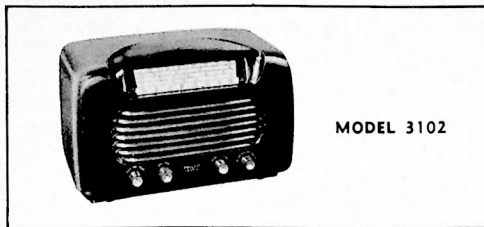


# PHILCO-TROPIC RADIO MODEL 3102



MODEL 3102

## SPECIFICATIONS

CABINET ..... Bakelite  
 CIRCUIT ..... Five-tube superheterodyne

## FREQUENCY RANGES

Standard Broadcast ..... 540—1600 kc.  
 Short Wave 1 ..... 2.3—5.8 mc.  
 Short Wave 2 ..... 5.7—9.3 mc.  
 Short Wave 3 ..... 9.2—12.0 mc.  
 Short Wave 4 ..... 11.6—22.0 mc.  
 OPERATING VOLTAGES ..... 105-125 volts or 220-240 volts.  
 a.c. or d.c.  
 POWER CONSUMPTION ..... 31 watts at 115 volts; 63  
 watts at 230 volts  
 AUDIO OUTPUT ..... 1.7 watts at 115 volts; 2.2  
 watts at 230 volts  
 AERIAL ..... Philco Outdoor Aerial, Part  
 No. 45-1494

## INTERMEDIATE

FREQUENCY ..... 455 kc.  
 PHILCO TUBES (5) ..... 1457, 7B7, 14B6, 50A5, 35Y4  
 TP-7105

## CALIBRATING DIAL BACKPLATE

When the chassis has been removed from the cabinet, dial calibration and alignment points should be marked on the backplate below the pointer. First, make a mark  $3\frac{1}{2}$  inches from the reference point, indicated in figure 1 by the line at the left-hand edge of the backplate; this mark locates the index point. Second, place the left-hand edge of the ruler at the index point, and make pencil marks on the backplate for the alignment points.

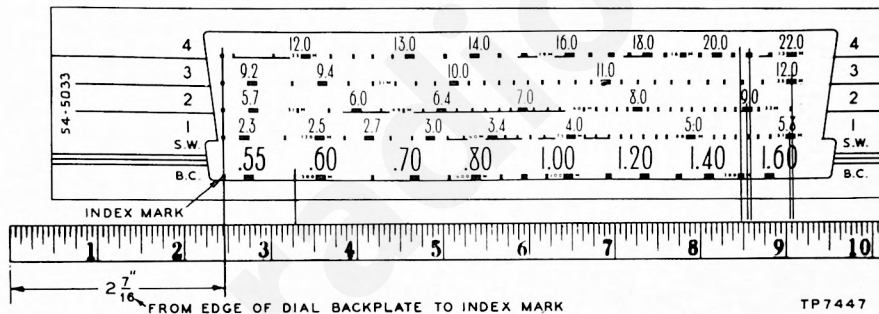


Figure 1. Dial-Backplate Calibration Measurements

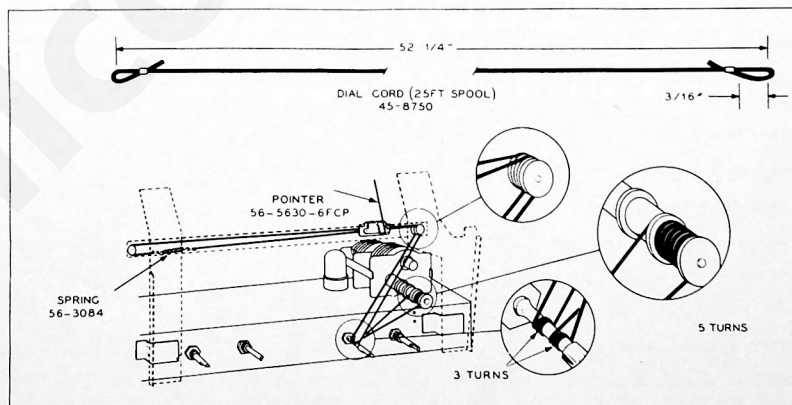


Figure 2. Drive-Cord Installation Details

TP-6973B

# ALIGNMENT PROCEDURE

**CAUTION:** Before turning on the radio, make certain that the voltage-change switch, located on the rear of the chassis, is set to the correct line voltage. ONE SIDE OF THE POWER LINE IS CONNECTED TO THE RADIO CHASSIS.

**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.

STEP	SIGNAL GENERATOR		RADIO			ADJUST
	CONNECTIONS TO RADIO	FREQUENCY	BAND SWITCH	TUNING	SPECIAL INSTRUCTIONS	
1	Through .05-mf. condenser to pin 6 of 1457.	455 kc.	BC	580 kc.	Adjust in order given, for maximum output, then repeat.	C301B—2nd i-f sec. C301A—2nd i-f prl. C300B—1st i-f sec. C300A—1st i-f prl.
2	Through 400-ohm 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.	C408A—SW4 osc.
3	Same as step 2.	20.8 mc.	SW4	20.8 mc.	Adjust for maximum output.	C409B*—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.	C408B—SW3 osc.
5	Same as step 2.	12 mc.	SW3	12 mc.	Adjust for maximum output.	C409A*—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.	C408C—SW2 osc.
7	Same as step 2.	9 mc.	SW2	9 mc.	Adjust for maximum output.	C408F*—SW2 aerial
8	Same as step 2.	5.8 mc.	SW1	6 mc.	Adjust for maximum output. Image should be heard when radio is tuned to 5.1 mc.	C408D—SW1 osc.
9	Same as step 2.	5.8 mc.	SW1	6 mc.	Adjust for maximum output.	C408G*—SW1 aerial
10					Loosen trimmer 1/2 turn from tight position.	C409C—BC osc. (series)
11	Through 200-mmf. condenser to aerial lead.	1520 kc.	BC	1520 kc.	Adjust for maximum output.	C409D—BC osc. (shunt)
12	Same as step 11.	1520 kc.	BC	1520 kc.	Adjust for maximum output.	C408E*—BC aerial
13	Same as step 11.	580 kc.	BC	580 kc.	Adjust for maximum output.	C409C*—BC osc. (series)
14	Repeat steps 11, 12, 13, and 12.					

\* Rock tuning gang while adjusting this trimmer.

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

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

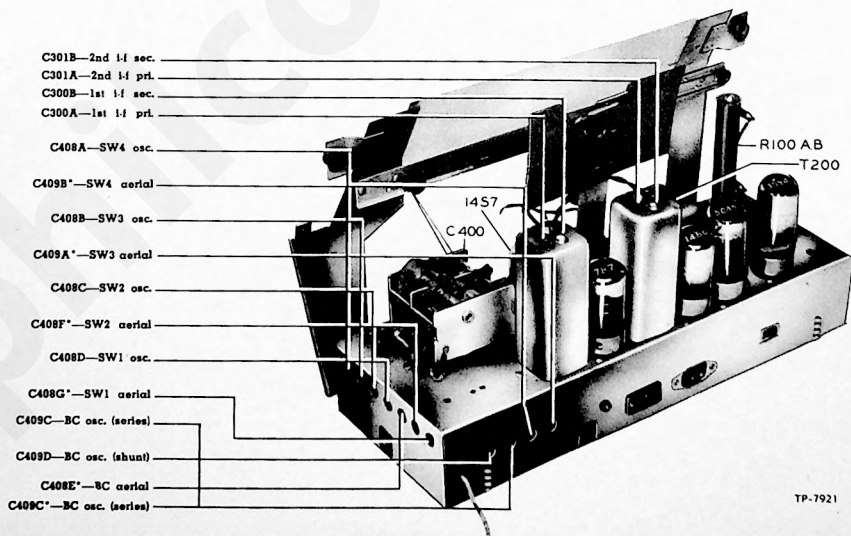


Figure 3. Chassis View, Showing Trimmer Locations



# 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, electrolytic, 4-section	30-2568-12
C100A	Condenser, filter, 40 mf., 200v	Part of C100
C100B	Condenser, filter, 30 mf., 200v	Part of C100
C100C	Condenser, filter, 20 mf., 200v	Part of C100
C101	Condenser, line filter, .02 mf.	61-0108*
I100	Pilot lamp, 110—125v	34-2605*
J100	Socket, power input	27-6240
R100	Resistor, line dropping, wire wound, 2-section	33-3444
R100A	Resistor, 370 ohms, 17 watts	Part of R100
R100B	Resistor, 560 ohms, 10 watts	Part of R100
R101	Resistor, filter, 220 ohms, 1 watt	66-1224340*
R102	Resistor, filter, 1000 ohms	66-2103340*
S100	Switch, off-on	Part of R206
S101	Switch, voltage change	42-1553-3
W100	Line-cord-and-bracket assembly	76-4285

SECTION 2 AUDIO CIRCUITS		
Reference Symbol	Description	Service Part No.
C200	Condenser, d-c blocking, .006 mf.	45-3500-7*
C201	Condenser, d-c blocking, .006 mf.	45-3500-7*
C202	Condenser, tone compensation, .01 mf.	61-0120*
C203	Condenser, i-f filter, 220 mmf.	62-122001001
C204	Condenser, by-pass, 220 mmf.	62-122001001
C205	Condenser, cathode by-pass, 10 mf., 25v	Part of C100
C206	Condenser, phono isolation, .05 mf.	61-0122*
C207	Condenser, tone compensation, .006 mf.	45-3500-7*
J200	Jack, phono input	27-6126
LS200	Speaker, p-m	36-1615-9
R200	Volume control, 500,000 ohms	33-5565
R201	Resistor, grid return, 10 megohms	66-6103340*
R202	Resistor, plate dropping, 470,000 ohms	66-4473340*
R203	Resistor, i-f filter, 22,000 ohms	66-3223340*
R204	Resistor, grid return, 470,000 ohms	66-4473340*
R205	Resistor, cathode bias, 150 ohms	66-1153340*
R206	Tone control (with off-on switch), 500,000 ohms	33-5538-44
T200	Transformer, output	32-8321
WS-1(F)	Wafer-switch section	Part of 42-1879

SECTION 3 I-F, DETECTOR, AND A-V-C CIRCUITS		
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, i-f filter, 100 mmf. (part of Z301)	60-10105407*
C301D	Condenser, i-f filter, 100 mmf. (part of Z301)	60-10105407*
C302	Condenser, screen by-pass, .05 mf.	61-0122*
C303	Condenser, a-v-c filter, .05 mf.	61-0122*
L300A	Coil, primary, 1st i-f	Part of Z300
L300B	Coil, secondary, 1st i-f	Part of Z300
L301A	Coil, primary, 2nd i-f	Part of Z301
L301B	Coil, secondary, 2nd i-f	Part of Z301
L301C	Coil, tertiary, 2nd i-f	Part of Z301
R300	Resistor, i-f filter, 47,000 ohms (part of Z301)	66-3473340*
R301	Resistor, screen dropping, 12,000 ohms	66-3123340*

Reference Symbol	Description	Service Part No.
R302	Resistor, diode load, 2.2 megohms	66-5223340*
WS-1(R)	Wafer-switch section	Part of 42-1879
Z300	Transformer, 1st i-f	32-4345
Z301	Transformer, 2nd i-f	32-4346

SECTION 4 R-F AND CONVERTER CIRCUITS		
Reference Symbol	Description	Service Part No.
C400	Condenser, tuning gang, 2-section	31-2723-2
C401	Condenser, aerial coupling, .002 mf.	61-0062*
C402	Condenser, d-c blocking, 100 mmf.	60-10105407*
C403	Condenser, d-c blocking, 100 mmf.	60-10105407*
C404	Condenser, d-c blocking, 270 mmf.	60-10275407*
C405	Condenser, fixed padder, silvered mica, 310 mmf.	30-1220-11
C406	Condenser, fixed padder, 2400 mmf.	60-20245304*
C407	Condenser, fixed padder, silvered mica, 310 mmf.	30-1220-11
C408	Condenser, trimmer, 7-section	31-6414-5
C408A	Condenser, trimmer, SW4 oscillator	Part of C408
C408B	Condenser, trimmer, SW3 oscillator	Part of C408
C408C	Condenser, trimmer, SW2 oscillator	Part of C408
C408D	Condenser, trimmer, SW1 oscillator	Part of C408
C408E	Condenser, trimmer, BC aerial	Part of C408
C408F	Condenser, trimmer, SW2 aerial	Part of C408
C408G	Condenser, trimmer, SW1 aerial	Part of C408
C409	Condenser, trimmer, 4-section	31-6414-2
C409A	Condenser, trimmer, SW3 aerial	Part of C409
C409B	Condenser, trimmer, SW4 aerial	Part of C409
C409C	Condenser, padder, BC oscillator	Part of C409
C409D	Condenser, trimmer, BC oscillator	Part of C409
R400	Resistor, grid return, 1 megohm	66-5103340*
R401	Resistor, plate dropping, 10,000 ohms	66-3103340*
R402	Resistor, grid return, 68,000 ohms	66-3683340*
R403	Resistor, parasitic suppressor, 68 ohms	66-0683340*
T400	Transformer, aerial (BC, SW1, SW2)	32-4330
T401	Transformer, aerial (SW3, SW4)	32-4185
T402	Transformer, oscillator (SW3, SW4)	32-4184
T403	Transformer, oscillator (BC, SW1, SW2)	32-4329
WS-2(F)	Wafer-switch section	Part of 42-1879
WS-2(R)	Wafer-switch section	Part of 42-1879
WS-3(F)	Wafer-switch section	Part of 42-1879
WS-3(R)	Wafer-switch section	Part of 42-1879

SECTION 5 MISCELLANEOUS		
Reference Symbol	Description	Service Part No.
A	Adapter, a-c continental plug	L-3275
B	Backplate assembly, scale	76-4343
C	Cabinet	10666D
	Back	54-7398-2
	Baffle assembly	40-9161-1
	Scale	54-5033
	Strap, r. h., scale mounting	56-4032FCP
	Strap, l. h., scale mounting	56-4031FCP
	Cord, dial (25-ft. spool)	45-8750*
	Knob (4)	54-4227-2
	Pilot-lamp assembly	27-6233
	Pointer	56-5630-6FCP
	Scale, regional (diffusing panel)	54-5036
	Shaft, drive	31-2738
	Socket, Loktal (5)	27-6207
	Spring, gang and pointer drive	56-3084
	Spring, regional scale mounting (2)	56-3841