

PHILCO

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Service Bulletin No. 166-A

Models 38 and 38-A (Code 123)

The Philco Models 38 and 38-A are battery-operated five-tube superheterodyne receivers. Model 38 is designed for use with a two-volt storage battery for filament ("A") supply; Model 38-A for use with dry "A" battery,—in conjunction with a Type 1A1 ballast tube. The frequency range is 545 to 2415 kilocycles, and a wave-band switch permits the selection of either the standard broadcast or police and amateur radio stations. Models 38 and 38-A possess receiver chasses that are identical. When shipped, Model 38 has a shorting jumper across the filament contacts of the Type 1A1 Ballast Tube socket. This should **not** be disturbed as long as the receiver is operated upon the storage battery. Removal of it will open the filament circuit. The Model 38-A,—in addition to its complement of five tubes,—is equipped with a Type 1A1 ballast tube which **must** be used with the receiver operating on dry "A" battery. A special resistor is used across the filament of the Type 1A1 ballast tube.

The Models 38 and 38-A employ a Philco Type 1A6 tube as detector-oscillator, a Type 32 tube for the intermediate frequency amplifier, a Type 32 as second detector, a Type 30 tube for the first audio frequency stage, and a Type 19 tube as output (class "B" amplifier). These are the Philco low-current drain two-volt tubes.

The Model 38 is designed to be used with the Philco Type 172-R two-volt storage battery and Philco Type "P-9068" "B"/"C" battery; the Model 38-A with the Philco Type "P-896" dry "A" battery and Philco Type "P-9068" "B"/"C" battery.

Tube Socket Voltages

All Voltages Measure to Ground or -F

	1A6	32 (I.F.)	32 (2nd Det.)	30	19
Plate....	127	127	50	126	126
Screen Grid...	G ₂ 82	64	22
Grid.....	G ₁ -10	G ₁ -2.9 G ₂ -2.9

Above voltages measured with a high resistance D. C. voltmeter, using test prods applied to sockets underneath chassis (see Fig. 2). Philco Model 025 circuit tester is recommended for these tests.

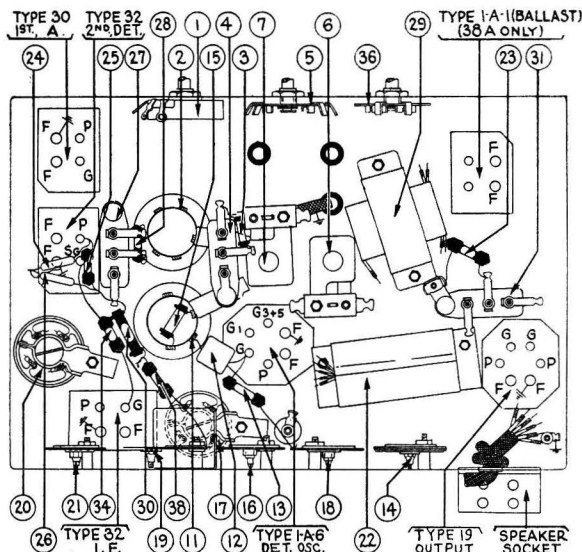


FIG. 2—Bottom of Chassis Showing Parts; and Sockets for Testing Voltages

The filament ("A") supply should **never** exceed two volts at the tube socket terminals of either Model. The Type 1A1 tube acts as a voltage-regulator, and maintains a constant "A" potential to the filaments of the Model 38-A. The filament current drain upon the "A" battery is 720 milliamperes. The "B" battery current drain varies between 8 and 12 milliamperes,—at 135 volts. The intermediate frequency of the superheterodyne circuit is 460 kilocycles.

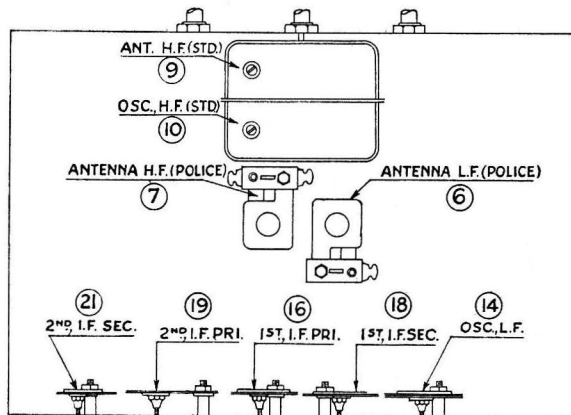


FIG. 1—Locations of Compensating Condensers
NOTE: Condensators ⑨ and ⑩ are shown as viewed from top of chassis; all others in position seen from bottom.

Adjusting Compensating Condensers

Adjustment of compensating condensers in Model 38 requires the use of an accurate signal generator (such as the Philco Model 024), an output meter (Philco Model 012 or 025 are recommended) and a special adjusting wrench (Philco No. 3164). The I. F. or intermediate frequency of the set is 460 K. C. Refer to Fig. 1 for locations of compensating condensers.

I. F.—Set signal generator at 460 K. C. Remove grid clip from cap of 1A6 tube and connect antenna lead from signal generator to cap of tube, connect ground lead to ground post of set. Set dial of receiver at 550 and wave band switch at left. See that set is connected to batteries and volume control full "on." Connect output meter to primary terminals of output transformer (in chassis). Turn "on" the receiver and signal generator. Adjust the four I. F. compensating condensers ⑬, ⑭, ⑮ and ⑯ to give maximum response in the output meter. These adjustments are all made from the rear of the chassis through holes in sub-base.

ANT. H. F. and OSC. H. F. (standard wave)—These are condensers ⑨ and ⑩ located on top of the tuning condenser assembly and adjusted from above. ⑨ is the one nearest the front of chassis. Set signal generator at 1500. Replace grid clip on cap of 1A6 tube and connect antenna and ground leads from signal generator direct to antenna and ground posts of set. Turn dial of set to 150 and adjust condensers ⑨ and ⑩ for maximum reading in output meter.

OSC. L. F. (standard wave)—Set signal generator at 600 and turn dial of set to 60. Adjust condenser ⑭, reached from rear of chassis, to give maximum reading in output meter.

ANT. H. F. and L. F. (police band)—Turn wave band switch to the right. Set signal generator at 2400 and dial at 2.4 (lower scale). Adjust condenser ⑦ to give maximum response in output meter. Now turn dial to 1.5 and set signal generator at 1500. Adjust condenser ⑥ for maximum response. Condensers ⑥ and ⑦ are reached through the two holes in top of chassis to rear of tuning condenser assembly.

NOTE: If reading on output meter is too great during adjustments, turn down "attenuator" on signal generator.

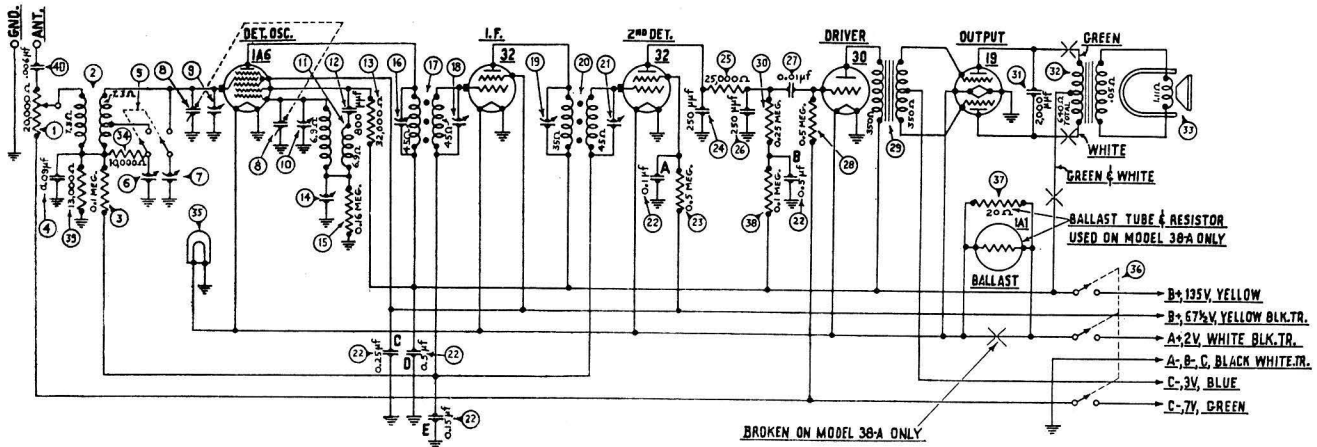
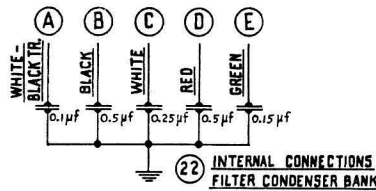


FIG. 3—Schematic Wiring Diagram



Replacement Parts—Model 38 (Code 123)

Part No.	List Price	Part No.	List Price
① Volume Control.....	33-5017 \$1.00	⑳ Condenser (.01 mfd. Bakelite Block).....	3903-Z \$0.25
② Antenna Transformer.....	32-1518 .60	㉑ Resistor (.5 meg.) (Yellow-White-Yellow).....	6097 .20
③ Resistor (.1 meg.) (White-White-Yellow).....	6099 .20	㉒ Audio Transformer.....	7233 1.80
④ Condenser (.09 mfd. Bakelite Block).....	4989-F .35	㉓ Resistor (.25 meg.) (Red-Yellow-Yellow).....	4410 .20
⑤ Wave-band Switch.....	42-1039 .45	㉔ Condenser (.002 mfd. mica).....	7296-C .25
⑥ Compensating Condenser (Ant. L. F.-Police).....	04000-S .35	㉕ Output Transformer.....	32-7286 1.60
⑦ Compensating Condenser (Ant. H. F.-Police).....	04000-D .15	㉖ Voice Coil & Cone Assembly (KR-7).....	36-3159 .80
⑧ Tuning Condenser Assembly.....	31-1401 3.50	㉗ Resistor (10000 ohms) (Brown-Black-Orange).....	33-1000 .20
⑨ Compensating Condenser (Ant. H. F.).....	Part of ⑧	㉘ Pilot Lamp (dial).....	5316 .23
⑩ Compensating Condenser (Osc. H. F.).....	Part of ⑧	㉙ On-Off Switch.....	42-1040 .65
⑪ Oscillator Transformer.....	32-1519 .60	㉚ Ballast Tube Resistor (20 ohms)	
⑫ Condenser (.0008 mfd. mica).....	5878 .35	(Used on Model 38-A only).....	33-3043 .25
⑬ Resistor (32000 ohms) (Orange-Red-Orange).....	5279 .20	㉛ Resistor (.1 meg.) (White-White-Yellow).....	6099 .20
⑭ Compensating Condenser (Osc. L. F.).....	04000-S .35	㉜ Resistor (13000 ohms) (Brown-Orange-Orange).....	33-1160 .20
⑮ Resistor (160000 ohms) (Brown-Blue-Yellow).....	33-1191 .20	㉝ Condenser (.006 mfd.).....	30-4125 .25
⑯ Compensating Condenser (1st I. F. Pri.).....	04000-A .15	Dial Assembly.....	31-1408 .30
⑰ First I. F. Transformer.....	32-1251 1.05	Scale.....	27-5068 .13
⑱ Compensating Condenser (1st I. F. sec.).....	04000-A .15	4 Prong Socket.....	7545 .11
⑲ Compensating Condenser (2nd I. F. pri.).....	04000-A .15	6 Prong Socket.....	7547 .11
⑳ Second I. F. Transformer.....	32-1252 1.05	Speaker Socket.....	7828 .10
㉑ Compensating Condenser (2nd I. F. sec.).....	04000-A .15	Shorting Jumper (Ballast Tube Socket).....	28-8061 .014
㉒ Filter Condenser Block (.25-.5-.15-.1-.5).....	03915 1.30	Tube Shield (Fits Inside Base).....	28-1107 .10
㉓ Resistor (.5 meg.) (Yellow-White-Yellow).....	4517 .20	Tube Shield (Fits Over Base).....	8005 .10
㉔ Condenser (.00025 mfd. mica).....	3082 .35	Battery Cable Assembly (With Plug).....	38-5265 .95
㉕ Resistor (25000 ohms) (Red-Green-Orange).....	4516 .20	Knob.....	27-4052 .10
㉖ Condenser (.00025 mfd. mica).....	3082 .35		

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