



MODELS 209, 211, 212, 213

SPECIFICATIONS

TYPE OF CIRCUIT: Philco models 209, 211, 212, 213 are all five tube battery operated super-heterodyne radios intended for standard broadcast reception. Models 211 and 213 have short wave reception.

TUNING RANGE: Models 209 and 212, 540-1700 Kc.
Models 211 and 213, 540-1700 Kc.
5.8-12 Mc.

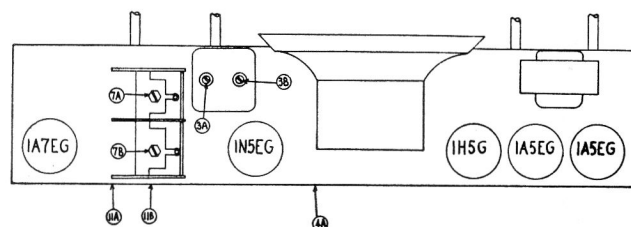
INTERMEDIATE FREQUENCY: 460 Kc.

PHILCO TUBES USED: 1-1A7EG, 1st detector and oscillator; 1-1N5EG, I.F. amplifier; 1-1H5G, 2nd detector, audio amplifier, automatic volume control; 2-1A5EG, push-pull output stage.

BATTERIES REQUIRED: These models require 1½ volts of "A" power and 90 volts of "B"

power. The power may be derived from a Philco "AB" pack, type P-60D11L or from two 45 volt "B" batteries and one 1½ volt "A" battery.

BATTERY CURRENT: "A" battery, 250 Ma.
"B" battery, 8.2 Ma.



LOCATION OF COMPENSATORS

ALIGNMENT OF COMPENSATORS

EQUIPMENT REQUIRED: (1) Signal Generator, Philco Model 177 signal generator which has a fundamental frequency range from 115 to 32,500 K.C., is the correct instrument for this purpose.

(2) Output Meter, Philco Model 028 circuit tester incorporates a sensitive output meter and is recommended.

(3) Philco fibre handled screw driver, Part No. 45-2610 and fibre wrench, Part No. 7696.

OUTPUT METER: The Philco 028 output meter is connected to the plate and screen terminals of the output tube and is adjusted to the 0 to 30 scale. After connecting the output meter adjust the compensators in the order shown in the tabulation below. If the output meter goes off scale when adjusting the compensators, reduce the signal strength from the generator.

MODELS 209 and 212

OPERATIONS IN ORDER	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators	
1	High Side to 17AEG Grid Cap	460 K.C.	580 K.C.	Volume Max.	4A, 3B, 3A	Note A
2	High Side to Antennae Lead	1500 K.C.	1500 K.C.	Volume Max.	7B, 7A	Note B, C

MODELS 211 and 213

OPERATIONS IN ORDER	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators	
1	High Side to 17AEG Grid Cap	460 K.C.	580 K.C.	Volume Max.	4A, 3B, 3A	Note A
2	High Side to Antennae Lead	1400 K.C.	1400 K.C.	Wave Sw Broad. Volume Max.	7B, 7A	Note B, C
3	High Side to Antennae Lead	600 K.C.	600 K.C.	Wave Sw Broad. Volume Max.	11B	Note D
4	High Side to Antennae Lead	1400 K.C.	1400 K.C.	Wave Sw Broad. Volume Max.	7B, 7A	Note B, C
5	High Side to Antennae Lead	12 M.C.	12 M.C.	Wave Switch Short Wave Volume Max.	11A	Note B, C

NOTE A—When adjusting the I.F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to the grid cap of the 1A7EG tube. The ground side of the signal generator is connected to the ground lead of the receiver.

NOTE B—**DIAL CALIBRATION:** Before adjusting the R.F. padders the dial must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows: With the tuning condenser

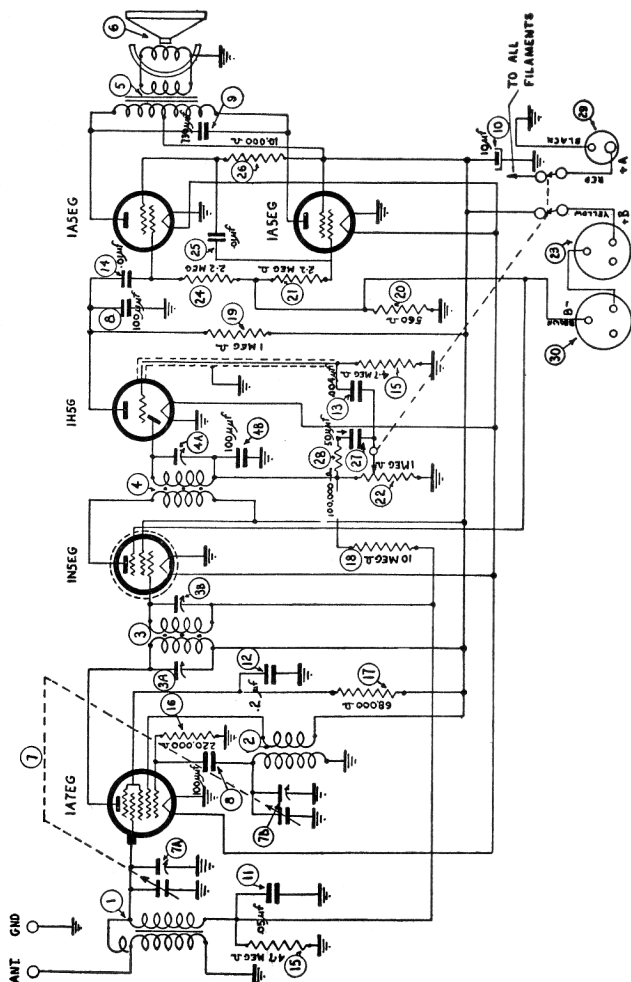
in the closed position (maximum capacity) set the dial pointer on the small dot at the extreme left end of the dial calibration.

NOTE C—When aligning the R.F. padders, the high side of the signal generator is connected through a 200 mmfd. condenser to the antennae lead of the receiver. The ground lead of the generator is connected to the grid lead of the receiver.

NOTE D—Roll gang for maximum sensitivity.

REPLACEMENT PARTS — MODELS 209-212

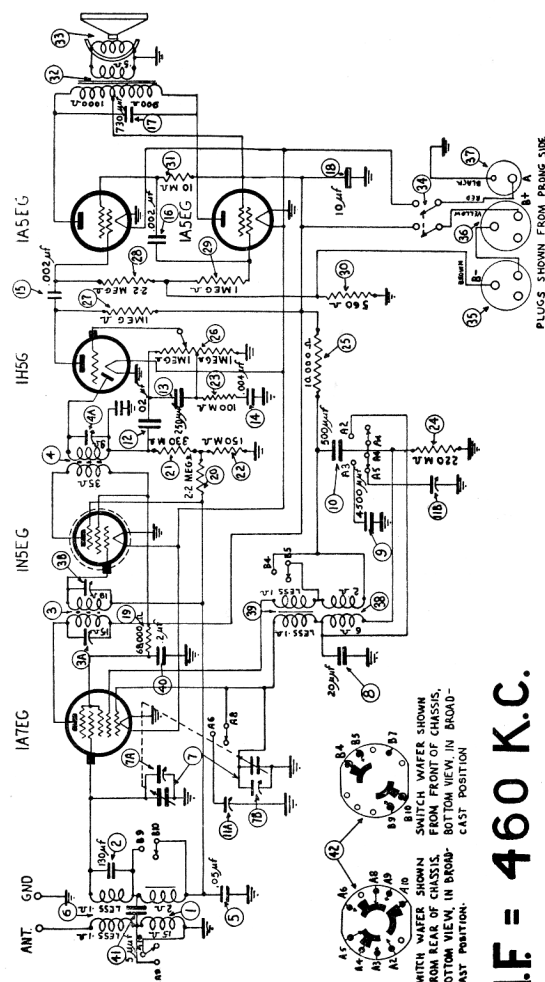
Schem. No.	Description	Part No.	Schem. No.	Description	Part No.
1	Antenna Transformer	32-3183	28	Resistor, 100,000 ohms	33-410244
2	Osc. Transformer	32-3184	29	Battery Cable Plug A+	27-4786
3	1st I.F. Transformer	32-3198	30	Battery Cable Plug B-	27-4347
4	2nd I.F. Transformer	32-3199	MISCELLANEOUS PARTS		
5	Output Transformer	32-3107			
6	Speaker Assembly (209)	36-1507			
7	Speaker Assembly (212)	36-1488			
8	Tuning Condenser	31-2457			
9	Mica Condenser, 100 mmf.	60-110157			
10	Electrolytic Condenser, 730 mmf.	60-173137			
11	Tubular Condenser, 05-200v	30-2396			
12	Tubular Condenser, 20-200	30-4519			
13	Tubular Condenser, 004-400v	30-4536			
14	Tubular Condenser, .01-400v	30-4578			
15	Resistor, 4.7 meg.	33-547244			
16	Resistor, 220,000 ohms	33-422244			
17	Resistor, 68,000 ohms	33-368244			
18	Resistor, 10 meg.	33-610244			
19	Resistor, 560 ohms	33-166356			
20	Resistor, 2.2 meg.	33-522244			
21	Volume Control and Switch	33-5398			
22	Battery Cable Plug B+	27-4347			
23	Resistor, 2.2 meg.	33-522244			
24	Tubular Condenser, .01-400v	30-4572			
25	Resistor, 10,000 ohms	33-310244			
26	Mica Condenser, 50 mmf.	60-050157			



SCHEMATIC DIAGRAM — MODELS 209-212

REPLACEMENT PARTS — MODELS 211-213

Schem. No.	Description	Part No.	Schem. No.	Description	Part No.
1	Ant. Coil Broadcast	32-3468	34	"Off-On" Switch	42-1581
2	Mica Condenser, 130 mmf.	60-113117	35	Battery Plug "B"	27-4347
3	1st I.F. Coil	32-3198	36	Battery Plug "B"	27-4347
4	2nd I.F. Coil	32-3199	37	Battery Plug "A"	27-4786
5	Tubular Cond., .05-200v	30-4519	38	Osc. Coil Broadcast	32-3469
6	Ant. Coil, S.W.	32-3471	39	Osc. Coil S.W.	32-3470
7	Tuning Condenser	31-2474	40	Tubular Cond., 2-200v	30-4536
8	Mica Cond., 20 mmf.	60-020127	41	Mica Cond., 5 mmf.	60-00537
9	Mica Cond., 500 mmf.	60-245124	42	Wave Switch	42-1617
10	Padder Cond., (2 section)	31-6353	MISCELLANEOUS PARTS		
11	Tubular Cond., 02-400v	30-4516			
12	Mica Cond., 250 mmf.	60-125157			
13	Tubular Cond., 004-400v	30-4578			
14	Tubular Cond., .002-400v	30-4579			
15	Tubular Cond., .002-400v	30-4579			
16	Mica Cond., 730 mmf.	60-173137			
17	Electrolytic Cond., 10 mf.	60-2396			
18	Resistor, 68,000 ohms	33-368244			
19	Resistor, 2.2 meg.	33-522244			
20	Resistor, 330,000 ohms	33-433244			
21	Resistor, 150,000 ohms	33-415244			
22	Resistor, 100,000 ohms	33-410244			
23	Resistor, 220,000 ohms	33-422244			
24	Resistor, 10,000 ohms	33-310244			
25	Volume Control	33-5402			
26	Resistor, 1 meg.	33-510244			
27	Resistor, 2.2 meg.	33-522244			
28	Resistor, 1 meg.	33-510244			
29	Resistor, 560 ohms	33-166356			
30	Resistor, 10,000 ohms	33-310244			
31	Output Transformer	32-3107			
32	Speaker Assembly (211)	36-1511			
33	Speaker Assembly (213)	36-1518			



SCHEMATIC DIAGRAM — MODELS 211-213

I.F. = 460 K.C.