

MODELS 40-205 and 40-216

WIRELESS REMOTE CONTROL SPECIFICATIONS

Model 40-205

TYPE CIRCUIT: Model 40-205, code 121, is a 12-tube wireless remote control and dial tuned receiver employing a super-heterodyne circuit for reception of standard broadcast stations. Eight broadcast stations can be automatically tuned in from the remote control unit. The wireless remote control unit also increases and decreases volume and turns off the set without any connections between the receiver and the control unit. This model is also designed to receive the sound of a television program tuned in by Philco Television sets.

PHILCO BUILT-IN SUPER AERIAL SYSTEM:

A new type aerial system which eliminates an outside aerial is also incorporated in this model. Included in the built-in super aerial system is a statically shielded loop for broadcast band reception. The feature of the built-in broadcast band statically shielded loop is that it may be turned to the position in which it picks up a minimum amount of interference or if interference is not present, the loop may be set in the position where best reception is obtained.

In addition, other features of design are automatic volume control, continuously variable tone control, base compensation, degenerated push pull pentode audio output.

POWER SUPPLY: 115 Volts, 50 to 60 Cycles, A. C.

POWER CONSUMPTION: 180 watts.

TUNING RANGES: 540 to 1600 K. C.

I. F. FREQUENCY: 470 K. C.

PHILCO TUBES USED: Receiver—7CT, F. R. Amplifier: 6J8G, First Detector Oscillator; 78, I. F. Amplifier; 6Q7G, Second Detector, A. V. C. and First Audio; two (2) 42 Audio Output, and one 80 Rectifier.

Wireless Remote Control Amplifier—78, First Control Amplifier; 6J7G, Second Control Amplifier; A. V. C.: 6ZY5G, A. V. C. and a 2A4G Thyatron Rectifier.

Wireless Remote Control Unit—One type 30.

AUDIO OUTPUT: 10 watts.

CABINET DIMENSIONS:

	Height	Width	Depth
Console	28	30	15 $\frac{1}{2}$
Wireless Remote Control.....	5 $\frac{1}{2}$	7 $\frac{1}{4}$	9 $\frac{1}{2}$

SCHEMATIC AND PARTS LIST: The Schematic Diagram and Replacement Parts List for Model 40-205 will be found on page 74.

Model 40-216

TYPE CIRCUIT: Model 40-216, code 121, is a 11-tube wireless remote control and dial tuned receiver employing a super-heterodyne circuit with three tuning ranges for reception of standard and short wave broadcast stations. Eight broadcast stations can be automatically tuned in from the remote control unit. The wireless remote control unit also increases and decreases volume and turns off the set without any connections between the receiver and the control unit. This model is also designed to receive the sound of a television program tuned in by Philco Television sets. A Philco wireless record player can also be set up for use with this receiver.

PHILCO BUILT-IN SUPER AERIAL SYSTEM:

A new type aerial system which eliminates an outside aerial is also incorporated in this model. Included in the built-in super aerial system is a statically shielded loop for broadcast band reception and a short wave receiving loop. The feature of the built-in broadcast band statically shielded loop is that it may be turned to the position in which it picks up a minimum amount of interference or if interference is not present, the loop may be set in the position where best reception is obtained.

In addition other features of design are automatic volume control, continuously variable tone control, base compensation, degenerated push pull pentode audio output. Outside aerial connections are also provided for remote localities where station signal strength is exceptionally weak.

POWER SUPPLY: 115 Volts, 50 to 60 Cycles, A. C.

POWER CONSUMPTION: 190 watts.

TUNING RANGES: 540 to 1600 K.C., 1.5 to 4.5 MC., 6.0 to 18.0 MC.

I. F. FREQUENCY: 470 K. C.

PHILCO TUBES USED: Receiver—6J7G, R. F. Amplifier; 6ASG, Converter; 78, I. F. Amplifier; 6Q7G, Second Detector, A. V. C. and First Audio; 37, Phase Inverter; two 42 Audio Output, and one 80, Rectifier.

Wireless Remote Control Amplifier—78, First Control Amplifier; 6J7G, Second Control Amplifier; 6J5G, A. V. C., 6ZY5G and 2A4G, Rectifier.

Wireless Remote Control Unit—1 type 30 tube.

AUDIO OUTPUT: 10 watts.

CABINET DIMENSIONS:

	Height	Width	Depth
Console	36 $\frac{1}{4}$	35	14 $\frac{1}{4}$
Wireless Remote Control.....	5 $\frac{1}{2}$	7 $\frac{1}{4}$	9 $\frac{1}{2}$

Adjusting Wireless Remote Control for Reception of Stations

The procedure for setting up stations on the wireless remote control receivers is similar to the procedure in setting up Philco electric automatic tuning models. The eight push buttons, however, are automatically dialed by the remote control unit instead of by pushing buttons. To set up stations on these models for best reception, a signal generator, Philco Model 077 and a vacuum tube voltmeter Philco Model 027 or 028 should be used. With this equipment proceed as follows:

1. Select and remove the desired eight station call letters from the large station tab card supplied with the receiver. Insert the station tabs in the apertures (windows) of the bezel. The lowest frequency station is placed in the first window on the left and the remaining station tabs in the order of increasing frequency. Turn "on" power switch.

2. Remove from the small call letter card the tab of the first low frequency station. Insert the tab in the third aperture on the right side of the bezel on the remote control unit dial. Transparent tabs are also supplied to be placed over each call letter. The remaining call letter tabs are then placed in the order of increasing frequency around the bezel from right to left (counter clock-wise).

3. Insert the loud and soft tabs in the first and second windows respectively on the right hand side of the bezel.

4. Connect the negative terminal of the vacuum tube voltmeter through a 2 meg. resistor to the grid of the 78 I. F. tube. The resistor must be connected directly to the grid of the tube and the voltmeter attached to the resistor at this point. Connect the positive terminal to the chassis ground terminal.

5. Attach a loop consisting of a few turns of wire to the output terminals of the Model 077 signal generator. Turn the signal generator modulation control to "mod on". Turn the receiver range selector switch to "Broadcast" and manually tune in the lowest frequency station desired. This station should be between 540 and 1030 K. C. The signal generator is then tuned to the frequency of the station being received. A beat note should then be heard when the volume control is turned on.

6. Turn the range selector disc of the receiver to "remote". Dial first low frequency station on the right side of the bezel of the remote control unit.

7. Using a padding screw driver, adjust the first 540 to 1030 K. C. "Osc" padder (bottom row of holes) at the left rear of the chassis, until the station identified by the modulated signal of the generator is tuned in to maximum on the vacuum tube voltmeter. Next adjust the first 540 to 1030 K. C. "Ant" padder (top row of holes) for maximum indication on the voltmeter.

8. Turn the signal generator off the station frequency and readjust the "Ant" and "Osc" padders with the station signal for maximum reading on the voltmeter. This should be done with the volume control of the receiver adjusted for low volume. This procedure is repeated for each of the remaining stations to be set up. The next station to be set up should be within the frequency range of 540 to 1030 K. C. of the second set of padders. The third station is tuned in by the third set of padders and should be within a frequency range of 670 to 1160 K. C. The remaining stations are then set up in the order of increasing frequency.

PRODUCTION CHANGES

Volume Control Motor (80)
Motor Condenser (88)
Wave Switch Link

115 V., 25 cyc.
25-1152
30-2377
56-1295

In addition a resistor Part No. 33-3368 is connected in series with the low side of the Choke Coil (96) in the plate of the 2A4G tube and the Stepper Unit Coil (81).

When operating the Model 40-216 on 25 cycle power supply, the volume control motor assembly, motor condenser and wave switch link must be changed in addition to the parts shown in Service Bulletin for 25 cycle operation. Part numbers of these parts are as follows:

MODEL 40-216

Replacement Parts — Model 40-216

SCH. No.	DESCRIPTION	PART No.	SCH. No.	DESCRIPTION	PART No.	SCH. No.	DESCRIPTION	PART No.
1	Loop Assy. (Broadcast)	38-9882	81	Stepper Unit (Complete)	38-9689		Drive Cord (Pointer)	31-2320
1A	Resistor (10,000 ohms, 1/2 watt)	33-103339	81X	Rotary Switch (Stepper Unit)	42-14681		Disc (Timing)	27-4766
1B	Mica Cond. (250 mfmf.)	61-0033	82	B. C. Resistor (Wirewound, 10 ohms)	33-3363		Disc (Volume)	27-4763
2	Loop Assy. (Short Wave)	33-103339	83	Pilot Lamp Assy. (Station Indicator)	30-4499		Disc (Wave Switch)	27-4767
2A	Compensator	31-6226	84	Switch (Volume Control/Motor)	42-14681		Disc (Tone Control)	27-4764
3	Ant. Servo Trans. (Broadcast)	32-2929	85	Tubular Cond. (1 mfd.)	33-115339		Pilot Lamp Assy. (R. M. Bracket)	38-9894
3A	Compensator	31-6222	86	Tubular Cond. (1 mfd.)	30-4499		Pilot Lamp Assy. (L. M. Bracket)	38-9711
4	Ant. Servo Trans. (Short Wave)	32-2929	87	Tubular Cond. (1 mfd.)	30-4499		Pilot Lamp Assy. (Station Lights)	38-9709
5	Ant. Trans. (Police Shunt)	31-6222	88	Electrolytic Cond. (30 mfd., 30 V.)	30-2361		Pilot Lamp Assy. (Cabinet Bulbeye)	38-9712
6	Mica Cond. (250 mfmf.)	61-0033	89	Padder Strip (Pushbuttons)	31-6264		Pilot Light Jewel (Bulbeye)	27-4777
7	Resistor (10,000 ohms, 1/2 watt)	33-103339	89A	Compensator No. 1	31-6264		Socket (1 prong, type 42 78 tubes)	27-6044
8	Tubular Cond. (.05 mfd.)	30-4123	89B	Compensator No. 2			Socket (3 prong, type 37 tube)	27-6038
9	Resistor (10,000 ohms, 1/2 watt)	33-103339	89C	Compensator No. 3			Socket (1 prong, type 42 78 tubes)	27-6038
10	Resistor (12,000 ohms, 1/2 watt)	33-112339	89D	Compensator No. 4			Socket (Octal, type 6J9G, 6A7G tubes)	27-6086
11	Tubular Cond. (.05 mfd.)	30-4123	89E	Compensator No. 5			Socket (Octal, type 6J7G tube)	27-6087
12	R. F. Trans. (Broadcast, Pushbutton and Police)	32-3230	89F	Compensator No. 6			Socket (Octal, type 6A8G tube)	26-9913
12X	Mica Condenser (35 mfmf.)	30-1141	89G	Compensator No. 7			Speaker	38-1450
13	R. F. Trans. (Broadcast Manual)	32-3227	89H	Compensator No. 8			Spring (Drive Cord)	38-9893
13A	Compensator	31-6222	89H	Compensator No. 9			Washer (Keyed Washer Tuning Dial)	27-8447
14	R. F. Trans. (Short Wave)	32-3046	90	Elec. Pushbutton Trans. Assy. (8 Trans.)	32-3091		Washer (Spring Washer Tuning Dial)	6717
14X	Mica Cond. (5 mfmf.)	30-1097	90A	Osc. Trans. No. 1				
15	Tubular Cond. (1 mfd.)	30-4455	90B	Osc. Trans. No. 2				
16	Tubular Cond. (.05 mfd.)	30-4123	90C	Osc. Trans. No. 3				
17	Tubular Cond. (1 mfd.)	30-4455	90D	Osc. Trans. No. 4				
18	Resistor (51,000 ohms, 1/2 watt)	33-351339	90E	Osc. Trans. No. 5				
19	Oscillator Trans. (Broadcast)	32-3231	90F	Osc. Trans. No. 6				
20	Oscillator Trans. (Police)	32-3231	90G	Osc. Trans. No. 7				
21	Oscillator Trans. (Short Wave)	31-6222	90H	Osc. Trans. No. 8				
22	Compensator (3 section, oscillator)	31-6266						
23	Compensator (Broadcast, Low Frequency)	31-6262						
24	Tracking Cond. (1230 mfmf.)	31-6262						
25	Tracking Cond. (3425 mfmf.)	31-6263						
26	Mica Cond. (250 mfmf.)	61-0033						
27	Resistor (10,000 ohms, 1/2 watt)	33-103339	91	Silver Mica Cond. (370 mfmf.)	32-3041			
28	Resistor (10,000 ohms, 1/2 watt)	33-103339	91	Silver Mica Cond. (370 mfmf.)	30-1110			
29	Resistor (18,000 ohms, 1/2 watt)	33-183339	92	Bakelite Cond. (370 mfmf.)	30-1110			
30	Resistor (50,000 ohms, 1/2 watt)	33-503339	93	Resistor (150 ohms)	33-3362			
31	Electrolytic Cond. (4 mfd., 250 V.)	30-2334	94	Resistor (150 ohms)	30-2366			
32	Mica Cond. (450 mfmf.)	61-0033	95	Electrolytic Cond. (16 mfd., 200 V.)	30-2366			
33	1st I. F. Trans. Assy.	32-3089	96	Choke Coil	32-1281			
34	Tubular Cond. (.01 mfd.)	30-4572	97	Tubular Cond. (.05 mfd.)	30-4123			
35	Resistor (1.0 meg., 1/2 watt)	33-510339	98	Tubular Cond. (.05 mfd.)	30-4123			
36	Resistor (100,000 ohms, 1/2 watt)	33-433339	99	Tubular Cond. (.05 mfd.)	30-4123			
37	Resistor (330,000 ohms, 1/2 watt)	33-433339	100	Tubular Cond. (.05 mfd.)	30-4551			
38	2nd I. F. Trans. Assy.	30-4572	101	Resistor (400 ohms, 1/2 watt)	33-240339			
39	Mica Cond. (110 mfmf.)	30-1031	102	Resistor (51,000 ohms, 1/2 watt)	33-513339			
39A	Tubular Cond. (.004 mfd.)	30-4578	103	No. 3 Control Amp. Trans.	32-3275			
40	Tubular Cond. (.01 mfd.)	30-4479	104	Resistor (750,000 ohms, 1/2 watt)	33-451639			
41	Mica Cond. (50 mfmf.)	30-1029	105	Resistor (750,000 ohms, 1/2 watt)	33-451639			
42	Volume Control	33-5300	106	Tubular Cond. (.02 mfd.)	30-4123			
43	Resistor (70,000 ohms, 1/2 watt)	33-703339	107	Tubular Cond. (.02 mfd.)	30-4455			
44	Tubular Cond. (.015 mfd.)	30-4334	108	Resistor (270,000 ohms, 1/2 watt)	33-123339			
45	Resistor (2.0 meg., 1/2 watt)	33-520339	109	Tubular Cond. (.05 mfd.)	30-4123			
46	Resistor (1.0 meg., 1/2 watt)	33-510339	110	Resistor (99,000 ohms, 1/2 watt)	33-993339			
47	Tubular Cond. (.01 mfd.)	30-4572	111	Tubular Cond. (.05 mfd.)	30-4123			
48	Resistor (3,000 ohms, 1/2 watt)	33-300339	112	Resistor (150,000 ohms, 1/2 watt)	33-153339			
49	Tubular Cond. (.01 mfd.)	30-4169	113	Resistor (1.5 meg., 1/2 watt)	30-1412			
50	Resistor (490,000 ohms, 1/2 watt)	33-490339	114	Tubular Cond. (.05 mfd.)	33-153339			
51	Resistor (9,000 ohms, 1/2 watt)	33-250339	115	No. 2 Control Amp. Trans.	32-3087			
52	Resistor (45,000 ohms, 1/2 watt)	33-453339	116	Tubular Cond. (.05 mfd.)	30-4444			
53	Resistor (45,000 ohms, 1/2 watt)	33-453339	117	Sensitivity Control	33-5295			
54	Tubular Cond. (.02 mfd.)	30-4481	118	Resistor (300 ohms, 1/2 watt)	33-103339			
55	Tone Control (1.0 meg.)	33-5287	119	No. 1 Control Amp. Trans.	32-3086			
56	Tubular Cond. (.01 mfd.)	30-4572	120	Silver Mica Cond. (130 mfmf.)	30-1122			
57	Resistor (51,000 ohms, 1/2 watt)	33-513339	121	Compensator (Secondary Inductor)	31-6268			
58	Resistor (490,000 ohms, 1/2 watt)	33-490339	122	Secondary inductor (Mystery Tuning)	40-6415			
59	Resistor (490,000 ohms, 1/2 watt)	33-490339	123	Wave Switch	15-1537			
60	Resistor (240,000 ohms, 1/2 watt)	33-243339	124	Tuning Cond.	31-2417			
61	Tubular Cond. (.01 mfd.)	30-4501						
62	Tubular Cond. (.01 mfd.)	30-4501						
63	Resistor (100,000 ohms, 1/2 watt)	33-103339						
64	Output Trans.	32-7996						
65	Cone and Voice Coil Assy. (Spkr. Part No. 36-1450-2)	36-4089	125	Primary Inductor	32-3097			
66	Tubular Cond. (.01 mfd.)	30-4501	126	Silver Mica Cond. (200 mfmf.)	30-1115			
67	Resistor (1.0 meg., 1/2 watt)	33-103339	127	Tubular Cond. (.05 mfd.)	30-4119			
68	Resistor (1.0 meg., 1/2 watt)	33-103339	128	Air Padder	31-6268			
69	Electric Cond. (25 mfd., 300 V.)	30-2360	129	Resistor (500 ohms, 1/2 watt)	33-150339			
70	Electric Cond. (18 mfd., 475 V.)	30-2200	130	Mystery Pack (Battery)	41-8023			
71	Field Coil (Replace Spkr. Part No. 36-1450)	34-2064	131	Dial Unit (Pointer)	38-1504			
72	Resistor (Wirewound, Bias)	33-3364	132	Spark Filter Assy. (Inlet of Stepper Unit)	38-9898			
73	Power Trans. (115 V., 50-60 cycles)	32-8001	132A	Spark Filter Choke	32-3276			
74	Power Trans. (115 V., 25-40 cycles)	32-8017	132B	Resistor (100 ohms, 1/2 watt)	33-110339			
75	Bypass Cond. (.05 mfd., 110 V. Plug)	30-4576	132C	Tubular Cond. (.05 mfd.)	30-4444			
76	Pilot Lamp (Bulbeye)	33-016331	132D	Tubular Cond. (.05 mfd.)	30-4444			
77	Pilot Lamp (Dual)	34-2064						
78	Filament Trans. (115 V., 50-60 cycles)	32-7993						
79	Filament Trans. (115 V., 25-40 cycles)	32-8016						
78X	Choke Coil	1281						
79	Motor Trans. (115 V., 50-60 cycles)	32-7990						
79A	Motor Trans. (115 V., 25-40 cycles)	32-8015						
80	Motor Assy. (Volume Control)	35-1151						

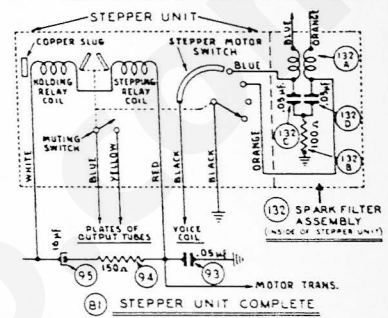


FIG. 2. INTERNAL WIRING OF STEPPER UNIT. NUMBERS CORRESPOND TO SCHEMATIC, PAGE 73.

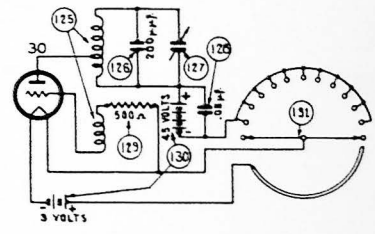


FIG. 3. WIRELESS REMOTE CONTROL UNIT SCHEMATIC DIAGRAM.

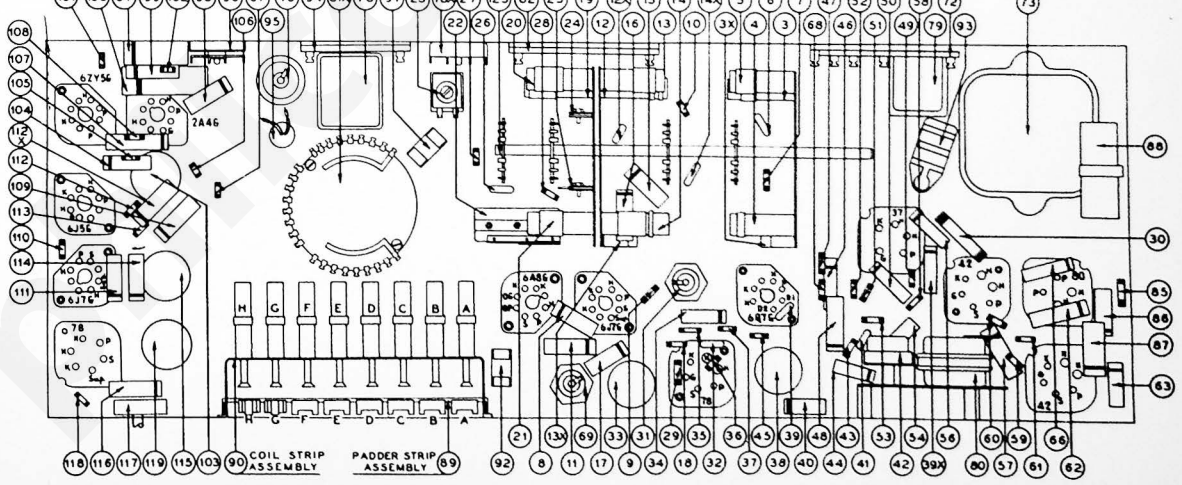


FIG. 1. MODEL 40-216 PART LOCATIONS, UNDERSIDE OF CHASSIS.

To operate this model on 220 volt, 60 cycle current, use Stepdown Transformer, Part No. 32-8035.

MODEL 40-205

Specifications will be found on page 70, Aligning Procedure for R. F. and I. F. Circuits on page 75, and Wireless Remote Control Adjustments on page 76.

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1X	Resistor (1.0 meg. 1/2 watt)	33-510339	59	Stepper Unit Complete	38-9089	MISCELLANEOUS PARTS		
1Y	Tubular Cond. (.05 mfd.)	30-4519	60A	Compensator Strip (Pushbutton)	31-6264		Bezel	38-9931
1Z	Resistor (330,000 ohms, 1/2 watt)	33-433339	60A	Compensator No. 1			Bezel Gasket and Staple Assy.	38-9734
2	Mica Cond. (200 mfd.)	30-1078	60A	Compensator No. 2			Bezel Screws	W-1834
2X	R. F. Trans.	30-4123	60C	540-1030 K.C. Part of 60			Cable and Plug (Power Supply)	L-3176
3	Resistor (12,000 ohms, 1/2 watt)	33-112339	60D	Compensator No. 4			Cabinet	10402A
3A	Mica Cond. (250 mfd.)	30-1032	60E	670-1160 K.C. Part of 60			Drive Cord (Tuning Cond.)	31-2350
3B	Resistor (32,000 ohms, 1/2 watt)	33-132339	60F	Compensator No. 5			Drive Cord (Pointer)	31-2320
4	Oscillator Trans.	32-2239	60F	Compensator No. 6			Disc (Tuning)	27-4766
5	Resistor (10,000 ohms, 1/2 watt)	33-102339	60G	900-1470 K.C. Part of 60			Disc (Tone Control)	27-4767
6	Mica Cond. (15 mfd.)	30-1139	60H	Compensator No. 7			Disc (Volume Control)	27-4765
7	Resistor (5,000 ohms, 2 watts)	33-250339	61	1170-1600 K.C. Part of 60			Disc (Wave Switch)	38-9694
8	Resistor (13,000 ohms, 1 watt)	33-113439	61A	Con. Assy. (Pushbuttons)			Pilot Lamp Assy. (R. H. Bracket)	38-9711
9	Resistor (3,000 ohms, 2 watts)	33-250339	61A	Oscillator Coil No. 1			Pilot Lamp Assy. (L. H. Bracket)	38-9711
10	Electrolytic Cond. (4 mfd., 250 V.)	30-2134	61B	Oscillator Coil No. 2	32-3042		Pilot Lamp Assy. (Cabinet Bulbless)	38-9712
11	Tubular Cond. (.05 mfd.)	30-1031	61B	Oscillator Coil No. 3			Pilot Lamp Jewel (Bulbless)	27-6044
12	1st I. F. Trans. Assy.	32-2885	61C	Oscillator Coil No. 4			Socket (4 prong, type 80 tube)	27-6036
13	2nd I. F. Trans. Assy.	32-2845	61C	Oscillator Coil No. 5	32-3042		Socket (6 prong, type 42 and 78 tubes)	27-6086
14	Mica Cond. (130 mfd.)	30-1031	61E	Oscillator Coil No. 6			Socket (6 prong, type 615G, 607G tubes, etc.)	27-6057
15	Resistor (2.0 meg. 1/2 watt)	33-520339	61F	Oscillator Coil No. 7	32-3041		Socket (7 prong, Octal, 6AB8 tube)	27-6059
16	Mica Cond. (50 mfd.)	30-1029	61G	Oscillator Coil No. 8			Speaker	38-1450
17	Tubular Cond. (.01 mfd.)	30-4479	62	Silver Mica Cond. (370 mfd.)	30-1110		Spring (Drive Cords)	28-8913
18	Resistor (70,000 ohms, 1/2 watt)	33-370339	62	1170-1600 K.C.	30-1110		Tab (Television)	27-0447
19	Volume Control (2.0 meg.)	33-5300	63	Spark Filter Assy.	30-1110		Washer (Keyed Washer, Tuning Disc)	56-1029
20	Tubular Cond. (.004 mfd.)	30-4384	63A	Spark Filter Assy.	32-3276		Washer (Spring Washer, Tuning Disc)	6717
21	Resistor (1.0 meg. 1/2 watt)	33-510339	63B	Resistor (100 ohms, 1/2 watt)	32-110339			
22	Tubular Cond. (.004 mfd.)	30-4384	63C	Tubular Cond. (.05 mfd.)	30-4444			
23	Resistor (1.0 meg. 1/2 watt)	33-510339	63D	Tubular Cond. (.05 mfd.)	30-4444			
24	Tone Control (3.0 meg.)	33-5287	63E	Tubular Cond. (.05 mfd.)	30-4444			
25	Tubular Cond. (.02 mfd.)	30-4481	63F	Bakelite Cond. (.05 mfd.)	36-15-50			
26	Resistor (99,000 ohms, 1/2 watt)	33-399339	63G	Resistor (150,000 ohms, 1/2 watt)	33-512339			
27	Resistor (330,000 ohms, 1/2 watt)	33-433339	63H	Resistor (150,000 ohms, 1/2 watt)	33-512339			
28	Resistor (490,000 ohms, 1/2 watt)	33-449339	63I	Tubular Cond. (.02 mfd.)	30-4516			
29	Tubular Cond. (.05 mfd.)	30-4517	63J	Tubular Cond. (.02 mfd.)	30-4516			
30	Tubular Cond. (.05 mfd.)	30-4517	63K	Tubular Cond. (.02 mfd.)	30-4516			
30X	Tubular Cond. (.05 mfd.)	30-4517	63L	Tubular Cond. (.02 mfd.)	30-4516			
31	Tubular Cond. (.01 mfd.)	30-4501	63M	Tubular Cond. (.02 mfd.)	30-4516			
32	Resistor (350,000 ohms, 1/2 watt)	33-235339	63N	Tubular Cond. (.02 mfd.)	30-4516			
33	Tubular Cond. (.01 mfd.)	30-4501	63O	Tubular Cond. (.02 mfd.)	30-4516			
34	Output Transformer	30-7997	63P	Tubular Cond. (.02 mfd.)	30-4516			
35	Cone and Voice Coil Assy. (Spkr. Part No. 38-1450-2)	36-4089	63Q	Tubular Cond. (.02 mfd.)	30-4516			
36	Tubular Cond. (.01 mfd.)	30-4501	63R	Tubular Cond. (.02 mfd.)	30-4516			
37	Resistor (3000 ohms, 1/2 watt)	33-230339	63S	Tubular Cond. (.02 mfd.)	30-4516			
38	Tubular Cond. (.1 mfd.)	30-4499	63T	Tubular Cond. (.02 mfd.)	30-4516			
39	Resistor (1.0 meg. 1/2 watt)	33-510339	63U	Tubular Cond. (.02 mfd.)	30-4516			
40	Electrolytic Cond. (25 mfd., 300 V.)	30-2360	63V	Tubular Cond. (.02 mfd.)	30-4516			
41	Resistor (150,000 ohms, 1/2 watt)	33-512339	63W	Tubular Cond. (.02 mfd.)	30-4516			
42	Electrolytic Cond. (18 mfd., 475 V.)	30-2200	63X	Tubular Cond. (.02 mfd.)	30-4516			
43	Field Coil (Replace Spkr. Part No. 36-1450)	32-7999	63Y	Tubular Cond. (.02 mfd.)	30-4516			
44	Power Trans. (115 V., 25-40 cycles)	32-8013	63Z	Tubular Cond. (.02 mfd.)	30-4516			
45	Condenser (.05 mfd., 115 V. Plug)	30-4516	64	Resistor (1,500 ohms, 1/2 watt)	33-227339			
46	Pilot Lamp (Bulbless)	34-2210	65	Resistor (750,000 ohms, 1/2 watt)	33-399339			
47	Pilot Lamp Resistor (16 ohms, 1 watt)	33-016431	66	Tubular Cond. (.05 mfd.)	30-4123			
48	Filament Trans. (115 V., 50-60 cycles)	32-7993	67	Tubular Cond. (.05 mfd.)	30-4123			
49	Filament Trans. (115 V., 50-60 cycles)	32-8016	68	Tubular Cond. (.05 mfd.)	30-4123			
50	Motor Trans. (115 V., 25-40 cycles)	32-7990	69	Tubular Cond. (.05 mfd.)	30-4123			
51	Bias Resistor (Wirewound, 10 ohms)	42-1468	70	Tubular Cond. (.05 mfd.)	30-4123			
52	Rotary Switch	33-115339	71	Tubular Cond. (.05 mfd.)	30-4123			
53	Bias Resistor (Wirewound, 10 ohms)	42-1468	72	Tubular Cond. (.05 mfd.)	30-4123			
54	Pilot Lamps (Station Indicator)	34-2084	73	Tubular Cond. (.05 mfd.)	30-4123			
55	Resistor (150 ohms, 1/2 watt)	33-115339	74	Tubular Cond. (.05 mfd.)	30-4123			
56	Volume Control Switch (Motor Control)	30-4499	75	Tubular Cond. (.05 mfd.)	30-4123			
57	Tubular Cond. (.1 mfd.)	30-4499	76	Tubular Cond. (.05 mfd.)	30-4123			
58	Tubular Cond. (.1 mfd.)	30-4499	77	Tubular Cond. (.05 mfd.)	30-4123			
58X	Electrolytic Cond. (30 mfd., 30 V.)	30-2361	78	Tubular Cond. (.05 mfd.)	30-4123			
			79	Tubular Cond. (.05 mfd.)	30-4123			
			80	Tubular Cond. (.05 mfd.)	30-4123			
			81	Resistor (99,000 ohms, 1/2 watt)	33-399339			
			82	Tubular Cond. (.05 mfd.)	30-4123			
			83	Resistor (1.5 meg., 1/2 watt)	33-515339			
			84	Tubular Cond. (.05 mfd.)	30-4123			
			85	No. 2 Control Amp. Coil	32-3087			
			86	Tubular Cond. (.05 mfd.)	30-4123			
			87	Tubular Cond. (.05 mfd.)	30-4123			
			88	Resistor (300 ohms, 1/2 watt)	33-130339			
			89	Sensitivity Control (50,000 ohms)	33-5295			
			90	No. 1 Control Amp. Coil	32-3086			
			91	Silver Mica Cond. (.5 mfd.)	30-4611			
			92	Air Padder (Secondary Inductor)	31-6268			
			93	Secondary Inductor	40-6414			
			94	Wave Switch	42-1454			
			95	Tuning Cond.	31-2311			
			96	Long Assembly	38-9882			
			96A	Mica Cond. (.250 mfd.)	61-0033			
			96B	Resistor (10,000 ohms, 1/2 watt)	33-110339			
			97	Ant. Series Trans.	32-3226			

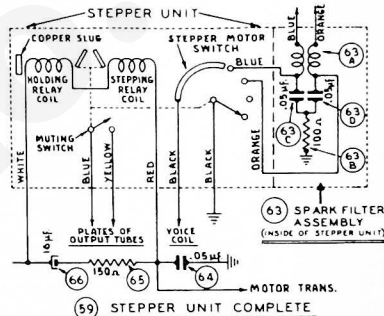
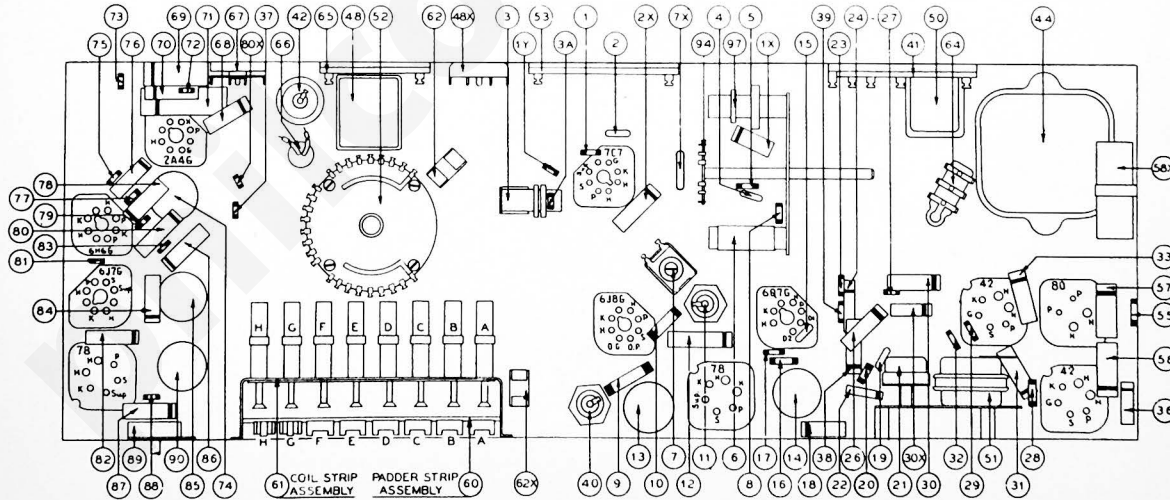
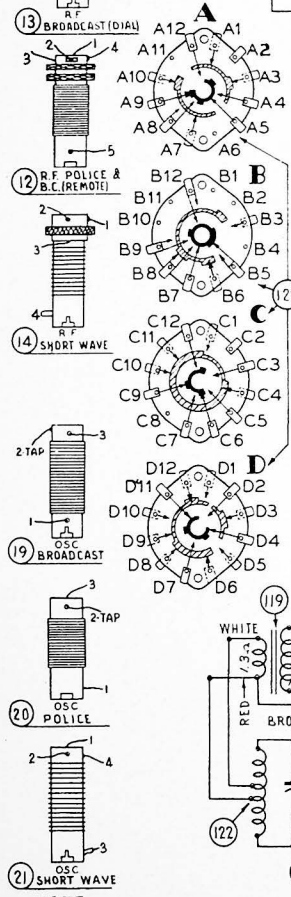
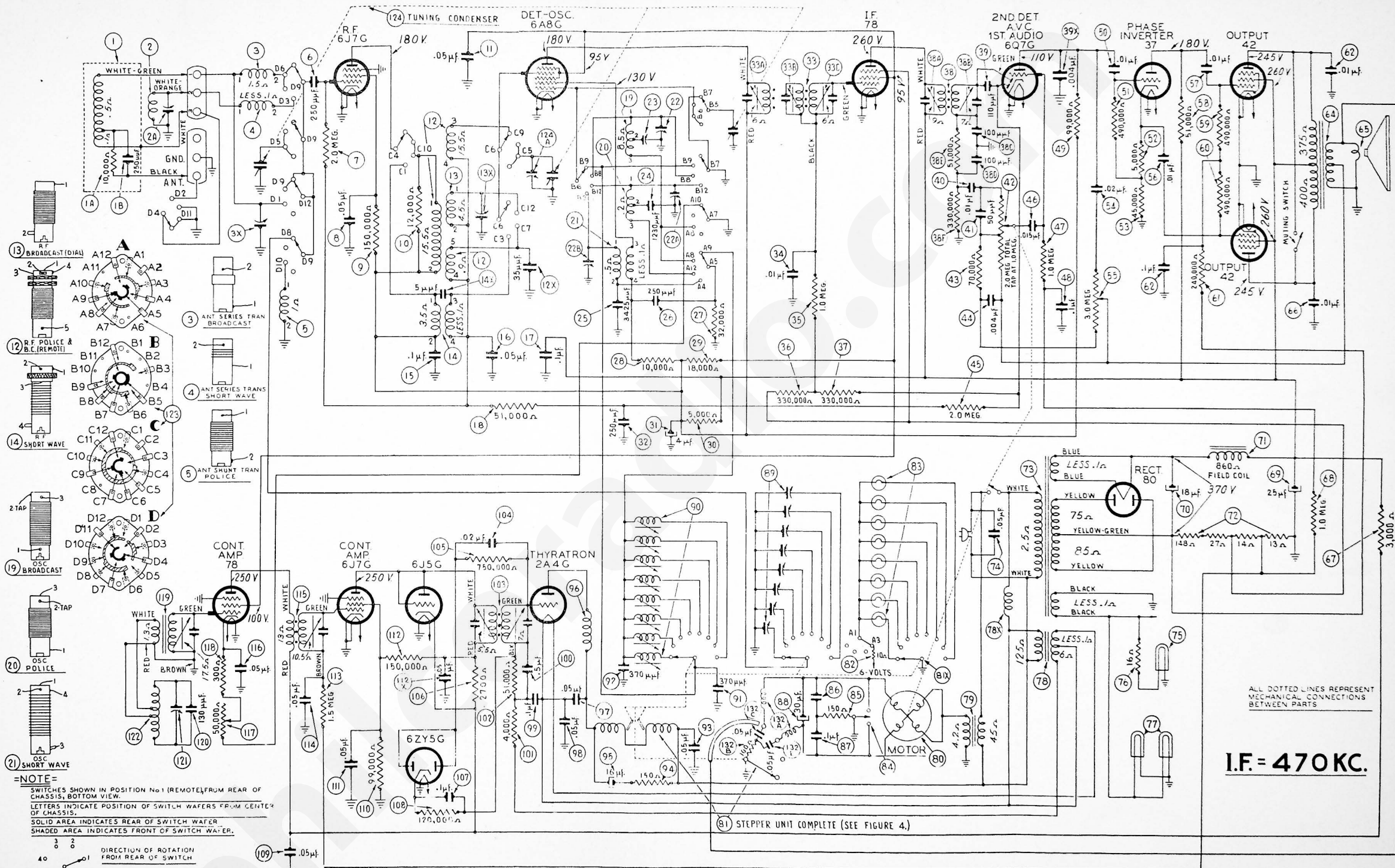


FIG. 8. INTERNAL WIRING OF STEPPER UNIT. NUMBERS CORRESPOND TO SCHEMATIC, PAGE 74.



MODEL 40-205. LOCATIONS OF PARTS. UNDERSIDE OF CHASSIS.

* To operate this model on 220 volt, 60 cycle current, use Stepdown Transformer, Part No. 32-8035.

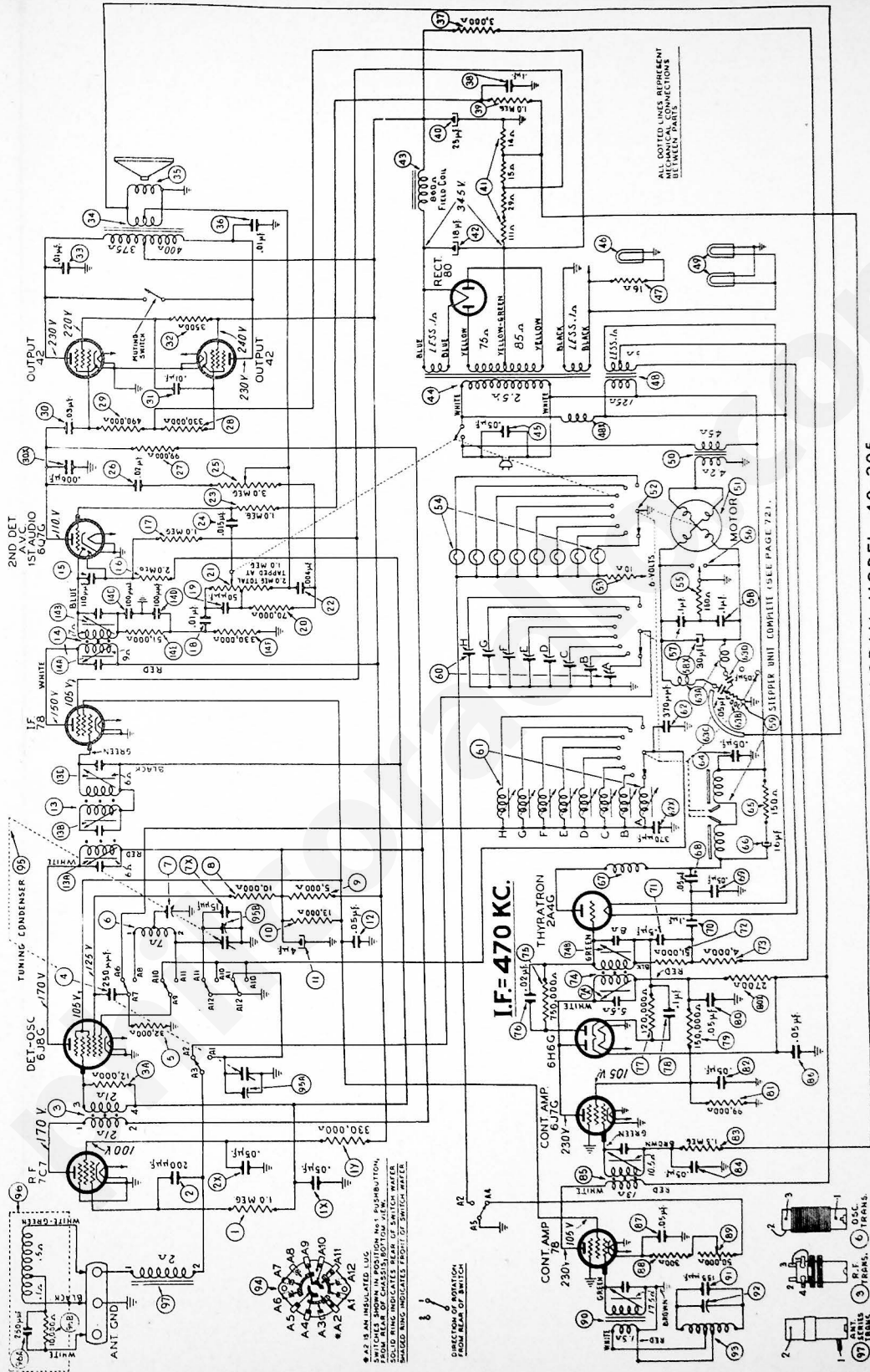


NOTE
 SWITCHES SHOWN IN POSITION No. 1 (REMO TEL) FROM REAR OF CHASSIS, BOTTOM VIEW.
 LETTERS INDICATE POSITION OF SWITCH WAFERS FROM CENTER OF CHASSIS.
 SOLID AREA INDICATES REAR OF SWITCH WAFER
 SHADED AREA INDICATES FRONT OF SWITCH WAFER.

40 1
 DIRECTION OF ROTATION FROM REAR OF SWITCH

SCHEMATIC DIAGRAM MODEL 40-216
FIG. 4. MODEL 40-216 SCHEMATIC DIAGRAM.

VOLTAGES MEASURED FOR SOCKET CONTACTS TO CHASSIS. LINE VOLTAGE 115 VOLT A. C. VOLUME MINIMUM. RANGE SELECTOR (BROADCAST). NO STATION BEING RECEIVED.



SCHEMATIC DIAGRAM MODEL 40-205

VOLTAGES MEASURED FOR SOCKET CONTACTS TO CHASSIS, LINE VOLTAGE 115 VOLT A. C., VOLUME MINIMUM, RANGE SELECTOR (BROADCAST), NO STATION BEING RECEIVED.

MODELS 40-205 and 40-216

ALIGNING OF COMPENSATING CONDENSERS

Models 40-205, 40-216

EQUIPMENT REQUIRED

(1) **Signal Generator.** In order to properly adjust this receiver a calibrated signal generator such as Philco Model 077 is required. This signal generator covers a frequency range of 540 to 36,000 K. C.

(2) **Indicating Device.** To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube volt-

meter and circuit tester such as Philco Models 027 and 028 is recommended. These testers also contain an audio output meter which may be used as an indicating device.

(3) **Aligning Tools.** Fiber handle screw driver Philco Part No. 45-2610. When using the vacuum tube voltmeter for adjusting the set, an aligning adaptor Part No. 45-2767 is required.

CONNECTING ALIGNING INSTRUMENTS

VACUUM TUBE VOLTMETER: To use the vacuum tube voltmeter as an aligning indicator it should be connected to the A. V. C. circuit as follows:

1. Connect the negative (—) terminal of the voltmeter through a 2 meg. resistor to the converter grid (6J8G) Model 205; (6A8G) Model 216. The resistor must be connected directly to the grid of the tube and the voltmeter wire attached to the resistor.

2. Connect the positive (+) terminal to the chassis ground terminal.

AUDIO OUTPUT METER: If this type of meter is used as an aligning indicator, it should be connected to the plate terminals of the 42 tubes. Adjust the meter for the 0 to 30 volt A. C. scale.

After connecting the aligning meter, adjust the compensators

in the order as shown in the tabulation below. Locations of the compensators are shown on page 76. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

SIGNAL GENERATOR: When adjusting the I. F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the signal generator is connected to the chassis of the receiver.

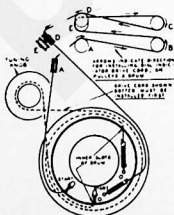
When aligning the R. F. padders a loop antenna is made from a few turns of wire and connected to the signal generator output terminals; the loop is then placed two or three feet from the loop in the cabinet. Do not remove the receiver loop from the cabinet. It is necessary when adjusting the padders, that the receiver be left in the cabinet.

Receiver Circuit Adjustments — Model 40-216

Operation	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators	
1	78 I. F. Grid	470 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcat"	38A, 38B	Turn Out 33B Full
2	6A8G Det. Osc. Grid	470 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcat"	33C, 33A, 33B	Note A
3	Use Loop on Generator	18.0 M.C.	18.0 M.C.	Vol. Max. Range Switch "Short Wave"	22B, 124A, 2A	Note C, Note D
4	Use Loop on Generator	1500 K.C.	1500 K.C.	Vol. Max. Range Switch "Brdcat"	22, 13X, 3X	Note A
5	Use Loop on Generator	580 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcat"	23	Rollgang
6	Use Loop on Generator	1550 K.C.	1550 K.C.	Vol. Max. Range Switch "Brdcat"	22	
7	Use Loop on Generator	3.5 M.C.	3.5 M.C.	Vol. Max. Range Switch "Police"	22A	Note B

Receiver Circuit Adjustments — Model 40-205

Operation	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators	
1	78 Grid	470 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcat"	14A, 14B	Turn Out 13B Full
2	6J8G Grid	470 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcat"	13A, 13C, 13B, 14A	
3	Loop	1500 K.C.	1500 K.C.	Vol. Max. Range Switch "Brdcat"	95B, 95A	Note A
4	Loop	580 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcat"	7	Rollgang when Adjusting Padder
5	Loop	1500 K.C.	1500 K.C.	Vol. Max. Range Switch "Brdcat"	95B, 95A	Note B



NOTE A — Dial Calibration: In order to adjust the receiver correctly the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable and dial pointer is shown in Fig. 5.

NOTE B — See page 76 for Remote Control Amplifier adjustments.

NOTE C — If two peaks (signals) are observed on the aligning meter when adjusting the oscillator padder No. 22A tune the padder to the second peak from the maximum capacity position (screw all the way in).

NOTE D — If two peaks (signals) are observed on the aligning meter when adjusting the R. F. and loop padders 124A and 2A, tune the padders to the first peak signal from the maximum capacity position (screw all the way in). When adjusting the padders to this first peak roll the tuning condenser (rock) slightly back and forth to obtain the maximum readings on the aligning meter.

← FIG. 5. DIAL POINTER AND CABLE ARRANGEMENT, MODELS 40-205, 40-216.

MODELS 40-205 and 40-216

ADJUSTMENT OF WIRELESS REMOTE CONTROL CIRCUITS

Models 40-205, 40-216

ADJUSTING CONTROL FREQUENCY AMPLIFIER

The wireless remote control models are shipped with 5 different control frequencies which range from 350 to 400 K. C. These frequencies are identified by code numbers appearing on the serial number ticket and on the rear of the chassis. The code numbers and frequencies are as follows:

Code 5.....355 K. C. Code 7.....375 K. C.
Code 6.....367 K. C. Code 8.....383 K. C.
Code 9.....395 K. C.

The purpose of the different control frequencies is to prevent interaction between two or more wireless remote control models which are on the same floor or exceptionally close together. When several wireless remote control models are to be located close together, it will be necessary to use different control frequencies. These frequencies should be 20 K. C. apart. For example, if three models are to be operated at the same time and are closely situated, it will be advisable to adjust the control frequency of the first set to 355 K. C., the second set to 375 K. C., and the third set to 395 K. C.

In order to realign or change the control frequency of these models, the following equipment is required:

1. Philco Model 077 signal generator with a loop attached to the output terminal. (A few turns of wire 12 inch in diameter).
2. Philco wireless remote control aligning adapter. Part No. 45-2769.
3. Philco aligning screw driver, Part No. 45-2610.

With this apparatus the control frequency is adjusted as follows:

1. Remove the 2A4G control tube from its socket and replace with the aligning adapter. Connect the red lead of the aligning adapter to the positive terminal of the vacuum tube voltmeter. The black lead of the adapter is connected to the negative terminal of the vacuum tube voltmeter.
2. Remove the 78 control amplifier tube, its shield and the shield of the 6J7G tube. Apply power to the set and turn the range selector disc to "remote".
3. Attach the "high" side of the signal generator output to the grid of the 6J7G tube. Set the generator modulation

control to "mod on" and turn the attenuator control about one-fourth on.

4. The control frequency to which the control amplifier is tuned can now be determined by tuning the signal generator between 350 and 400 K. C. When the signal generator is tuned to the control frequency, the vacuum tube voltmeter will show maximum deflection. If this frequency is to be used, leave the signal generator at this point or turn the indicator to any other frequency desired between 350 and 400 K. C.

5. After the control frequency has been found or changed, compensators (103A), (103B) Model 40-216; and (74A), (74B) Model 40-205 are adjusted for maximum indication on the vacuum tube voltmeter.

6. After adjusting this circuit, replace the 78 tube and shields in their sockets and remove the signal generator lead from the grid of the 6J7G tube.

7. Place the small loop mentioned above into the "high" and "ground" of the signal generator output terminals and place the signal generator near the secondary inductor loop in the bottom of the cabinet. When doing this, do not disturb the setting of the signal generator indicator. Turn the sensitivity control located on the right rear of the chassis toward the position marked "extreme" then adjust compensators (119), (115) Model 40-216; (90), (85) Model 40-205 for maximum reading on the vacuum tube voltmeter.

8. Next adjust the secondary inductor loop compensator (121) in the Model 216 and (92) Model 205 located in the bottom of the cabinet. This compensator is encased in a cardboard container that is attached to one corner of a loop. Extreme care should be used in adjusting the compensator to the exact point of resonance as the secondary inductor is a very sharply tuned circuit.

9. If the vacuum tube voltmeter pointer goes off scale when adjusting the compensators, turn the attenuator control of the signal generator toward the "off" position. After these compensators are adjusted to maximum, the control amplifier is tuned to the frequency selected.

ADJUSTING WIRELESS REMOTE CONTROL UNIT

The wireless remote control unit is now adjusted to the control frequency of the amplifier as follows:

1. Turn off the signal generator, then dial any one of the stations indicated on the remote control unit by pulling the selector to the stop position; release the selector and at the same time press the stop down and hold it in this position.
2. Now bring the wireless remote control unit close to the receiver. Using a padding wrench, Philco Part No. 3164, tune the compensator (127) Fig. 3, located on the bottom of the remote control unit until a maximum voltage reading is indicated on the vacuum tube voltmeter. When tuning this compensator, it should be done very slowly so as not to pass over the frequency to which the control amplifier is tuned.

3. After adjusting the compensator with the sensitivity control on the receiver in the "extreme" position, the remote control unit is adjusted for maximum sensitivity by setting the sensitivity control in the "near" position and placing the remote control unit a few feet away from the receiver. The compensator (127) Fig. 3, is then adjusted again for maximum voltage reading of the vacuum tube voltmeter.

4. After making these adjustments, remove the aligning adapter from the socket and replace the 2A4G tube. The wireless remote control unit should now be adjusted to the same frequency as the control frequency in the receiver.

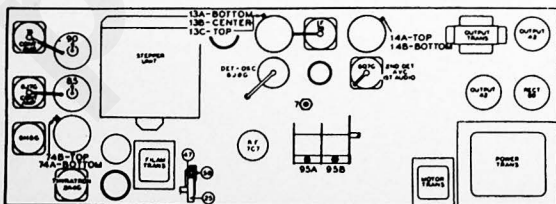


FIG. 6. LOCATIONS OF COMPENSATORS, MODEL 40-205.

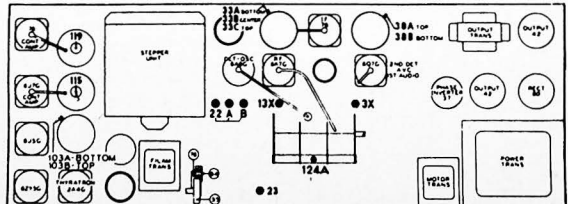


FIG. 7. LOCATIONS OF COMPENSATORS, MODEL 40-216.