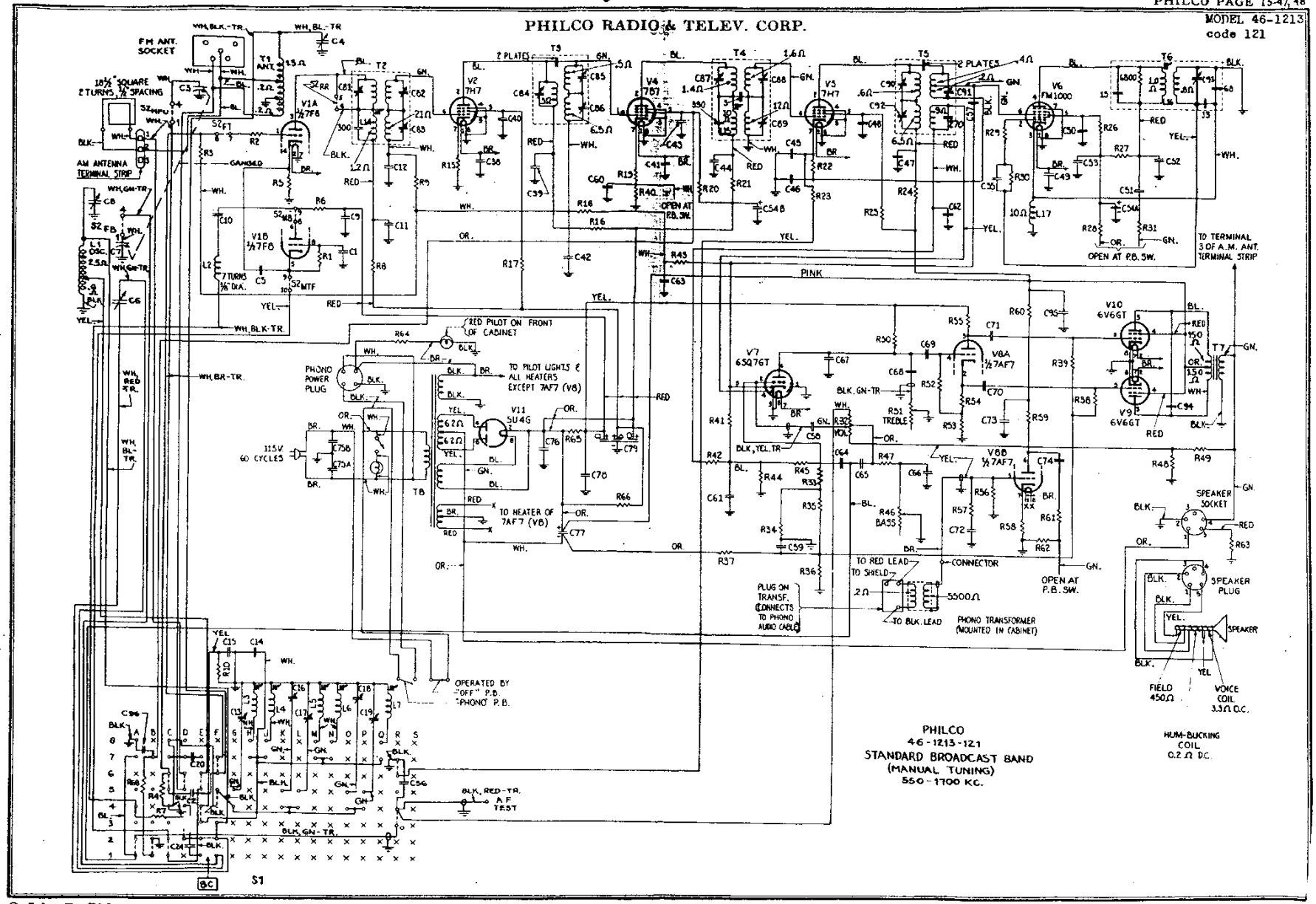
Philco Radio & Television Corp.

Model: 46-1213 (121)	Chassis:	Year: Pre 1948
Power:	Circuit:	IF:
Tubes:		
Bands:		

Resources
Riders Volume 15 - PHILCO 15-47, 48
Riders Volume 15 - PHILCO 15-49, 50
Riders Volume 15 - PHILCO 15-51, 52
Riders Volume 15 - PHILCO 15-53, 54
Riders Volume 15 - PHILCO 15-55, 56
Riders Volume 15 - PHILCO 15-57
Riders Volume 15 - PHILCO 15-58
Riders Volume 15 - PHILCO 15-59
Riders Volume 15 - PHILCO 15-60
Riders Volume 15 - PHILCO 15-61
Riders Volume 15 - PHILCO 15-62

Courtesy Nostalgia Air



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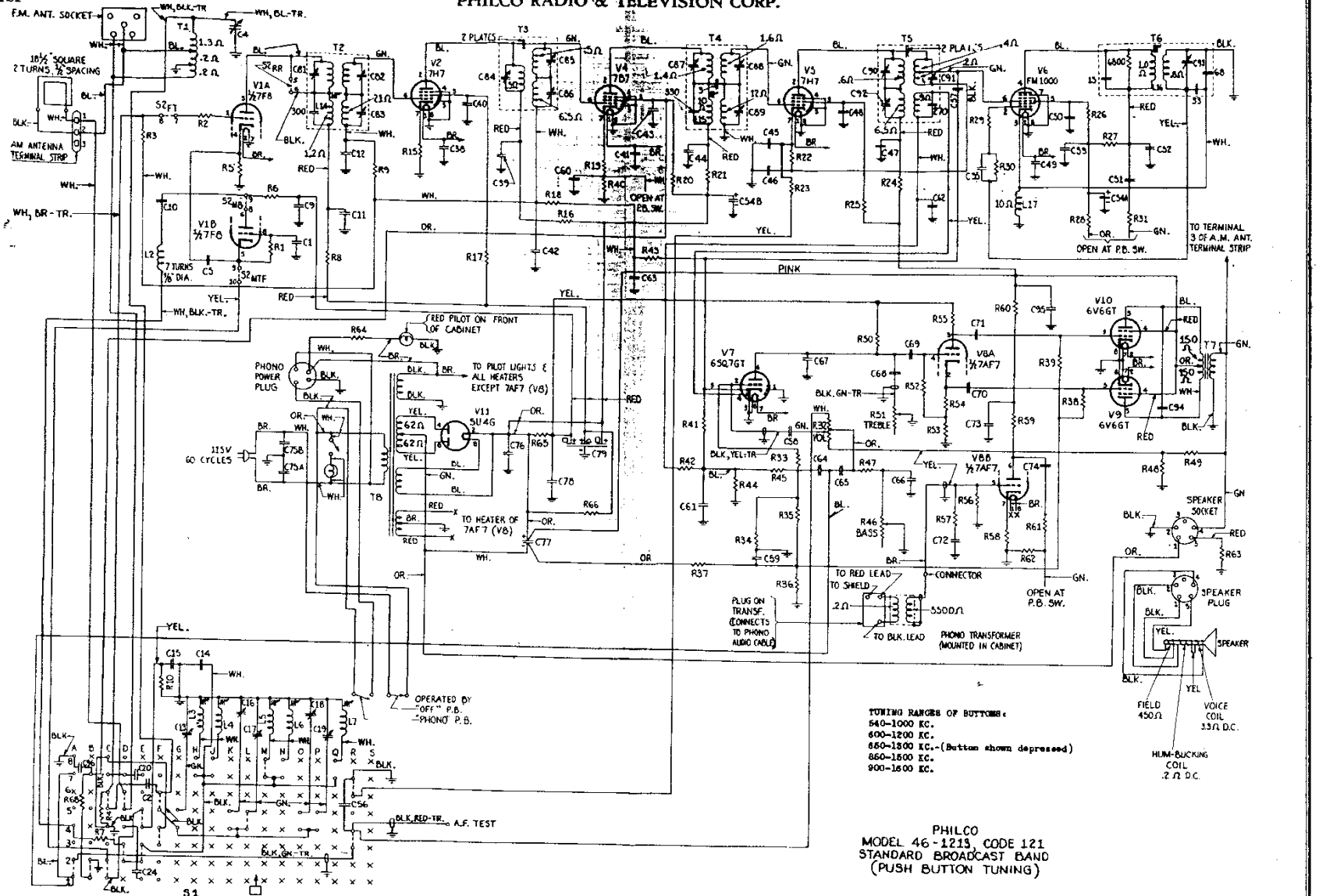
Courtesy Nostalgia Air

MODEL 46-1213
code 121

PHILCO RADIO & TELEVISION CORP.



TUNING RANGES OF BUTTONS:
540–1000 KC.
600–1200 KC.
650–1300 KC.–(Button shown depressed)
850–1500 KC.
900–1600 KC.

PHILCO
MODEL 46-1213, CODE 121
STANDARD BROADCAST BAND
(PUSH BUTTON TUNING)

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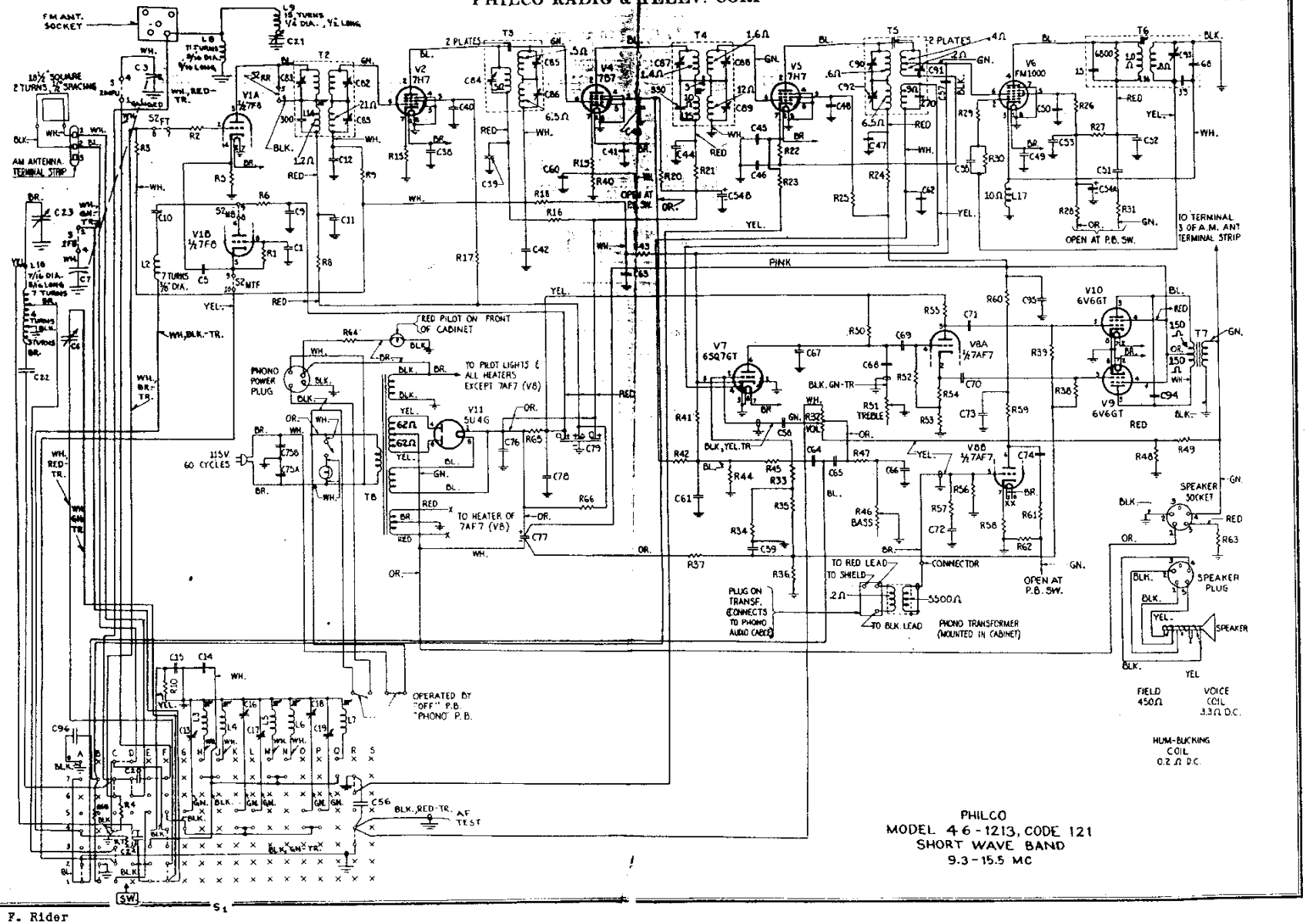
PHILCO RADIO & TELEV. CORP

MODEL 46-1213
code 121



PHILCO
MODEL 46-1213, CODE 121
SHORT WAVE BAND
9.3 - 15.5 MC

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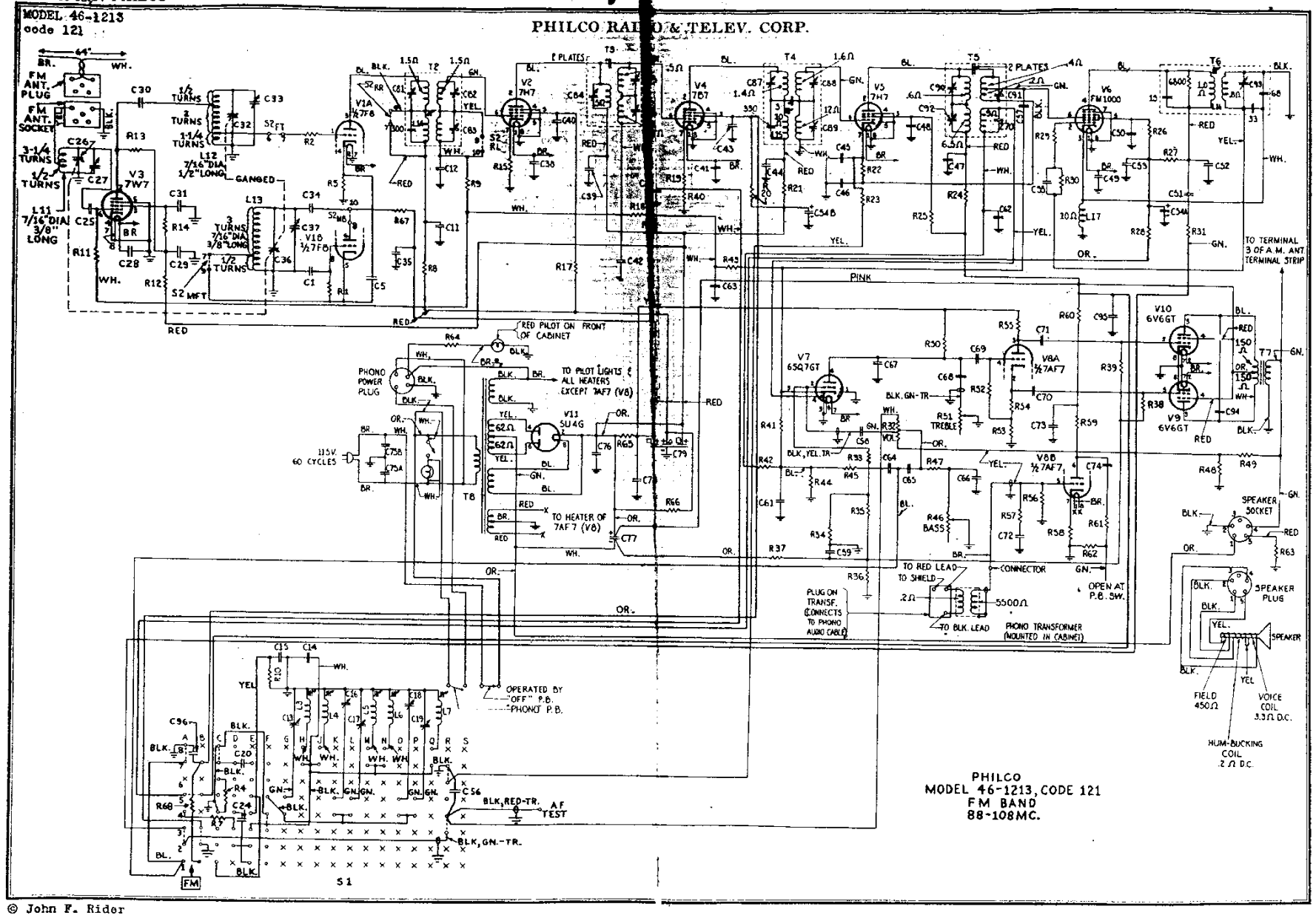
MODEL 46-1213
code 121

PHILCO RADIO & TELEV. CORP.



PHILCO
MODEL 46-1213, CODE 121
FM BAND
88-108MC.

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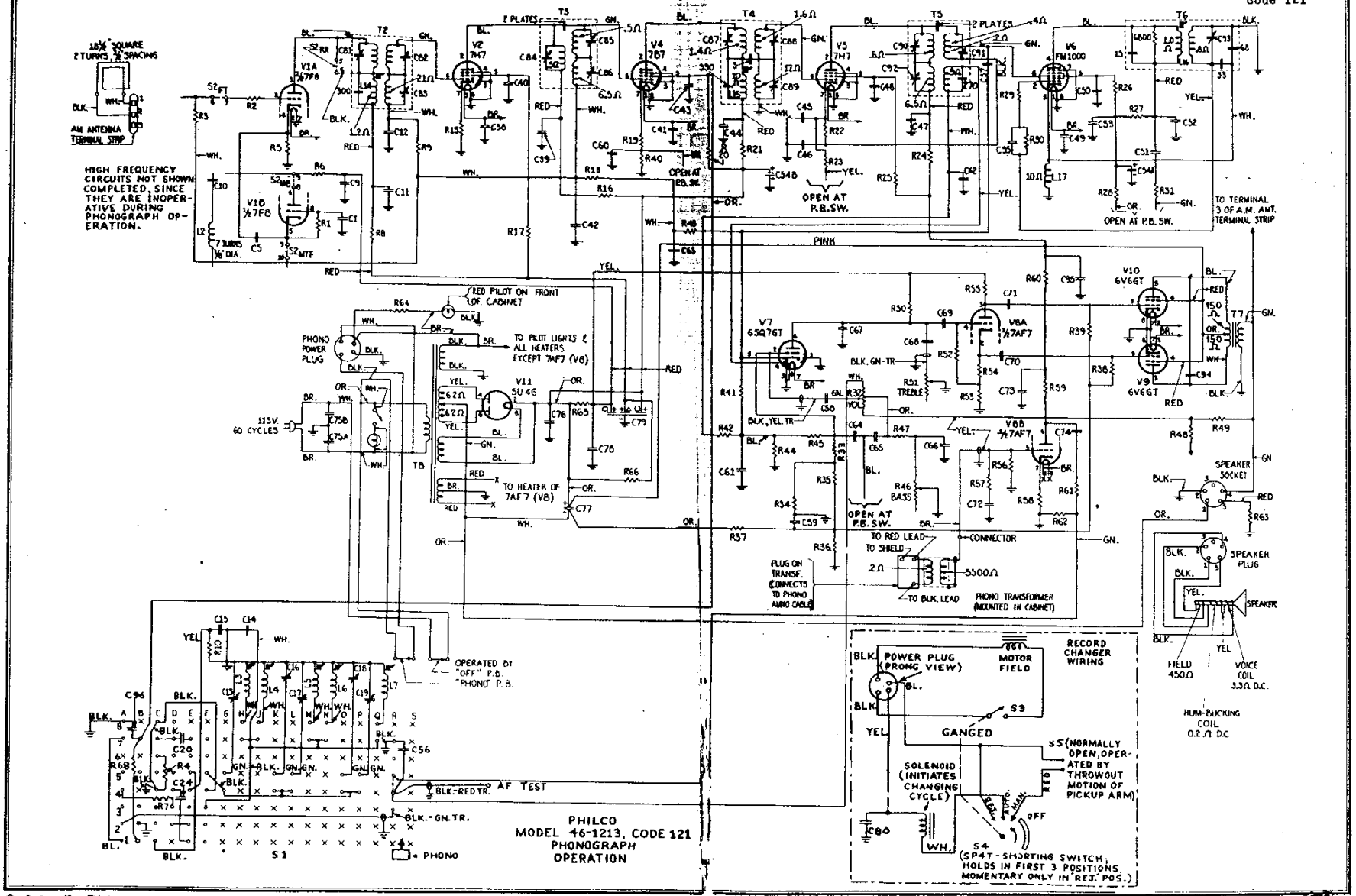
MODEL 46-1213
code 121



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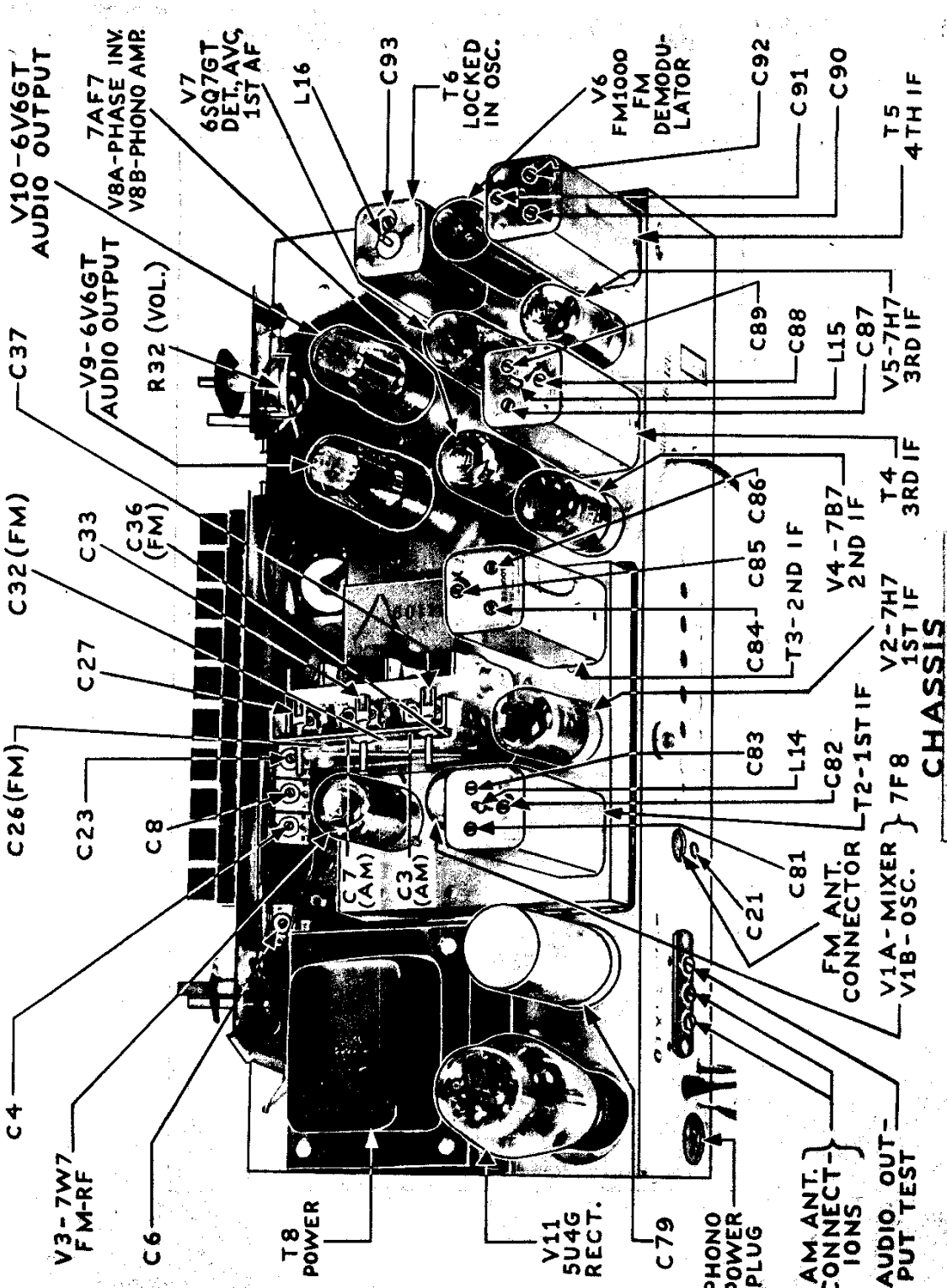
PHILCO RADIO & TELEVISION CORP.

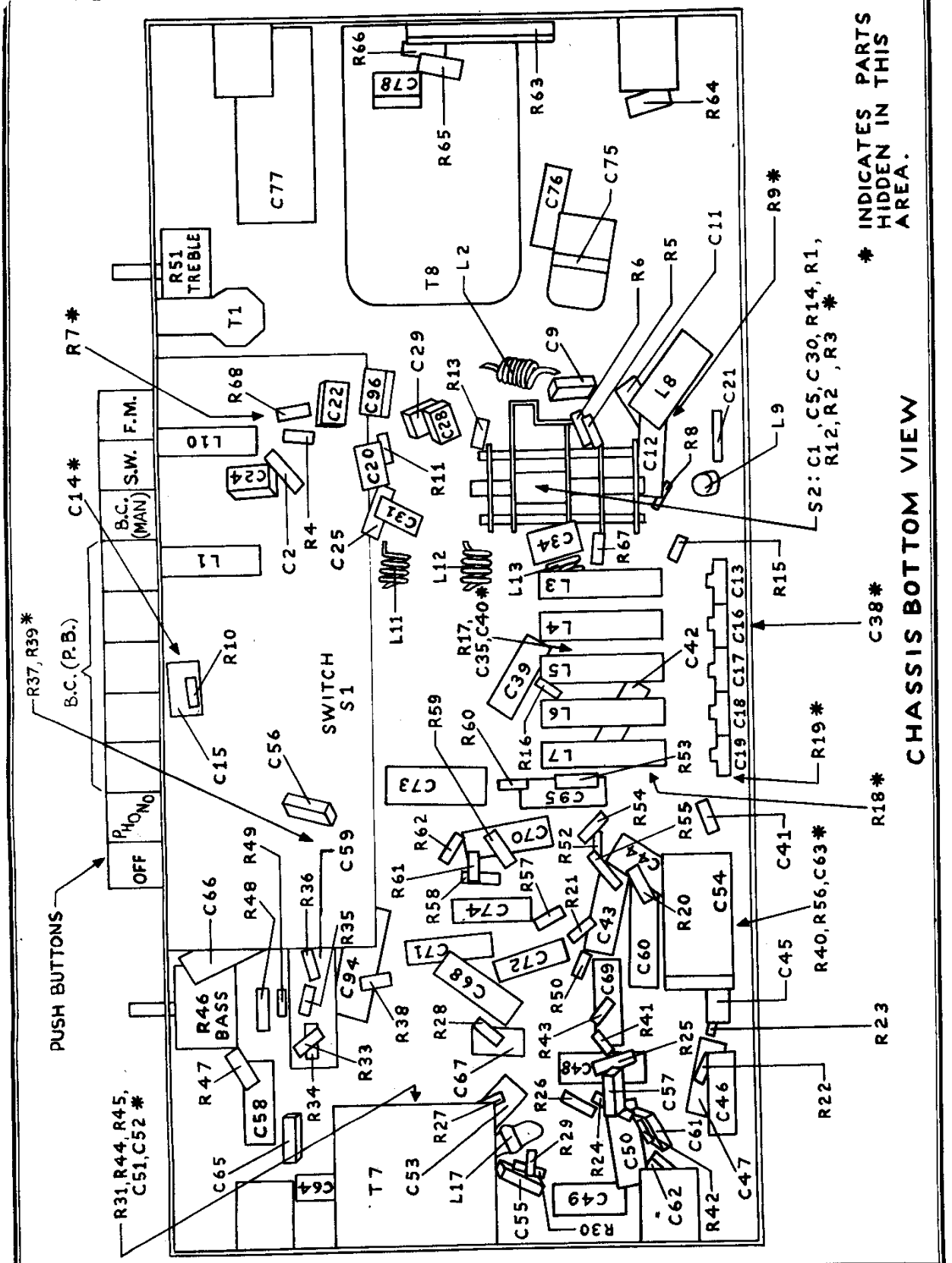
MODEL 46-1213
code 121



Courtesy Nostalgia Air

MODEL 46-1213
code 121

PHILCO RADIO & TELEV. CORP.



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Courtesy Nostalgia Air

PHILCO RADIO & TELEV. CORP. MODEL 46-1213
code 121

ALIGNMENT

PHILCO 46-1213

This chassis must be removed from the cabinet for alignment. Power should not be turned on this receiver unless the speaker is connected. A-M alignment should be completed before F-M alignment. Alignment of the A-M circuits may not disturb the alignment of the F-M circuits. Calibrate the receiver dial backplate as shown in Figure 1. Indentations may be found at the bottom of the dial backplate which will facilitate calibration. The receiver dial pointer should coincide with the index mark at the low frequency end of the dial when the gang condenser plates are fully in mesh.

A-M ALIGNMENT

Connect the output meter between terminals 3 (high) and 2 (ground) of the antenna terminal strip. The receiver loop should be connected between terminals 1 (high) and 2 (ground) of the antenna terminal strip. Connect the signal generator to the standard Hazeltine loop Model 1150 and couple loosely to the receiver. The volume control should be set at maximum and the treble control set in the maximum high position. The generator output should always be just sufficient to obtain a minimum deflection on the output meter.

	Signal Generator Frequency	Receiver Band Switch Position	Receiver Dial Position	Adjust for Maximum
1.	455 kc.	Broadcast	Index Mark (condenser plates fully meshed)	C92 C89 L15 C86 C83 L14
2.	1700 kc.	Broadcast	1700 kc.	C8
3.	1500 kc.	Broadcast	1500 kc.	C4
4.	580 kc.	Broadcast	580 kc.	Adjust C6 for peak while rocking tuning control.
5.	1700 kc.	Broadcast	1700 kc.	Readjust C8
6.	15 mc.	Short Wave	15 mc.	Starting with trimmer C23 screw loosened, slowly tighten for peak on first signal heard. Image should be obtained with receiver tuned to 15.9 mc.

For F-M alignment, see next page

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PHILCO 46-1213

	Signal Generator Connection	Signal Generator Frequency	Receiver Dial Position	Adjust as Noted
1.	To pin 6 (signal grid) of FM 1000 tube (V6)	9.1 Mc. No modulation	Quiet point on dial.	Adjust C93 (osc. section of V6) until approximately zero beat is obtained as heard in loudspeaker.
2.	Same	9.1 Mc. Audio amplitude modulation (400 cycles)	Same	Adjust L16 (phasing network) very slowly for minimum signal between the two maximum signals (found close together) as indicated on output meter. If a large change is made from the original setting of L16 repeat step 1 above.
3.	To pin 6 (signal grid) of 7H7(V5)	9.1 Mc. No modulation	Same	Adjust C91 and then C90 (4th i-f trimmers) for maximum AVC response as indicated on VTVM
4.	To pin 6 (signal grid) of 7B7(V4)	Same	Same	Adjust C88 and then C87 (3rd i-f trimmers) for maximum AVC response.
5.	To pin 6 (signal grid) of 7H7(V2)	Same	Same	Adjust C85 and then C84 (2nd i-f trimmers) for maximum AVC response.
6.	To pin 1 of 7F8 (V1)	Same	Same	Adjust C82 and then C81 (1st i-f trimmers) for maximum AVC response.
7.	To right top terminal of the chassis F-M female socket	108 Mc. frequency modulated 400 cps at 75 kc. deviation	108 Mc. (approximately)	Adjust C37 for maximum AVC response with simultaneous undistorted sine wave on oscilloscope while rocking tuning condenser.
8.	Same	105 Mc. frequency modulated 400 cps at 75 kc. deviation	105 Mc. (approximately)	Adjust C33 for maximum AVC response with simultaneous undistorted sine wave on oscilloscope while rocking tuning condenser.

Philco 46-1213

F-M Alignment

The bandswitch is placed in the F-M position. The output meter is connected after the de-emphasis network (C51 and R31) in the audio output circuit of the demodulator (V6, FM-1000 tube). The high side of the meter may be connected to the lug on the terminal strip near R31 and the connection is thus between R31 and the green wire going to push-button switch S1. The low side of the meter connects to chassis. A d-c vacuum tube voltmeter is connected to the AVC line at the junction of C63, R43, and the white lead going to R18, with the positive lead going to the chassis. The signal generator is connected as shown in the table below with the generator negative lead connected to chassis at all times. A cathode ray oscilloscope may be connected across the output meter for use in checking bandpass distortion.

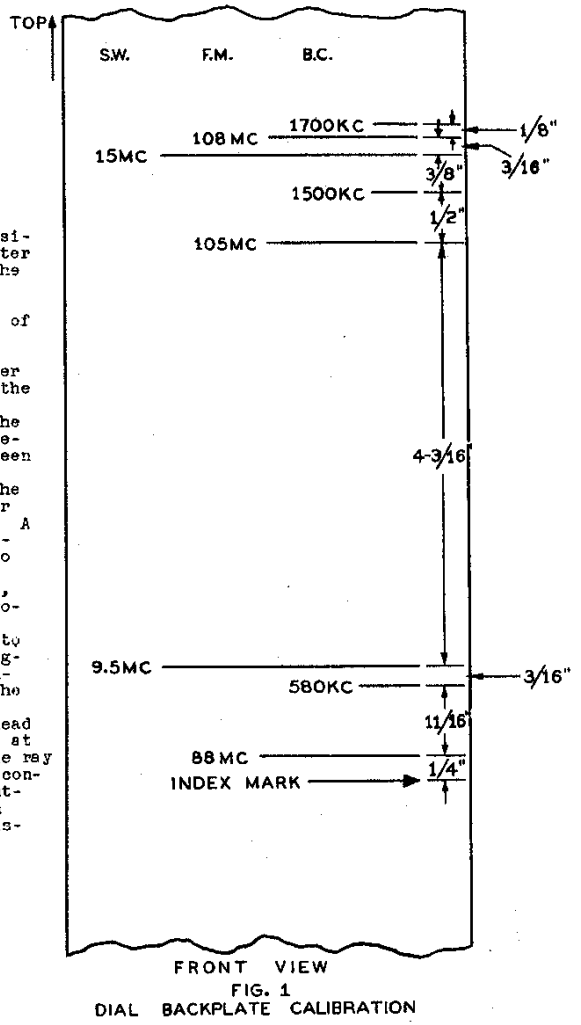
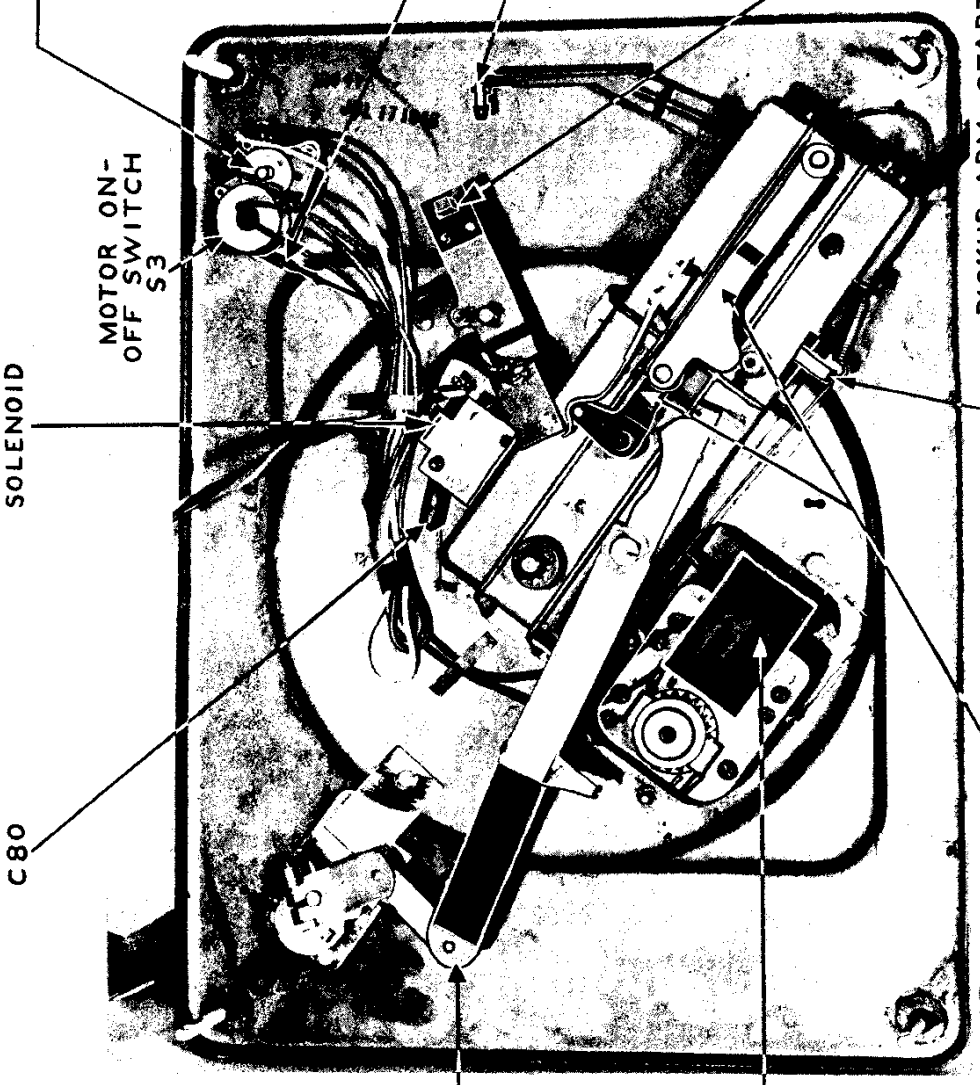


FIG. 1
DIAL BACKPLATE CALIBRATION

PHILCO RADIO & TELEVISION CORP.

MODEL 46-1213
code 121



RECORD CHANGER
BOTTOM VIEW

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MODEL 46-1213, CODE 121

SPECIFICATIONS

TUBE COMPLEMENT

7F8 (V1A) MIXER
7F8 (V1B) OSCILLATOR
7H7 (V2) 1ST IF
7B7 (V4) 2ND IF
7H7 (V5) 3RD IF
FM 1000 (V6) FM DEMODULATOR
6SQ7GT (V7) DET, AVC, 1ST AF
7AF7 (V8A) PHASE INVERTER
7AF7 (V8B) PHONO AMPLIFIER
6V6GT (V9) AUDIO OUTPUT
6V6GT (V10) AUDIO OUTPUT
5U4G (V11) RECTIFIER
7W7 (V3) RF (RADIO FREQUENCY)

SWITCH S2 CODE

1ST LETTER	2ND & 3RD LETTERS
F-FRONT WAFER	F-FRONT OF WAFER
M-MIDDLE WAFER	B-BACK OF WAFER
R-REAR WAFER	T-TOP OF WAVER
	R-RIGHT OF WAFER
	L-LEFT OF WAFER
	U-UNDERSIDE OF WAFER

SWITCH IS VIEWED FROM TOP FRONT OF CHASSIS; CONTACTS ARE NUMBERED CLOCK-WISE FROM BOTTOM OF RIGHT SUPPORTING BOLT.

COLOR CODE

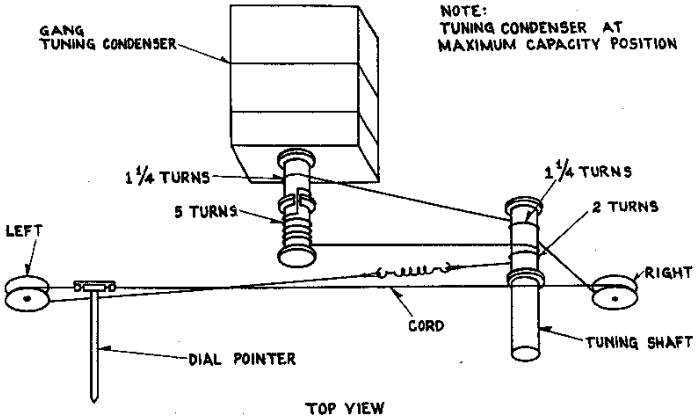
BLK	-	BLACK
BL	-	BLUE
BR	-	BROWN
GN	-	GREEN
OR	-	ORANGE
RED	-	RED
YEL	-	YELLOW
WH	-	WHITE
TR	-	TRACER

PUSH BUTTON TUNING

TUNING RANGES OF BUTTONS

540	-	1000 KC.
600	-	1200 KC.
650	-	1300 KC.
850	-	1500 KC.
900	-	1600 KC.

(BUTTON SHOWN DEPRESSED ON DRAWING)



TOP VIEW
DIAL DRIVE ASSEMBLY

NOTE:
TUNING CONDENSER AT MAXIMUM CAPACITY POSITION

PARTS VALUES

CONDENSERS

C1	-	100 MMF	C33	-		C65	-	100 MMF
C2	-	22 MMF	C34	-	240 MMF	C66	-	6000 MMF
C3	-		C35	-	220 MMF	C67	-	240 MMF
C4	-		C36	-		C68	-	.01 MF
C5	-	750 MMF	C37	-		C69	-	6000 MMF
C6	-		C38	-	.01 MF	C70	-	6000 MMF
C7	-		C39	-	.01 MF	C71	-	6000 MMF
C8	-		C40	-	240 MMF	C72	-	1000 MMF
C9	-	220 MMF	C41	-	.01 MF	C73	-	1 MF
C10	-	510 MMF	C42	-	.01 MF	C74	-	6000 MMF
C11	-	.01 MF	C43	-	.01 MF	C75A	-	.01 MF
C12	-	.01 MF	C44	-	.01 MF	C75B	-	.01 MF
C13	-		C45	-	.01 MF	C76	-	3000 MMF
C14	-	285 MMF	C46	-	.01 MF	C77	-	15 MF
C15	-	485 MMF	C47	-	.01 MF	C78	-	510 MMF
C16	-		C48	-	.01 MF	C79□	-	15 MF
C17	-		C49	-	.01 MF	C79△	-	10 MF
C18	-		C50	-	.01 MF	C79○	-	30 MF
C19	-		C51	-	.03 MF	C80	-	.01 MF
C20	-	300 MMF	C52	-	1500 MMF	C81	-	
C21	-		C53	-	.01 MF	C82	-	
C22	-	10 MMF	C54A	-	10 MF	C83	-	
C23	-		C54B	-	10 MF	C84	-	
C24	-	255 MMF	C55	-	47 MMF	C85	-	
C25	-	10 MMF	C56	-	22 MMF	C86	-	
C26	-		C57	-	100 MF	C87	-	
C27	-		C58	-	.02 MF	C88	-	
C28	-	220 MMF	C59	-	.5 MF	C89	-	
C29	-	510 MMF	C60	-	.01 MF	C90	-	
C30	-	47 MMF	C61	-	100 MMF	C91	-	
C31	-	510 MMF	C62	-	240 MMF	C92	-	
C32	-		C63	-	.05 MF	C93	-	
			C64	-	6000 MMF	C94	-	3000 MMF
						C95	-	.01 MF
						C96	-	240 MMF

TRANSFORMERS

T1	-	ANTENNA	T4	-	3RD IF
T2	-	1ST IF	T5	-	4TH IF
T3	-	2ND IF	T6	-	LOCKED IN OSC.
			T7	-	AUDIO OUTPUT
			T8	-	POWER

PARTS VALUES

RESISTORS

R1	-	22,000 OHMS	R24	-	3300 OHMS	R46	-	1 MEGOHM
R2	-	10 OHMS	R25	-	82,000 OHMS	R47	-	33,000 OHMS
R3	-	4.7 MEGOHMS	R26	-	56,000 OHMS	R48	-	4.7 OHMS
R4	-	4.7 MEGOHMS	R27	-	47,000 OHMS	R49	-	68 OHMS
R5	-	2200 OHMS	R28	-	15,000 OHMS	R50	-	220,000 OHMS
R6	-	22,000 OHMS	R29	-	22 OHMS	R51	-	100,000 OHMS
R7	-	100 OHMS	R30	-	15,000 OHMS	R52	-	1 MEGOHM
R8	-	47,000 OHMS	R31	-	100,000 OHMS	R53	-	47,000 OHMS
R9	-	1 MEGOHM	R32	-	2 MEGS. TAPPED	R54	-	4700 OHMS
R10	-	10,000 OHMS			AT CENTER	R55	-	56,000 OHMS
R11	-	1 MEGOHM	R33	-	1 MEG	R56	-	4.7 MEGOHMS
R12	-	3300 OHMS	R34	-	1 MEGOHM	R57	-	220,000 OHMS
R13	-	33,000 OHMS	R35	-	10 MEGOHMS	R58	-	6800 OHMS
R14	-	100,000 OHMS	R36	-	220,000 OHMS	R59	-	150,000 OHMS
R15	-	180 OHMS	R37	-	1 MEGOHM	R60	-	470,000 OHMS
R16	-	3300 OHMS	R38	-	330,000 OHMS	R61	-	220,000 OHMS
R17	-	100,000 OHMS	R39	-	330,000 OHMS	R62	-	470,000 OHMS
R18	-	1 MEGOHM	R40	-	1500 OHMS	R63	-	180 OHMS
R19	-	180 OHMS	R41	-	1 MEGOHM	R64	-	10 OHMS
R20	-	100,000 OHMS	R42	-	47,000 OHMS	R65	-	15,000 OHMS
R21	-	3300 OHMS	R43	-	330,000 OHMS	R66	-	18,000 OHMS
R22	-	100 OHMS	R44	-	270,000 OHMS	R67	-	22,000 OHMS
R23	-	180 OHMS	R45	-	100,000 OHMS	R68	-	100,000 OHMS