3895-1
Z301	Transformer, 2nd i-f	32-3908-2

SECTION 3 I-F, DETECTOR, AND A-V-C CIRCUITS

C400	Condenser, tuning gang	31-2723
C400A	Condenser, tuning, aerial section	Part of C400
C400B	Condenser, tuning, osc. section	Part of C400
C401	Condenser, aerial series, .002 mf.	61-0162*
C402	Condenser assembly, trimmer, 4-section	31-6414-1
C402A	Condenser, trimmer, BC osc.	Part of C402
C402B	Condenser, series padding, BC osc.	Part of C402
C402C	Condenser, trimmer, SW4 aerial	Part of C402
† 42-1809	Band Switch	
C402D	Condenser, trimmer, SW3 aerial	Part of C402
C403	Condenser, assembly, trimmer, 7-section	31-6414-2
C403A	Condenser, trimmer, SW4 osc.	Part of C403
C403B	Condenser, trimmer, SW3 osc.	Part of C403
C403C	Condenser, trimmer, SW2 osc.	Part of C403
C403D	Condenser, trimmer, SW1 osc.	Part of C403
C403E	Condenser, trimmer, BC aerial	Part of C403
C403F	Condenser, trimmer, SW2 aerial	Part of C403
C403G	Condenser, trimmer, SW1 aerial	Part of C403
C404	Condenser, d-c blocking, 100 mmf.	60-10105407*
C405	Condenser, a-v-c filter, .05 mf.	61-0122*
C406	Condenser, series tracking, 310 mmf.	60-10305307*
C407	Condenser, d-c blocking, 270 mmf.	60-10275407*
C408	Condenser, d-c blocking, 100 mmf.	60-10105407*
C409	Condenser, fixed shunt, 2400 mmf.	60-20245304*
C410	Condenser, series tracking, 310 mmf.	60-10305307*
L400	Coil, BC, SW1, 2 osc.	32-4196
L401	Coil, SW3, 4 aerial	32-4195
R400	Resistor, grid return, 1 megohm	66-5103340*
R401	Resistor, grid bias, 47,000 ohms	66-3473340*
R402	Resistor, parasitic suppressor, 68 ohms	66-0683340*
R403	Resistor, plate dropping, 18,000 ohms	66-3183340*
T400	Transformer, BC, SW1, 2 aerial	32-4197
T401	Transformer, SW3, 4 osc.	32-4194
WS-1, 2, 3	Band switch	42-1809

SECTION 4 R-F AND CONVERTER CIRCUITS

C400	Condenser, tuning gang	31-2723
C400A	Condenser, tuning, aerial section	Part of C400
C400B	Condenser, tuning, osc. section	Part of C400
C401	Condenser, aerial series, .002 mf.	61-0162*
C402	Condenser assembly, trimmer, 4-section	31-6414-1
C402A	Condenser, trimmer, BC osc.	Part of C402
C402B	Condenser, series padding, BC osc.	Part of C402
C402C	Condenser, trimmer, SW4 aerial	Part of C402
† 42-1809	Band Switch	
C402D	Condenser, trimmer, SW3 aerial	Part of C402
C403	Condenser, assembly, trimmer, 7-section	31-6414-2
C403A	Condenser, trimmer, SW4 osc.	Part of C403
C403B	Condenser, trimmer, SW3 osc.	Part of C403
C403C	Condenser, trimmer, SW2 osc.	Part of C403
C403D	Condenser, trimmer, SW1 osc.	Part of C403
C403E	Condenser, trimmer, BC aerial	Part of C403
C403F	Condenser, trimmer, SW2 aerial	Part of C403
C403G	Condenser, trimmer, SW1 aerial	Part of C403
C404	Condenser, d-c blocking, 100 mmf.	60-10105407*
C405	Condenser, a-v-c filter, .05 mf.	61-0122*
C406	Condenser, series tracking, 310 mmf.	60-10305307*
C407	Condenser, d-c blocking, 270 mmf.	60-10275407*
C408	Condenser, d-c blocking, 100 mmf.	60-10105407*
C409	Condenser, fixed shunt, 2400 mmf.	60-20245304*
C410	Condenser, series tracking, 310 mmf.	60-10305307*
L400	Coil, BC, SW1, 2 osc.	32-4196
L401	Coil, SW3, 4 aerial	32-4195
R400	Resistor, grid return, 1 megohm	66-5103340*
R401	Resistor, grid bias, 47,000 ohms	66-3473340*
R402	Resistor, parasitic suppressor, 68 ohms	66-0683340*
R403	Resistor, plate dropping, 18,000 ohms	66-3183340*
T400	Transformer, BC, SW1, 2 aerial	32-4197
T401	Transformer, SW3, 4 osc.	32-4194
WS-1, 2, 3	Band switch	42-1809

MISCELLANEOUS

Description	Service Part No.	
Adapter, a-c	L3275	
Backplate assembly	76-3026	
Rubber mounting (6 req.)	27-4596	
Cabinet and Hardware		
Baffle	40-9161	
Cabinet (less scale)	10666B	
Cardboard back	54-7398-1	
Scale	27-5968-1	
Scale strap, r.h.	56-4032	
Scale strap, l.h.	56-4031	
Cord, dial (25-ft. spool)	45-8750*	
Knob	54-4227-2	
Lamp assembly, pilot (2 req.)	76-1179-5*	
Pointer	56-2546-1	
Shaft, drive	31-2730	
Socket, loktal	27-6138*	
Socket, octal	27-6174	
Spring, gang and pointer	56-3066	
Plate, electrolytic condenser mounting	27-9508	
† 42-1809	Band Switch	

PRODUCTION CHANGES FOR MODEL 822

Run 2

To eliminate parasitic oscillations, R402 was increased in value to 100 ohms. The part number of R402 is now 66-1108340*.

Run 3

To reduce vibrator hash, a spring grounding clip was added to the vibrator-pack assembly.