PHILCO-TROPIC RADIO-PHONOGRAPH MODEL 3453

SPECIFICATIONS

CABINET	Wood console, walnut finish
CIRCUIT	8-tube superheterodyne
FREQUENCY RANGES	
Standard broadcast (BC)	540—1700 kc.
Short Wave 1 (SW1)	1.2—5.8 mc.
Short Wave 2 (SW2)	7—22 mc.
Band Spread 1 (BS1)	5.2—7.6 mc.
Band Spread 2 (BS2)	9.35—9.9 mc.
Band Spread 3 (BS3)	11.35—12.0 mc.
Band Spread 4 (BS4)	14.75—15.6 mc.
Band Spread 5 (BS5)	17.25—18.2 mc.
Band Spread 6 (BS6)	20.7—21.9 mc.
AUDIO OUTPUT	10 watts
OPERATING VOLTAGES	90—125 volts, or 180—250 volts, 50/60 cycles, a.c.
POWER CONSUMPTION	Radio—90 watts Phonograph—120 watts
INTERMEDIATE FREQUENCY	455 kc.
PHILCO TUBES (8)	7H7 r-f ampl., 7S7 osc.—mixer, 7E7 i-f ampl. and a.v.c., 7R7 det. and 1st audio ampl., 7N7 phase inverter and phono pre-ampl., 7C5 (2) push-pull audio output, 5AZ4 rectifier
AERIAL	100-foot conventional L-type, such as Philco Part No. 45-1469
PHONOGRAPH	Philco Automatic Record Changer and Record Player Combination, Model M-12C (For service information, refer to Page 532)

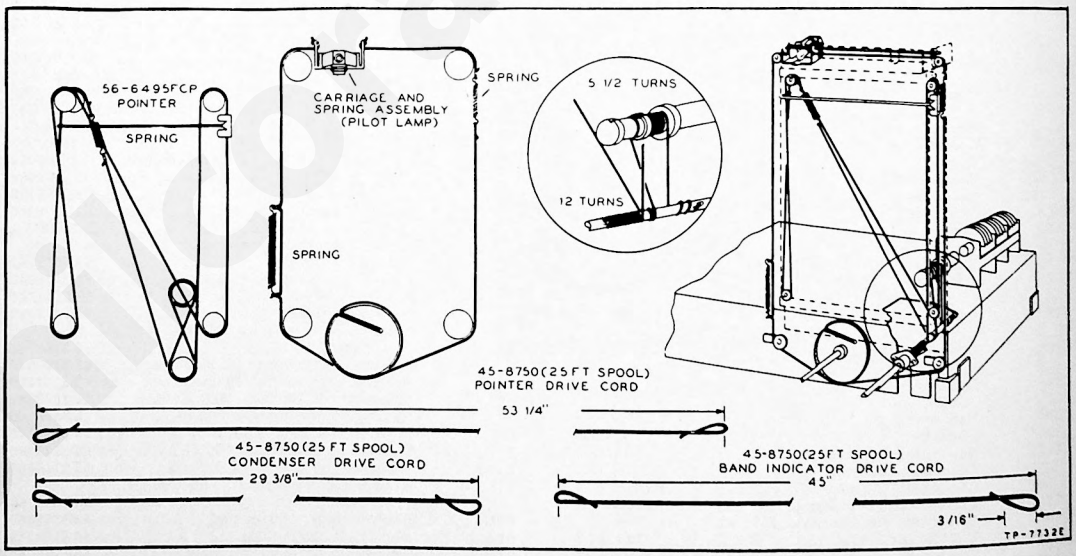

Figure 1. Drive-Cord-Installation Details

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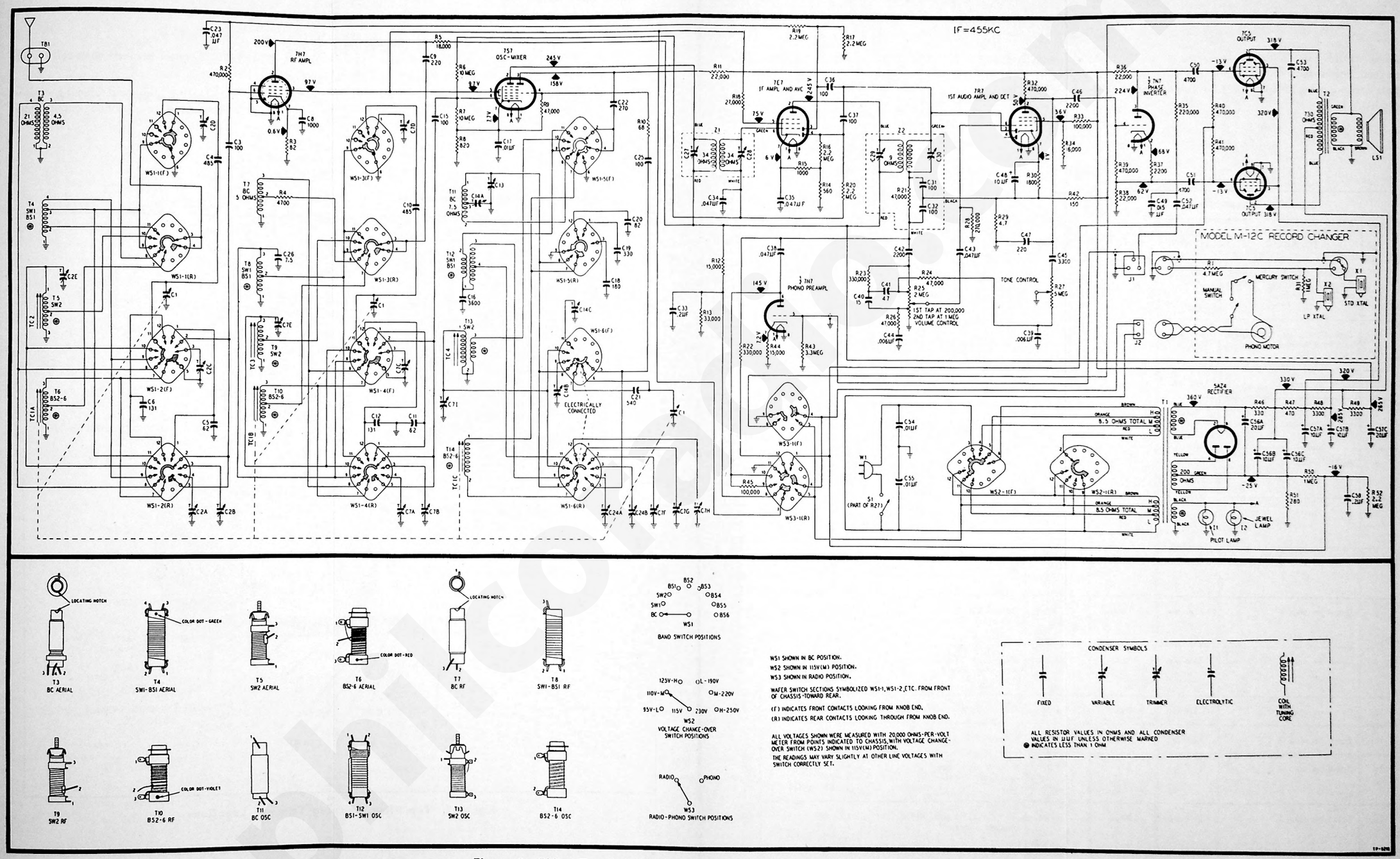

Figure 2. Philco-Tropic Radio-Phonograph Model 3453, Schematic Diagram

ALIGNMENT PROCEDURE

CAUTION: Before connecting radio to power source, make certain that voltage change-over switch is correctly set for line voltage.

DIAL POINTER—With tuning-condenser plates fully meshed, adjust dial pointer to coincide with index mark (the second mark below "55") at low-frequency end of dial.

BAND-SPREAD TUNING CORES—With tuning control at extreme low-frequency setting, set oscillator core TC1C flush with rear end of oscillator-coil form. Aerial core TC1A and r-f core TC1B should now extend approximately 1/16" beyond their coil forms.

STEP	SIGNAL GENERATOR		RADIO			ADJUST
	CONNECTION TO RADIO	DIAL SETTING	BAND SWITCH	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Through .1-μf. condenser to stator of r-f (center) section of C3.	455 kc.	BC	Tuning gang fully meshed.	Adjust, in order given, for maximum output; then repeat.	C30—2nd i-f sec. C29—2nd i-f pri. C28—1st i-f sec. C27—1st i-f pri.
2	Through 200-$\mu\mu f$. condenser to aerial terminal (lug 1 of TB1).	580 kc.	BC	580 kc.	Adjust for maximum output while rocking tuning control.	C14A—BC osc. (series)
3	Same as step 2.	1500 kc.	BC	1500 kc.	Adjust for maximum output.	C13—BC osc. (shunt)
4	Through 400-ohm resistor to aerial terminal (lug 1 of TB1).	5.0 mc.	SW1	5.0 mc.	Adjust for maximum output.	C14B—SW1 osc.
5	Same as step 4.	7.5 mc.	BS1	7.5 mc.	Adjust, in order given, for maximum output.	C14C—BS1 osc. C7D—BS1 r-f C2D—BS1 aerial
6					Preset approximately 1/2 turn from tight position.	C7I—SW2 osc. C7D—SW2 r-f C2E—SW2 aerial
7	Same as step 4.	9.0 mc.	SW2	9.0 mc.	Adjust, in order given, for maximum output.	TC4—SW2 osc. TC3—SW2 r-f TC2—SW2 aerial
8	Same as step 4.	21.0 mc.	SW2	21.0 mc.	Adjust, in order given, for maximum output.	C7I—SW2 osc. C7E—SW2 r-f C2E—SW2 aerial
9	Same as step 4.	15.2 mc.	BS4	15.2 mc.	Adjust, in order given, for maximum output.	C7F—BS4 osc. C7C—BS4 r-f C2C—BS4 aerial
10	Same as step 4.	9.7 mc.	BS2	9.7 mc.	Adjust for maximum output.	C7H—BS2 osc.
11	Same as step 4.	11.7 mc.	BS3	11.7 mc.	Adjust for maximum output.	C7G—BS3 osc.
12	Same as step 4.	17.8 mc.	BS5	17.8 mc.	Adjust, in order given, for maximum output.	C24B—BS5 osc. C7B—BS5 r-f C2B—BS5 aerial
13	Same as step 4.	21.5 mc.	BS6	21.5 mc.	Adjust, in order given, for maximum output.	C24A—BS6 osc. C7A—BS6 r-f C2A—BS6 aerial

SIGNAL GENERATOR—Connect ground lead to chassis, and output lead as indicated in chart. Use modulated output.

RADIO CONTROLS—Set volume control to maximum, and tone control fully clockwise. Set band switch, tuning control, and signal-generator frequency as indicated in chart.

OUTPUT METER—Connect between voice-coil lug on speaker and chassis.

OUTPUT LEVEL—During alignment, signal-generator output must be attenuated to maintain output-meter reading below 1.5 volts.

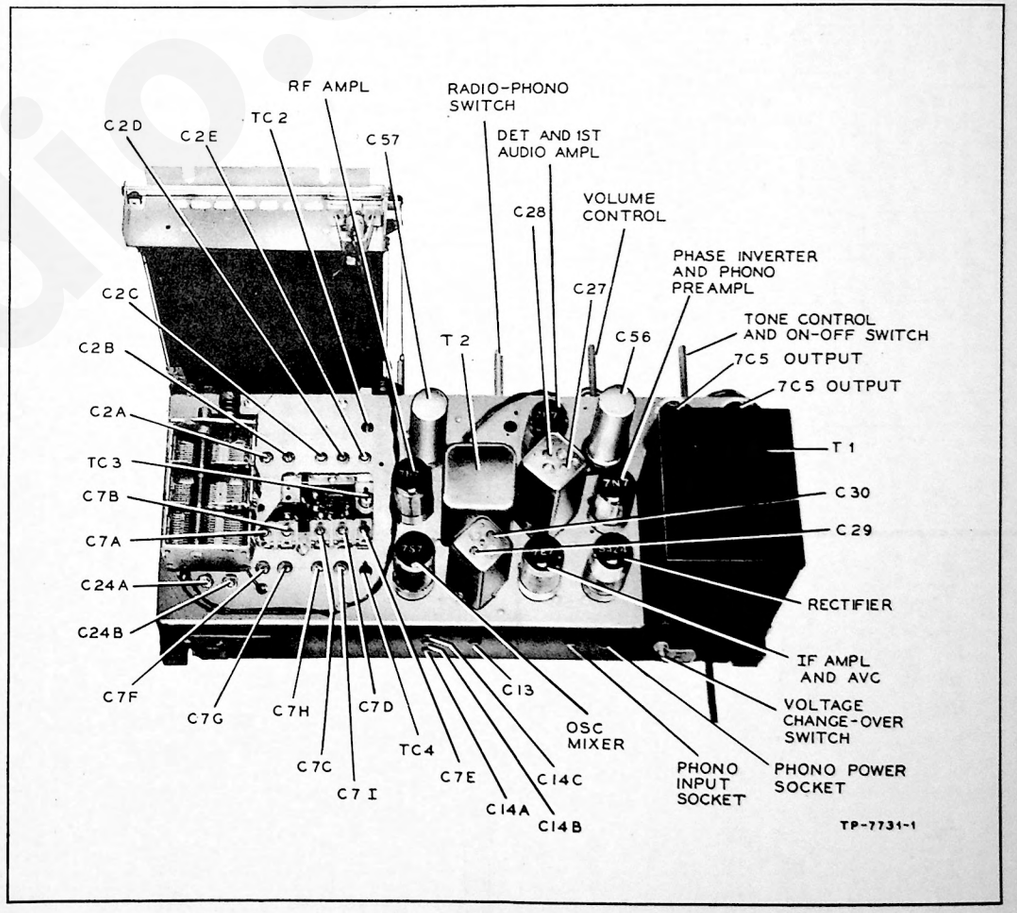

Figure 3. Top View, Showing Trimmer Locations

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."

Reference Symbol	Description	Service Part No.
C1	Condenser, tuning-gang, 3-section	31-2725-2
C2	Condenser, trimmer assembly, 5-section	31-6507-5
C2A	Condenser, trimmer, BS6 aerial	Part of C2
C2B	Condenser, trimmer, BS5 aerial	Part of C2
C2C	Condenser, trimmer, BS4 aerial	Part of C2
C2D	Condenser, trimmer, BS1 aerial	Part of C2
C2E	Condenser, trimmer, SW2 aerial	Part of C2
C3	Condenser, d-c blocking, 100 $\mu\mu f$.	62-110009001*
C4	Condenser, fixed padder, BS1 aerial, 485 $\mu\mu f$.	30-1220-23
C5	Condenser, fixed trimmer, BS3 aerial, 62 $\mu\mu f$.	60-00625307*
C6	Condenser, fixed trimmer, BS2 aerial, 131 $\mu\mu f$.	60-10135237*
C7	Condenser, trimmer assembly, 9-section	31-6507-4
C7A	Condenser, trimmer, BS6 r-f	Part of C7
C7B	Condenser, trimmer, BS5 r-f	Part of C7
C7C	Condenser, trimmer, BS4 r-f	Part of C7
C7D	Condenser, trimmer, BS1 r-f	Part of C7
C7E	Condenser, trimmer, SW2 r-f	Part of C7
C7F	Condenser, trimmer, BS4 osc.	Part of C7
C7G	Condenser, trimmer, BS3 osc.	Part of C7
C7H	Condenser, trimmer, BS2 osc.	Part of C7
C7I	Condenser, trimmer, SW2 osc.	Part of C7
C8	Condenser, cathode by-pass, 1000 $\mu\mu f$.	30-1225*
C9	Condenser, d-c blocking, 220 $\mu\mu f$.	62-122001001*
C10	Condenser, fixed padder, BS1 r-f, 485 $\mu\mu f$.	30-1220-23
C11	Condenser, fixed trimmer, BS3 r-f, 62 $\mu\mu f$.	60-00625307*
C12	Condenser, fixed trimmer, BS2 r-f, 131 $\mu\mu f$.	60-10135237*
C13	Condenser, trimmer, BC osc.	31-6308
C14	Condenser, trimmer assembly, 3-section	31-6477-4
C14A	Condenser, trimmer, BC osc.	Part of C14
C14B	Condenser, trimmer, SW1 osc.	Part of C14
C14C	Condenser, trimmer, BS1 osc.	Part of C14
C15	Condenser, d-c blocking, 100 $\mu\mu f$.	62-110009001*
C16	Condenser, fixed padder, SW1 osc., 3600 $\mu\mu f$.	60-20395404*
C17	Condenser, cathode by-pass, .01 μf.	30-4650-41*
C18	Condenser, fixed padder, BS3 and BS4 osc., 180 $\mu\mu f$.	30-1220-30*
C19	Condenser, fixed padder, BS1 and BS2 osc., 330 $\mu\mu f$.	60-10335407*
C20	Condenser, fixed padder, BS1 osc., 82 $\mu\mu f$.	60-00825237*
C21	Condenser, fixed padder, BS1 osc., 540 $\mu\mu f$.	60-10565314*
C22	Condenser, d-c blocking, 270 $\mu\mu f$.	60-10275407*
C23	Condenser, a-v-c filter, .047 μf.	30-4650-45
C24	Condenser, trimmer assembly, 2-section	31-6476-19
C24A	Condenser, trimmer, BS6 osc.	Part of C24
C24B	Condenser, trimmer, BS5 osc.	Part of C24
C25	Condenser, d-c blocking, 100 $\mu\mu f$.	60-10105407*
C26	Condenser, fixed trimmer, SW1 r-f, 7.5 $\mu\mu f$.	30-1224-8
C27	Condenser, trimmer	Part of Z1
C28	Condenser, trimmer	Part of Z1
C29	Condenser, trimmer	Part of Z2
C30	Condenser, trimmer	Part of Z2
C31	Condenser, i-f filter, 100 $\mu\mu f$. (Part of Z2)	60-10105237*
C32	Condenser, i-f filter, 100 $\mu\mu f$. (Part of Z2)	60-10105237*
C33	Condenser, screen by-pass, .2 μf.	45-3500-3*
C34	Condenser, a-v-c filter, .047 μf.	30-4650-45
C35	Condenser, cathode by-pass, .047 μf.	30-4650-45
C36	Condenser, a-v-c isolating, 100 $\mu\mu f$.	62-110009001*
C37	Condenser, a-v-c isolating, 100 $\mu\mu f$.	62-110009001*
C38	Condenser, d-c blocking, .047 μf.	30-4650-45
C39	Condenser, bass compensation, .006 μf.	45-3500-7*
C40	Condenser, tone compensation, 15 $\mu\mu f$.	30-1223-3
C41	Condenser, tone compensation, 47 $\mu\mu f$.	30-1224-2*
C42	Condenser, d-c blocking, .0022 μf.	30-4650-54
C43	Condenser, d-c blocking, .047 μf.	30-4650-45
C44	Condenser, bass compensation, .006 μf.	45-3500-7*
C45	Condenser, tone compensation, hi-cut, .0033 μf.	30-4650-55
C46	Condenser, d-c blocking, .0022 μf.	30-4650-54
C47	Condenser, plate by-pass, 220 $\mu\mu f$.	62-122001001*
C48	Condenser, cathode by-pass, 10 μf., 50v	30-2417-3*
C49	Condenser, phono degeneration, .015 μf.	30-4650-42
C50	Condenser, d-c blocking, .0047 μf.	30-4650-56
C51	Condenser, d-c blocking, .0047 μf.	30-4650-56
C52	Condenser, phono degeneration, .047 μf.	30-4650-45
C53	Condenser, tone compensation, .0047 μf.	30-4650-90
C54	Condenser, line filter, .01 μf.	30-4650-92
C55	Condenser, line filter, .01 μf.	30-4650-92
C56	Condenser, electrolytic, 3-section	30-2570-15
C56A	Condenser, filter, 20 μf., 450v	Part of C56
C56B	Condenser, filter, 10 μf., 450v In parallel	Part of C56
C56C	Condenser, filter, 10 μf., 450v In parallel	Part of C56
C57	Condenser, electrolytic, 3-section	30-2570-15
C57A	Condenser, filter, 10 μf., 450v	Part of C57
C57B	Condenser, filter, 10 μf., 450v	Part of C57
C57C	Condenser, filter, 20 μf., 450v	Part of C57
C58	Condenser, bias filter, .2 μf.	45-3500-3*
I1	Pilot lamp, 6—8 volts, bayonet base	34-2064
I2	Jewel lamp, 6—8 volts, bayonet base	34-2064
J1	Socket, phono input	27-6126
J2	Socket, phono power, A-C	27-6200
LS1	Speaker, 10-inch p-m	36-1611-4
R1	Resistor, phono compensation, 4.7 megohms (Part of M-12C)	66-5478340*
R2	Resistor, grid return, 470,000 ohms	66-4478340*
R3	Resistor, cathode bias, 82 ohms	66-0828340*
R4	Resistor, isolating, 4700 ohms	66-2478340*
R5	Resistor, plate load, 18,000 ohms, 2 watts	66-3185340*
R6	Resistor, grid return, 10 megohms	66-6108340*
R7	Resistor, grid return, 10 megohms	66-6108340*
R8	Resistor, cathode bias, 820 ohms	66-1828340*
R9	Resistor, grid return, 47,000 ohms	66-3478340*
R10	Resistor, oscillator stabilizer, 68 ohms	66-0688340*
R11	Resistor, plate load, 22,000 ohms, 1 watt	66-3224340*
R12	Resistor, dropping, 15,000 ohms, 1 watt	66-3154340*
R13	Resistor, screen bleeder, 33,000 ohms, 1 watt	66-3334340*
R14	Resistor, bias, 560 ohms	66-1568340*
R15	Resistor, cathode bias, 1000 ohms	66-2108340*
R16	Resistor, a-v-c load, 2.2 megohms	66-5228340*
R17	Resistor, a-v-c load, 2.2 megohms	66-5228340*
R18	Resistor, screen dropping, 27,000 ohms	66-3278340*
R19	Resistor, a-v-c filter, 2.2 megohms	66-5228340*
R20	Resistor, a-v-c filter, 2.2 megohms	66-5228340*
R21	Resistor, i-f filter, 47,000 ohms (Part of Z2)	66-3478340*
R22	Resistor, diode load, 330,000 ohms	66-4338340*

(Continued on Page 8)

REPLACEMENT PARTS LIST (Continued)

Reference Symbol	Description	Service Part No.
R23	Resistor, tone compensation, 330,000 ohms	66-4338340*
R24	Resistor, bass compensation, 47,000 ohms	66-3478340*
R25	Volume control, 2 megohms, tapped at 200,000 ohms and 1 megohm	33-5535-24
R26	Resistor, bass compensation, 47,000 ohms	66-3478340*
R27	Tone control, 5 megohms, with on-off switch	33-5566-3
R28	Resistor, grid return, 270,000 ohms	66-4278340*
R29	Resistor, cathode bias, 4.7 ohms	66-9478340*
R30	Resistor, cathode bias, 1800 ohms	66-2188340*
R31	Resistor, crystal load, 1 megohm (Part of M-12C)	66-5108340*
R32	Resistor, plate load, 470,000 ohms	66-4478340*
R33	Resistor, screen dropping, 100,000 ohms	66-4108340*
R34	Resistor, screen bleeder, 16,000 ohms	66-3168340*
R35	Resistor, phono degeneration, 220,000 ohms	66-4228340*
R36	Resistor, plate load, 22,000 ohms	66-3228340*
R37	Resistor, cathode load, 2200 ohms	66-2228340*
R38	Resistor, bias, 22,000 ohms	66-3228340*
R39	Resistor, grid return, 470,000 ohms	66-4478340*
R40	Resistor, grid return, 470,000 ohms	66-4478340*
R41	Resistor, grid return, 470,000 ohms	66-4478340*
R42	Resistor, feedback, 150 ohms	66-1158340*
R43	Resistor, grid return, 3.3 megohms	66-5338340*
R44	Resistor, cathode bias, 15,000 ohms	66-3158340*
R45	Resistor, plate load, 100,000 ohms	66-4108340*
R46	Resistor, filter, 330 ohms, 3 watts	33-1334-8
R47	Resistor, filter, 470 ohms, 1 watt	66-1474340*
R48	Resistor, filter, 3300 ohms, 1 watt	66-2334340*
R49	Resistor, filter, 3300 ohms, 2 watts	66-2335340*
R50	Resistor, bias filter, 1 megohm	66-5108340*
R51	Resistor, bias, 280 ohms, 3 watts	33-1334-11
R52	Resistor, bias divider, 2.2 megohms	66-5228340*
S1	Switch, off-on	Part of R27
T1	Transformer, power	32-8246-1
T2	Transformer, output	32-8300-1
T3	Transformer, BC aerial	32-4368
T4	Transformer, SW1 and BS1 aerial	32-4364
T5	Transformer, SW2 aerial	32-4208
T6	Transformer, BS2, BS3, BS4, BS5, and BS6 aerial	32-3670
T7	Transformer, BC r-f	32-4369
T8	Transformer, SW1 and BS1 r-f	32-4364-1
T9	Transformer, SW2 r-f	32-4208-7
T10	Transformer, BS2, BS3, BS4, BS5, and BS6 r-f	32-3671
T11	Transformer, BC osc.	32-4370
T12	Transformer, SW1 and BS1 osc.	32-4207-2
T13	Transformer, SW2 osc.	32-4208-2
T14	Transformer, BS2, BS3, BS4, BS5, and BS6 osc.	32-4212-2
TB1	Terminal board, aerial connection	38-9729
TC1	Tuning-core assembly, 3-section	76-1281-1
TC1A	Tuning core, band spread aerial	Part of TC1
TC1B	Tuning core, band spread r-f	Part of TC1
TC1C	Tuning core, band spread, osc.	Part of TC1
TC2	Tuning core, SW2 aerial	Part of T5
TC3	Tuning core, SW2 r-f	Part of T9
TC4	Tuning core, SW2 osc.	Part of T13
W1	Line cord	L-2183*
WS1	Wafer switch, band-change	42-1883-1†
WS2	Wafer switch, voltage change-over	42-1817
WS3	Wafer switch, radio-phono	42-1886
X1	Crystal-pickup cartridge, standard play (Part of M-12C)	35-2671-1
X2	Pickup cartridge, long play (Part of M-12C)	45-1612
Z1	Transformer, 1st i-f	32-3976
Z2	Transformer, 2nd i-f	32-4376

†42-1883-1 includes both the band-change wafer switch and the drive-shaft-and-bearing assembly.

MISCELLANEOUS

Description	Service Part No.
Cabinet	10737
Back	54-7752
Baffle, wood	219-142
Baffle-and-cloth assembly, cardboard, speaker	40-7612
Baffle-and-cloth assembly, cardboard, dummy	40-7612-1
Bezel strip	56-6497
Bin mechanism, (l.h.)	76-3223-5
Bin mechanism, (r.h.)	76-3223-6
Bullet catch (2)	45-6002
Dome (4)	45-6190
Door pull (2)	56-6521
Frame assembly, changer mounting	76-4104
Grille, metal	56-6492
Hinge, butt, phono door (2)	45-6067
Hinge, knife, record-storage door (2)	45-6449-1
Hinge, knife, radio door, top	56-5713-2
Hinge, knife, stop, radio door, bottom	56-5713
Strike plate (2)	45-6003
Continental a-c adapter plug	L-3275*
Dial-backplate assembly	76-4438
Drum assembly, band indicator	76-1246FA33
Pilot-lamp carriage-and-spring assembly	76-1512
Dial-scale assembly	76-4437
Pointer	56-6495
Spring, indicator (2)	56-3066
Spring, indicator	56-2980
Drive cord (25-foot spool)	45-8750*
Jewel	54-4304
Jewel-lamp assembly	41-3737-5
Knob (5)	54-4376
Pilot-lamp assembly	76-1236-1
Socket, Loktal (8)	27-6207
Spring, bin mechanism (2)	56-4978-1
Spring, record-changer mounting (3)	56-3043FA15
(3)	56-7059FCP
Spring, 50-cycle, conversion, motor shaft, 78 r.p.m.	56-7055
Spring, 50-cycle, conversion, pulley, 33-1/3 r.p.m.	56-7055-1