

# MODELS 40-195, 40-200 and 40-201, Codes 121-122

## SPECIFICATIONS

### MODELS 40-195, 40-200

**TYPE OF CIRCUIT:** Models 40-195 and 40-200 are Electric Push-Button and dial tuned radios incorporating the new Philco Built-in Super Aerial system which eliminates an outside aerial and reduces local static interference to a minimum. These models are also designed to receive the sound of a television program tuned in by special type Philco Television Sets.

### PHILCO BUILT-IN SUPER AERIAL SYSTEM:

Included in the built-in 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 general, both radios are similar with the exception of the number of tubes used and cabinet design. Models 40-195 and 40-200 employ ten and eleven tubes respectively.

In addition, other features of design are: Continuously variable tone control; three tuning ranges covering the frequencies listed below; automatic bass compensation and degenerative push-pull pentode audio output circuit. Outside aerial connections are also provided for remote localities where station signal strength is very weak.

Each receiver is equipped with eight electric tuning push buttons for automatically selecting stations. Seven of the push buttons are used for broadcast stations and one push button (left hand push button preferably) may be set up for use with a Philco wireless Record Player or the sound programs tuned in by Special Philco Television sets.

**POWER SUPPLY:** 115 Volts, 25 and 60 cycle A. C.

**POWER CONSUMPTION:** 110 watts.

**FREQUENCY TUNING RANGES:** (Three)

540 to 1550 K. C. 1.5 to 4.0 M. C. 6.0 to 18 M. C.

**INTERMEDIATE FREQUENCY:** 455 K. C.

**AUDIO OUTPUT:** 5 watts.

**PHILCO TUBES USED:** Model 40-195

1232, R. F.; 7J7, Converter; 7B7, I. F.; 7C6, Second Detector, A. V. C., and First Audio; 37, Phase Inverter; two 37, Drivers; two 42, Audio Power Outputs; 80, Rectifier.

Model 40-200

1232, R. F.; 7J7, Converter; 7B7, I. F.; 7A6 Detector A. V. C.; 7C6 First Audio; 37, Phase Inverter; two 37, Audio Drivers; two 42, Power Outputs; 80, Rectifier.

CABINET DIMENSIONS:	Height	Width	Depth
Model 40-195 type "XX".....	38"	29½"	13¾"
Model 40-200 type "RX".....	36¾"	34¾"	14¾"

### MODEL 40-201XX

Models 40-200XXS and 40-201XX, Code 121 are similar with the exception of the cabinets. The service information for Model 40-200, Code 121 also applies to Model 40-201XX, Code 121.

### MODEL 40-201, CODE 122

Model 40-201, Code 122 is similar to Model 40-195, Code 121 with the exception of the cabinet. Service information for Model 40-201, Code 122 is the same as that for the Model 40-195.

Instructions for adjusting the electric push-buttons will be found on page 9.

## PRODUCTION CHANGES

### MODEL 40-195

Run 2—A mica condenser Part No. 61-0038 was added to the police band and oscillator padder (25A) to improve padding of the circuit.

Run 4—Beginning with Run 4 receiver the converter tube was changed from a type 7J7 loktal to a 6J8G octal. Tube sockets changed from Part No. 27-6129 to 27-6120.

Run 5—To improve the operating characteristics of the set, screen by-pass condenser ( ) was changed from .05 mfd. Part No. 30-4518 to .01 mfd. Part No. 30-4572.

Run 6—A resistor, 27 ohms Part No. 33-027339 was connected in series with the oscillator grid circuit of sets using the 6J8G tube. This change was made to improve the oscillator performance.

### MODEL 40-200

Run 3—A mica condenser Part No. 62-0038 was added to the police band oscillator padder (25A) to improve padding of the circuit.

Run 4—Beginning with Run 4 receiver the converter tube

was changed from a type 7J7 loktal to a 6J8G octal. Tube sockets changed from Part No. 27-6129 to 27-6120.

Runs 5 and 6—Same as Model 40-195.

### MODELS 40-195, 40-200

Beginning with Run "7" receivers the converter tube is changed from a type 6J8G octal to a 7J7 loktal. The tube sockets are changed from Part No. 27-6120 to Part No. 27-6129.

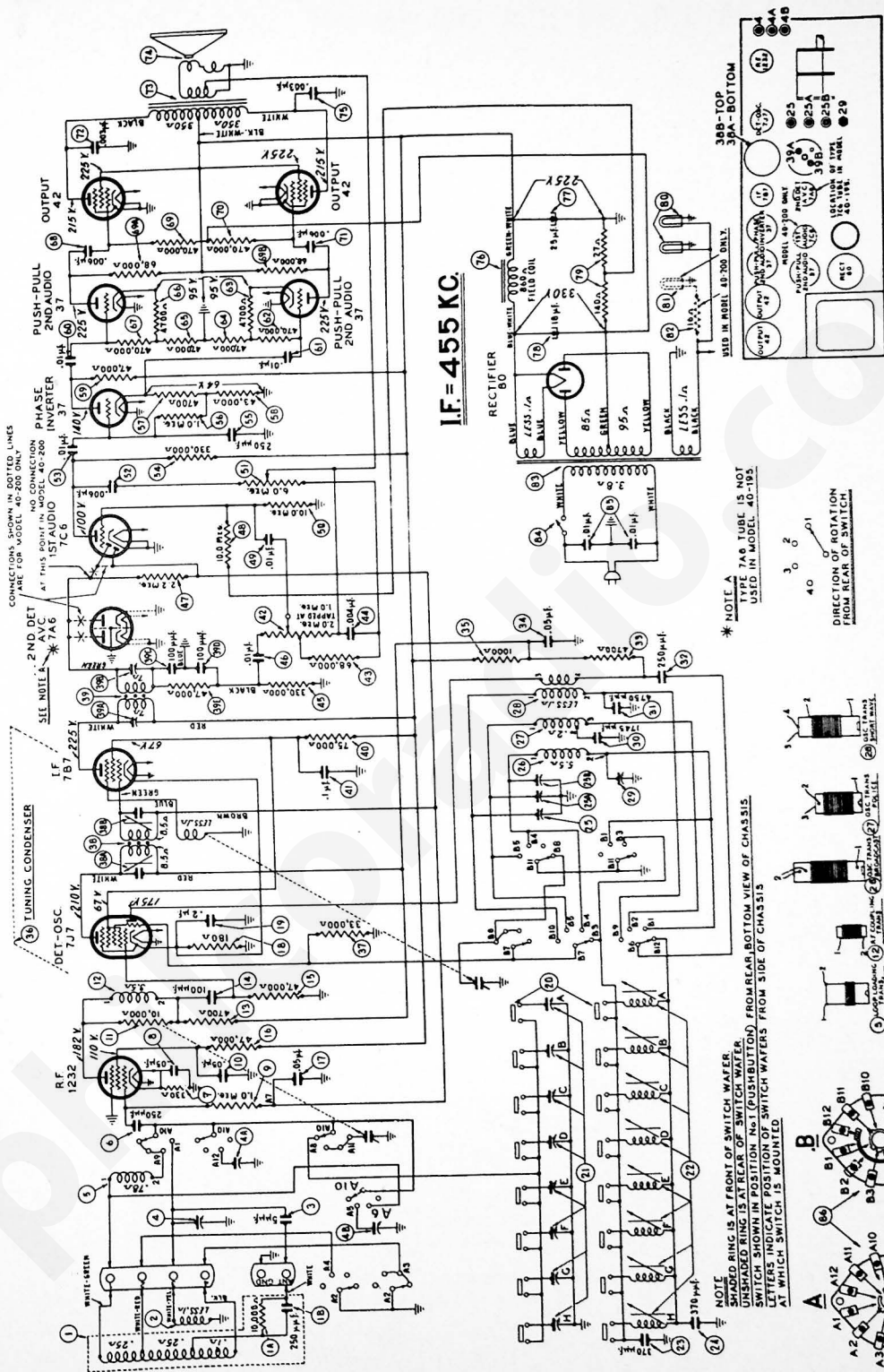
This change is the reverse of the change made on Run "4" receivers.

### MODELS 40-195, 40-200, 40-201

To improve the padding at 1500 K. C. a mmfd. condenser Part No. 30-1097 was connected in parallel with compensator (25B). This change is on all sets marked Run 8.

To prevent low frequency rumble at various points on the dial scale, another condenser Part No. 30-4334, .004 mfd. was connected in parallel with the present condenser (44) in the bass compensation circuit.

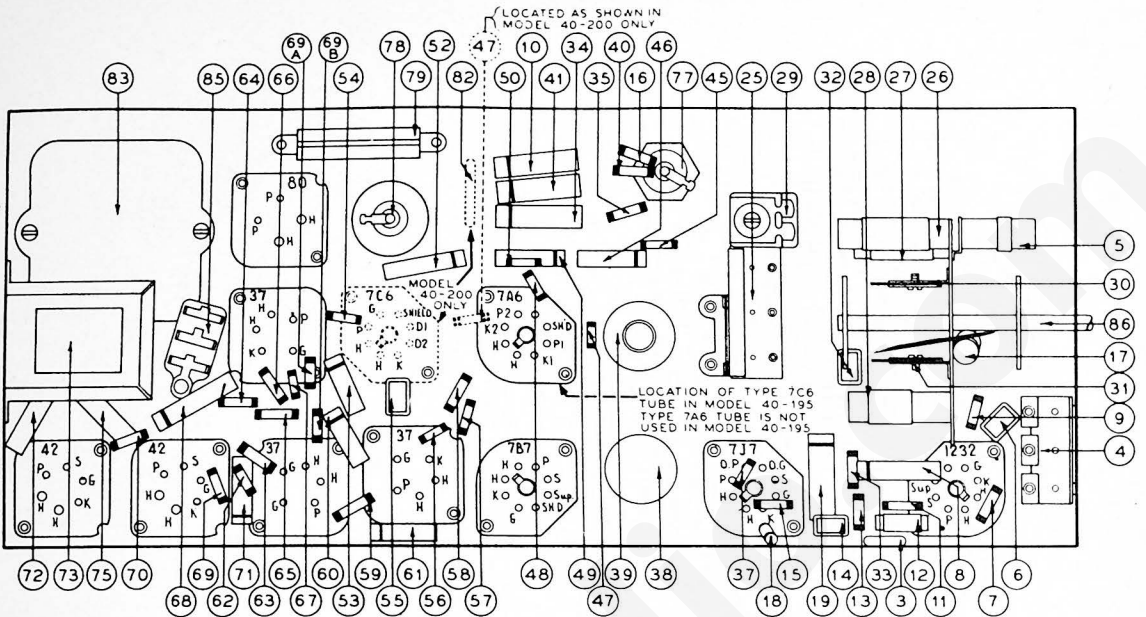
(See page 9 for Push Button Adjustments)



SCHMATIC DIAGRAM MODELS 40-195 & 40-200

The voltages indicated were measured with a Philco Model 027 Voltmeter (1000 ohms per volt) — Power supply 115 volts, 60 cycle — Volume control minimum — No signal being received — Range switch "Brdest."

# MODELS 40-195, 40-200 and 40-201, Codes 121-122



## Replacement Parts Models 40-195 and 40-200

SCHE. No.	DESCRIPTION	PART No.	LIST PRICE	SCHE. No.	DESCRIPTION	PART No.	LIST PRICE
1	Loop Assy. (Broadcast)	38-9883	.17	39C	Part of No. 39		
1A	Resistor (10,000 ohms, 1/2 watt)	33-310339	.20	39D	Part of No. 39		
1B	Mica Cond. (.250 mfd.)	61-0033	.20	39E	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
2	Loop Assy. (Short Wave)	38-9887		40	Resistor (75,000 ohms, 1/2 watt)	33-375339	.17
3	Mica Cond. (5 mfd.)	30-1097		41	Tubular Cond. (.1 mfd.)	30-4455	.20
4	Compensator (3 section)	31-6308		42	Volume Control (2 meg.)	33-5286	1.00
4A	Part of No. 4			43	Resistor (88,000 ohms, 1/2 watt)	33-368339	.17
5	Loop Leading Coil	32-3252		44	Tubular Cond. (.004 mfd.)	30-4334	.15
6	Mica Cond. (.250 mfd.)	61-0033	.20	45	Resistor (330,000 ohms, 1/2 watt)	33-433339	.17
7	Resistor (330 ohms, 1/2 watt)	33-123339	.17	46	Tubular Cond. (.01 mfd.)	30-4572	.15
8	Tubular Cond. (.05 mfd.)	30-4444	.15	47	Resistor (2.2 meg., 1/2 watt)	33-522339	.17
9	Resistor (1.0 meg., 1/2 watt)	33-510339	.17	48	Resistor (10.0 meg., 1/2 watt)	33-610339	.17
10	Tubular Cond. (.05 mfd.)	30-4518	.15	49	Tubular Cond. (.01 mfd.)	30-4572	.15
11	Resistor (10,000 ohms, 1/2 watt)	33-310339	.17	50	Resistor (10.0 meg., 1/2 watt)	33-610339	.17
12	R. F. Coupling Coil	32-3194		51	Tone Control (8 meg.)	33-5325	.15
13	Resistor (4700 ohms, 1/2 watt)	33-247339	.17	52	Tubular Cond. (.006 mfd.)	30-4465	.15
14	Mica Cond. (.100 mfd.)	30-1128	.15	53	Tubular Cond. (.01 mfd.)	30-4572	.15
15	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17	54	Resistor (330,000 ohms, 1/2 watt)	33-433339	.17
16	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17	55	Mica Cond. (.250 mfd.)	61-0033	.20
17	Tubular Cond. (.05 mfd.)	30-4518	.15	56	Resistor (1.0 meg., 1/2 watt)	33-510339	.17
18	Resistor (180 ohms, 1/2 watt)	33-118339	.17	57	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
19	Tubular Cond. (.2 mfd.)	30-4587	.20	58	Resistor (43,000 ohms, 1/2 watt)	33-343339	.17
20	Push Button Switch	48-1515		59	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
21	Compensator Strip	31-6313		60	Tubular Cond. (.01 mfd.)	30-4572	.15
21A	Compensator			61	Tubular Cond. (.003 mfd.)	30-4469	.20
21B	No. 1 (540-1030 K.C.)			62	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
21C	No. 2 (540-1030 K.C.)			63	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
21D	No. 3 (540-1030 K.C.)			64	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
21E	No. 4 (670-1160 K.C.)			65	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
21F	No. 5 (670-1160 K.C.)			66	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
21G	No. 6 (900-1800 K.C.)			67	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
21H	No. 7 (900-1800 K.C.)			68	Tubular Cond. (.006 mfd.)	30-4583	.15
21I	No. 8 (900-1800 K.C.)			69	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
22	Coil Strip (Complete)	32-3042	.50	70	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
22A	Coil No. 1 (540-1030 K.C.)	32-3042	.50	71	Tubular Cond. (.006 mfd.)	30-4583	.15
22B	Coil No. 2 (540-1030 K.C.)	32-3042	.50	72	Tubular Cond. (.003 mfd.)	30-4469	.20
22C	Coil No. 3 (540-1030 K.C.)	32-3042	.50	73	Output Trans.	32-7981	1.80
22D	Coil No. 4 (670-1160 K.C.)	32-3042	.50	74	Cone and Voice Coil Assy. (for Speaker 38-1450-2)	38-4089	2.80
22E	Coil No. 5 (670-1160 K.C.)	32-3042	.50		(for Speaker 38-1450-4)	38-4111	2.80
22F	Coil No. 6 (900-1800 K.C.)	32-3041	.50	75	Tubular Cond. (.001 mfd.)	30-4250	.11
22G	Coil No. 7 (900-1800 K.C.)	32-3041	.50	76	Field Coil (Replace Spkr. No. 38-1450)		
22H	Coil No. 8 (900-1800 K.C.)	32-3041	.50	77	Electrolytic Con. (28 mfd., 280V.)	30-2333	1.00
23	Silvered Mica Cond. (.370 mfd.)	30-1110	.45	78	Electrolytic Con. (18 mfd., 400V.)	33-3376	1.35
24	Silvered Mica Cond. (.370 mfd.)	30-1110	.45	79	B. C. Resistor	33-3376	
25	Compensator (2 section)	31-6092	.50	80	Pilot Lamps	34-2064	.09
25A	Part of No. 25			81	Pilot Lamps	34-2150	.11
25B	Part of No. 25			82	Resistor (18 ohms, pilot lamp)	33-018431	.20
26	Broadcast Dial	32-3240		83	Power Trans. (110V, 60 cycle)	32-8059	
27	Police Oscillator Coil	32-3052	.78	84	Power Trans. (110V, 60 cycle)	32-8059	
28	Short Wave Oscillator Coil	32-3242		85	Power Trans. (120/240V, 60 cyc.)	32-8097	
29	Compensator	32-3030		86	Wave Switch	42-1517	
30	Tracking Cond. (.1748 mfd.)	31-6307			Line Con. (18 mfd., Bakelite)	30-0308	.30
31	Tracking Cond. (4750 mfd.)	31-6308			A.C. Switch	42-1507	
32	Mica Cond. (.250 mfd.)	61-0033	.20				
33	Resistor (4700 ohms, 1/2 watt)	33-247339	.17				
34	Tubular Cond. (.05 mfd.)	30-4518	.15				
35	Resistor (180 ohms, 1/2 watt)	33-118339	.17				
36	Tuning Cond. Assy.	31-2389	.17				
37	Resistor (32,000 ohms, 1/2 watt)	33-333339	.17				
38	1st I. F. Trans. Assy.	32-3243					
39	2nd I. F. Trans. Assy.	32-3250					
39A	Part of No. 39						
39B	Part of No. 39						

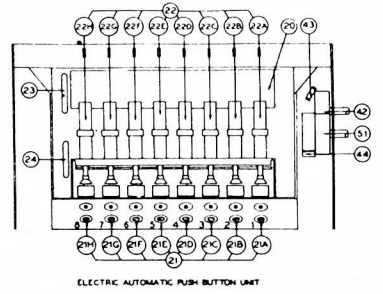


Fig. 3

SCHE. No.	DESCRIPTION	PART No.	LIST PRICE
	Coupling Assy. (Tuning Cond.)	31-2291	.35
	Dial	27-5513	
	Dial Clamp	28-1034	.08
	Dial Gasket	27-9224	.02
	Drive Cord Assy. (Pilot Lamp)	31-2316	.25
	Drive Cord Assy. (Tuning Cond.)	31-2350	.20
	Disc Control (Volume)	27-4768	.15
	Disc Control (Wave Switch)	27-4768	.30
	Disc Control (Tuning)	27-4768	.15
	Drum Assy. (Tuning Cond.)	38-9716	.60
	Drum Bracket & Bearing Assy.	38-9852	.10
	Pointer (Dial)	38-1033	.15
	Pilot Light Jewel	31-4717	.10
	Knobs (Push Buttons)	27-4852	
	Shaft (Control Drums)	28-9924	.08
	Socket Assy. (Pilot Lamp)	38-9812	.05
	Socket Assy. (Dial Lamp)	38-9854	.20
	Socket Assy. (Dial Lamp)	38-9858	.20
	Socket Assy. (Pilot Lamp)	38-9858	.40
	Socket (5 Prong, 37-Tube)	27-8035	.11
	Socket (8 Prong, 42-Tube)	27-8038	.11
	Socket (4 Prong, 80-Tube)	27-8044	.10
	Socket (Loklat, 717-Tube)	27-8129	
	Socket (Loklat, 746, 76C, Tubes)	27-8131	
	Speaker (Tuning Unit Assy. Mtg.)	38-1450	9.00
	Tab Kit	40-8475	
	Phone Tab	27-9418	
	Dial Tab	27-5530	
	Grommet (Push Button Sw. Mtg.)	27-4596	.03
	Grommet (Tuning Unit Assy. Mtg.)	3914	.02
	Grommet (Tuning Unit Assy. Mtg.)	3915	.02
	Screw (Bazel Mtg.)	W-1834	.80 Per C.
	Screw (Sph. Mtg.)	W-1224	.38 Per C.
	Screw (Loop Mtg. Rail)	W-546	.45 Per C.

## Miscellaneous Parts Model 40-200

Base (Ass'y)	40-8490	
Bearing (Drum Shaft)	56-1038	.10
Cable and Plug (Power Supply)	L-2778	.40
Cable (Speaker)	41-3430	.50

Prices subject to change without notice

# MODELS 40-195, 40-200 and 40-201, Codes 121-122

## ALIGNING R. F. AND I. F. COMPENSATORS

(See page 9 for Push Button Adjustments)

### Equipment Required

(1) Signal Generator. In order to properly adjust this receiver an accurately 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 voltmeter and circuit tester such as Philco Models 027 and 028 is recommended. When using

the vacuum tube voltmeter, an aligning adaptor Philco part No. 45-2767 is necessary for connecting to the A. V. C. circuit. These testers also contain an audio output meter which may also be used as an indicating device. (3) Aligning Tools, fiber handle screw driver Philco part No. 45-2610 and fiber wrench Philco part No. 7696.

### Connecting Aligning Instruments

**VACUUM TUBE VOLTMETER**—To use the vacuum tube voltmeter as an alignment indicator make the following connections:

#### 1. ADJUSTING I. F. CIRCUIT:

Remove the 1232 R. F. tube from its socket and insert the aligning adaptor, then replace the tube in the adaptor. Connect the negative terminal of the vacuum tube voltmeter to the wire which protrudes from the side of the adaptor. Attach the positive terminal of the voltmeter to the chassis.

#### 2. ADJUSTING R. F. CIRCUIT:

To adjust the R. F. circuit, the aligning adaptor is inserted in the 7C6 A. F. tube socket. The vacuum tube voltmeter remains connected to the adaptor as given in the above paragraph.

With the voltmeter connected in this manner a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted. If an audio output meter is used, connect it to the plate and socket terminals of the 42 type tube and adjust the output meter for the 0 to 30 A. C. scale.

After connecting the aligning indicator, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on the schematic diagram page No. 2. 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 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 receiving loop from the cabinet. It is necessary when adjusting the padders, that the receiver be left in the cabinet.

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order See Fig.	
1	High Side to No. 1 Ter. Loop Panel	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcat."	39B, 39A 38B, 38A	See Note A
2	Use Loop on Generator		1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcat."	29B, 4B	See Note B
3	Use Loop on Generator		580 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcat."	29	Roll Tuning Condenser Note C
4	Use Loop on Generator		1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcat."	25B, 4B	
5	Use Loop on Generator		3.5 M. C.	3.5 M. C.	Vol. Max. Range Switch "Police"	25A, 4A	
6	Use Loop on Generator		18.0 M. C.	18.0 M. C.	Vol. Max. Range Switch "S. W."	25, 4	Check Image Signal Note D

**NOTE A**—A "Dummy Antenna" consisting of a .1 mfd. condenser is connected in series with the signal generator output lead (high side).

**NOTE B**—**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 in this position is shown in Fig. 4.

**NOTE C**—When adjusting the low frequency compensator of Range One (Broadcast) or the antenna and R. F. compensators of the high frequency tuning ranges; the receiver Tuning Condenser must be adjusted (rolled) as follows: First tune the compensator for maximum output, then vary the tuning condenser of the receiver for maximum output. Now

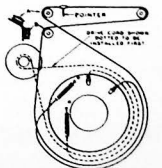


Fig. 4

turn the compensator slightly to the right or left and again vary the receiver tuning condenser for maximum output. This procedure of first setting the compensator and then varying the tuning condenser is continued until there is no further gain in output reading.

**NOTE D**—To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator to the maximum capacity position (clockwise). From this position slowly turn the compensator counter-clockwise until a second peak is obtained on the output meter. Adjust the compensator for maximum output at this second peak.

If the above procedure is correctly performed, the image signal will be found (much weaker) by turning the receiver dial 910 K. C. below the frequency being used on any high frequency range.