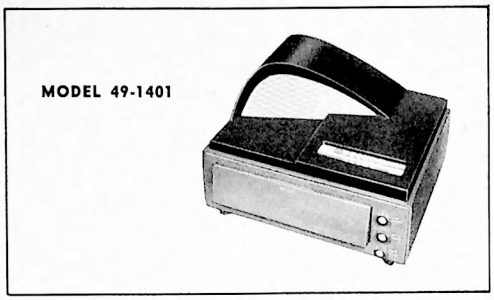
PHILCO RADIO-PHONOGRAPH MODEL 49-1401



SPECIFICATIONS

CABINET	Wood, mahogany finish with black plastic top
RADIO CIRCUIT	Five-tube superheterodyne
FREQUENCY RANGE	540—1600 kc.
AUDIO OUTPUT	2 watts
OPERATING VOLTAGES	105—120 volts, 60 cycles, a.c.
POWER CONSUMPTION	
Radio only	35 watts
Radio-phonograph	50 watts
AERIAL	Built-in loop; terminal also provided for external aerial
INTERMEDIATE FREQUENCY	455 kc.
PHILCO TUBES (5)	12BE6, 12BA6, 6AQ6, 35L6GT, 50Y6GT
PHONOGRAPH	Philco Automatic Record Player Model M-7 (for service information see manual PR-1522)

TP-4955

CALIBRATING DIAL BACKPLATE

When the radio chassis has been removed from the cabinet, dial-calibration and alignment points should be marked on the dial backplate, below the pointer.

The method of measuring for these points is illustrated in figure 1. Hold a ruler against the backplate, with the start of the ruler at the reference line shown, and mark pencil dots at the proper points for the required frequency settings. When the ruler is correctly placed, the index mark is approximately 2-3/8 inches from the reference point indicated in figure 1.

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

After installing the chassis in the cabinet, the dial pointer should be moved to coincide with the index mark on the dial. Coincidence of the pointer and index mark should occur with the tuning condenser fully meshed.

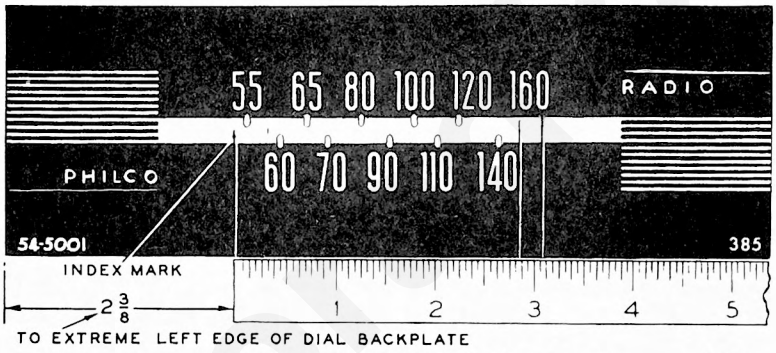


Figure 1. Dial-Backplate Calibration Measurements

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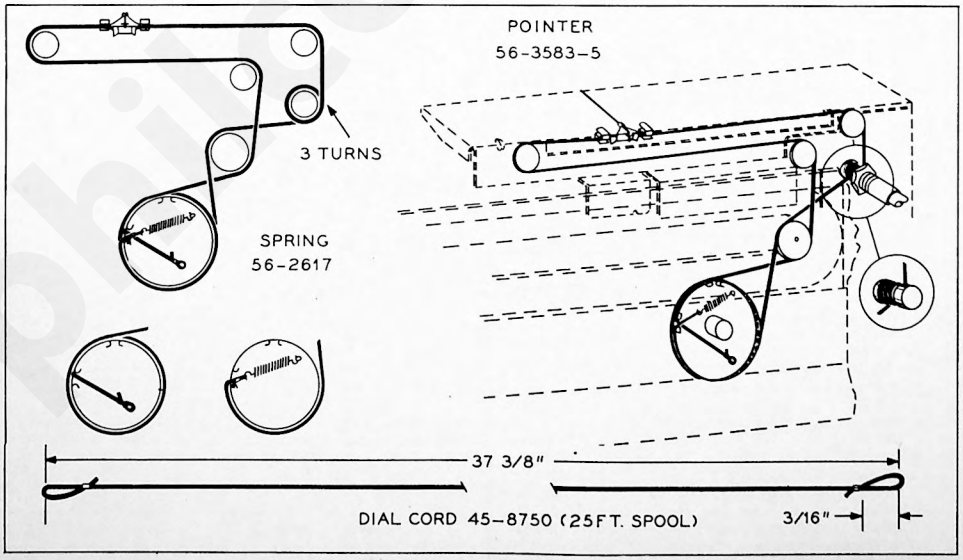

Figure 2. Drive-Cord Installation Details

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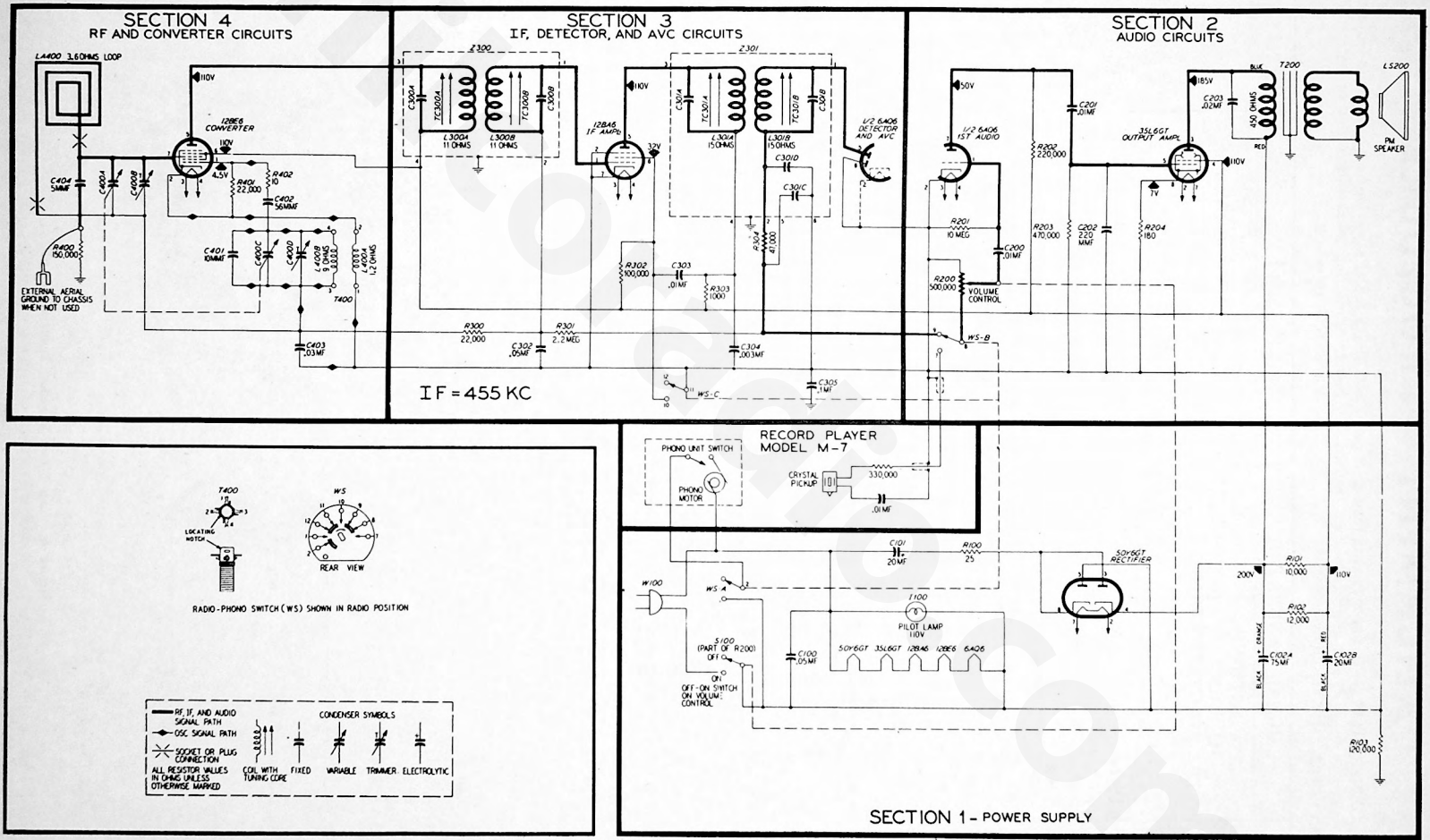

Figure 3. Philco Model 49-1401, Sectionalized Schematic Diagram.

TP-5379

ALIGNMENT PROCEDURE

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

OUTPUT LEVEL — During alignment, adjust signal-generator output to maintain output-meter indication below 1.25 volts.

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTION TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Through .1-mf. condenser to external-aerial lead. Make sure that radio loop aerial is connected to radio.	455 kc.	Tuning condenser fully meshed.	Adjust, in order given, for maximum output.	TC301B—2nd i-f sec. TC301A—2nd i-f pri. TC300B—1st i-f sec. TC300A—1st i-f pri.
2	Radiating loop (see note below).	1600 kc.	1600 kc.	Adjust for maximum output.	C400D—osc.
3	Same as step 2.	1500 kc.	1500 kc.	Adjust for maximum output.	C400B—aerial

RADIATING LOOP: Make up a 6—8-turn, 6-inch-diameter loop, using insulated wire; connect to signal-generator leads and place near radio loop aerial. Make sure that radio loop aerial is connected to radio.

DIAL — Calibration and pointer-index measurements are shown in figure 1. With tuning condenser fully meshed, set pointer to index mark.

RADIO CONTROLS — Set volume control to maximum, and radio-phono switch to radio position.

OUTPUT METER — Connect to terminals indicated in figure 4.

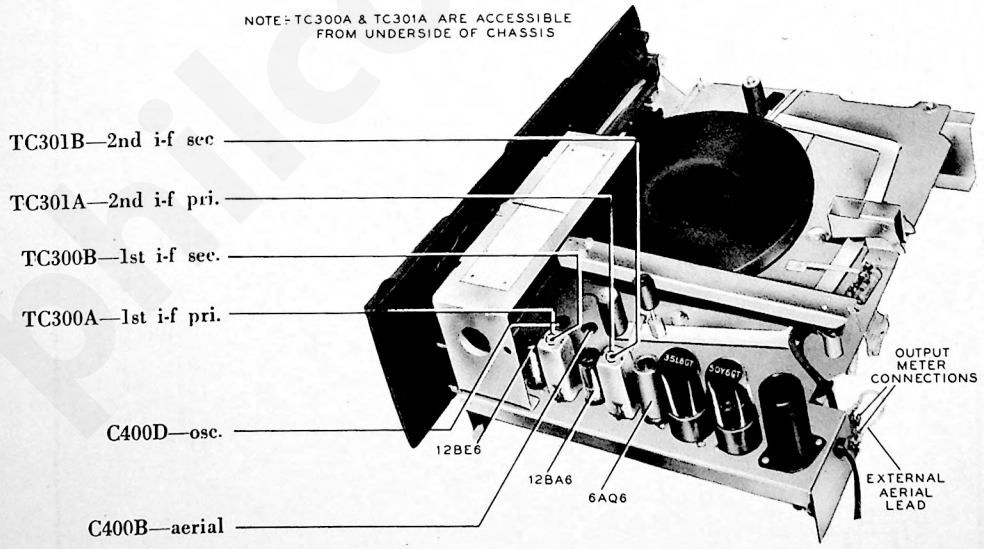

Figure 4. Top View, Showing Trimmer Locations

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SYMBOLIZATION

The components in the radio circuit are symbolized according to the types of parts and the sections of the radio in which the parts are located. The prefix letter of the symbol designates the type of part, as follows:

C —condenser	LA—loop aerial	S —switch	WS—wafer switch
I —pilot lamp	LS—loud-speaker	T —transformer	Z —electrical assembly
L —choke or coil	R —resistor	W —wire or cable	

The number of the symbol designates the section in which the part is located, as follows:

100-series components are in Section 1 — the power supply
200-series components are in Section 2 — the audio circuits
300-series components are in Section 3 — the i-f, detector, and a-v-c circuits
400-series components are in Section 4 — the r-f and converter circuits

REPLACEMENT PARTS LIST

NOTE: Parts marked with an asterisk (*) are general replacement items. These numbers may not be identical with those on factory assemblies; also, the electrical values of some replacement items may differ from the values indicated in the schematic diagram and replacement 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, line filter, .05 mf.	61-0170*
C101	Condenser, filter, electrolytic, 20 mf., 200v	30-2568-22
C102	Condenser, electrolytic, two-section	30-2575-20
C102A	Condenser, filter, 75 mf., 250v	Part of C102
C102B	Condenser, filter, 20 mf., 250v	Part of C102
I100	Pilot lamp	34-2605*
R100	Resistor, current limiting, 25 ohms	33-1334-5
R101	Resistor, filter, 10,000 ohms	66-3104340*
R102	Resistor, filter, 12,000 ohms	66-3124340*
R103	Resistor, isolating, 120,000 ohms	66-4123340*
S100	Switch, off-on power	Part of 33-5538-30
W100	Line-cord-and-plug assembly	L-2183*
WS-A	Switch-wafer section	Part of 42-1847†

SECTION 2
AUDIO CIRCUITS

C200	Condenser, d-c blocking, .01 mf.	61-0120*
C201	Condenser, d-c blocking, .01 mf.	61-0120*
C202	Condenser, r-f by-pass, 220 mmf.	62-122001001*
C203	Condenser, tone compensation, .02 mf.	61-0108*
R200	Volume control, 500,000 ohms	33-5538-30
R201	Resistor, grid return, 10 megohms	66-6103340
R202	Resistor, plate load, 220,000 ohms	66-4223340
R203	Resistor, grid return, 470,000 ohms	66-4473340
R204	Resistor, cathode bias, 180 ohms	66-1183340
LS200	Loud-speaker, p-m	36-1625*
T200	Transformer, output	32-8351
WS-B	Switch-wafer section	Part of 42-1847†

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

C300A	Condenser, fixed, 1st i-f primary	Part of Z300
C300B	Condenser, fixed, 1st i-f secondary	Part of Z300
C301A	Condenser, fixed, 2nd i-f primary	Part of Z301
C301B	Condenser, fixed, 2nd i-f secondary	Part of Z301
C301C	Condenser, i-f filter	Part of Z301
C301D	Condenser, i-f filter	Part of Z301
C302	Condenser, a-v-c filter, .05 mf.	61-0122*
C303	Condenser, screen by-pass, .01 mf.	61-0120*
C304	Condenser, plate by-pass, .003 mf.	61-0109*
C305	Condenser, r-f by-pass, .1 mf.	61-0113*
R300	Resistor, a-v-c filter, 22,000 ohms	66-3223340
R301	Resistor, a-v-c filter, 2.2 megohms	66-5223340
R302	Resistor, screen dropping, 100,000 ohms	66-4103340
R303	Resistor, plate dropping, 1,000 ohms	66-2103340
R304	Resistor, a-v-c filter, 47,000 ohms	66-3473340
WS-C	Switch-wafer section	Part of 42-1847†
Z300	Transformer, 1st i-f	32-4160
Z301	Transformer, 2nd i-f	32-4240

SECTION 4
R-F AND CONVERTER CIRCUITS

Reference Symbol	Description	Service Part No.
C400	Condenser, tuning gang	31-2727
C400A	Condenser, tuning, aerial section	Part of C400
C400B	Condenser, trimmer, aerial	Part of C400
C400C	Condenser, tuning, oscillator section	Part of C400
C40 D	Condenser, trimmer, oscillator	Part of C400
C401	Condenser, ceramic, 10 mmf.	30-1224-26
C402	Condenser, ceramic, 56 mmf.	60-00515307*
C403	Condenser, r-f by-pass, .03 mf.	45-3500-1*
C404	Condenser, aerial coupling, 5 mmf.	60-90505007*
LA400	Loop aerial	76-2127-7
R400	Resistor, leakage, 150,000 ohms	66-4153340
R401	Resistor, grid return, 22,000 ohms	66-3223340
R402	Resistor, parasitic suppressor, 10 ohms	66-0103340
T400	Transformer, oscillator	32-4190-2

†42-1847 is WS, wafer switch, single-wafer, radio-phono (includes WS-A, WS-B, WS-C).

MISCELLANEOUS

Description	Service Part No.
Cabinet and Cabinet Parts	
Baffle-and-cloth assembly	40-7504
Bracket, baffle-and-cloth mounting, 4 required	56-5466
Bracket, front top rail	56-5469FA3
Cabinet base, wood	10707
Cabinet top, plastic	54-4536
Connecting bar	76-2111
Cover, plastic top	54-4536
Dial scale	54-5001
Dial-scale strap	56-5465
Door	219113
Fastener, back	56-5476FA9
Fastener, front	56-5467FA3
Front panel, plastic	76-3741
Dial-Scale Hardware	
Dial cord, 25-foot spool	45-8750*
Panel, diffusing	54-7553
Pointer	56-3583-5
Shaft assembly	76-3731
Spring, diffusing panel, 2 required	56-3841
Spring, drive cord	56-2617
Clip, coil mounting	28-5002FCP
Knob, 3 required	54-4527-3
Panel, front	76-3741
Pin, door hinge, 2 required	56-5461FA15
Rail, record player	56-5464
Shield, tube	56-3979FA5
Socket, miniature	27-6226
Socket, octal	27-6174
Socket assembly, pilot lamp	27-6233-17