PHILCO

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Price change effective after Sept. 15, 1933.

Service Bulletin — No. 166

Models 38 and 38-A

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 6 ballast tube. The frequency range is 520 to 2470 kilocycles, and a wave-band switch permits the selection of either the standard broadcast or police and amateur radiophone signals. 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 6 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 6 ballast tube which **must** be used with the receiver operating on dry "A" battery. A 30-ohm resistor is used across the filament of the Type 6 ballast tube.

The Models 38 and 38-A employ a Philco Type 15 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-962" "B"/"C" battery; the Model 38-A with the Philco Type "P-166" dry "A" battery and Philco Type "P-962" "B"/"C" battery.

The filament ("A") supply should **never** exceed two volts at the tube socket terminals of either Model. The Type 6 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.

Table 1—Tube Socket Data*

CIRCUIT	Det.-Osc.	I. F.	2nd. Det.	1st. A. F.	Output
TYPE TUBES	**15**	**32**	**32**	**30**	**19**
Filament Volts—F to F.....	1.9	1.9	1.9	1.9	1.9
Plate Volts—P to F.....	135 (P to K)	135	40	135	135
Screen Grid Volts—SG to F..	67 (SG to K)	67	25	..	..
Control Grid Volts—CG to F	4. (CG to K)	.15	.15	.15	3 (To Gnd.)
Cathode Volts—K to F.....	5	..	..	..	..

*The above values were obtained from the underside of the chassis, using test prods and leads, with a high-resistance multi-range D. C. voltmeter. The Philco Model 048 All Purpose Set Tester is highly recommended for all tests of this character. Receiver volume control at maximum; station selector at 520 kilocycles. Readings taken with a plug-in adapter will **not** be satisfactory.

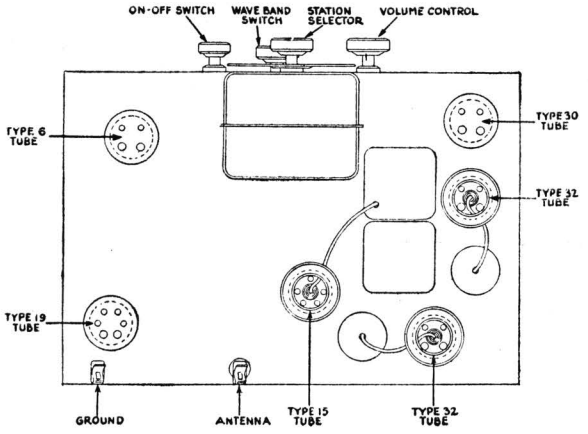


Fig. 1—Top View of Chassis, Showing Tube Locations. NOTE: Model 38 does not use Type 6 tube.

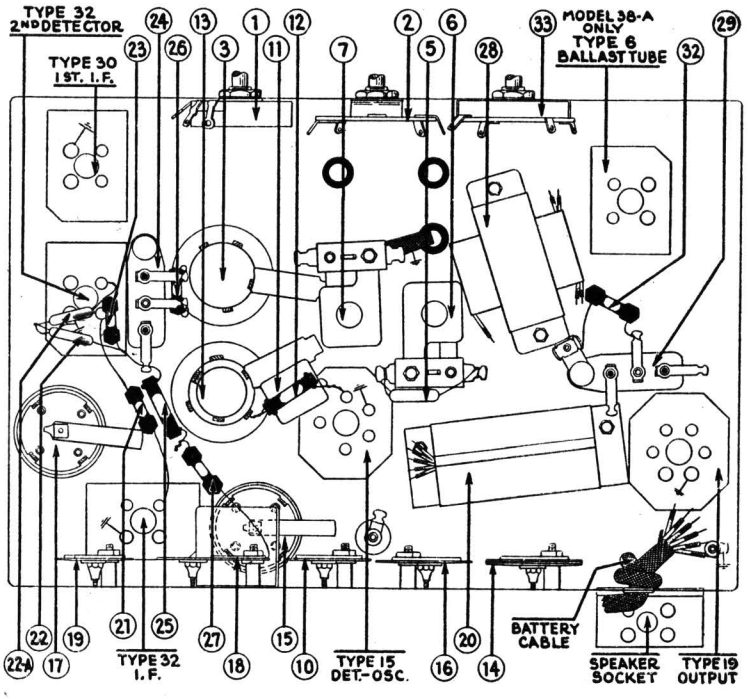
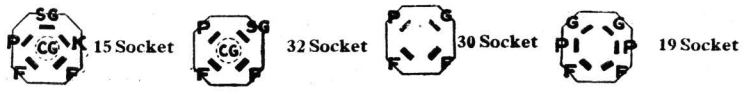


Fig. 2—Bottom View of Chassis, Showing Parts.



Terminal Arrangement of Tube Sockets, Viewed from Under Side of Chassis.

Adjustment of Models 38, 38-A

These receivers are adjusted accurately before shipment from the factory. Adjustments of the compensating condensers with which the receivers are equipped should be undertaken **only** when proper equipment is available, and full instructions are at hand. Your distributor can supply both. The **Philco Model 048 All-Purpose Set Tester** is recommended. It contains an accurately calibrated signal generator.

The adjustment of the compensating condensers is similar to the method described in Service Bulletin No. 120-C.

The location of the compensating condensers may be learned by referring to Fig. 3 of the present bulletin for their electrical location in the circuit; to Fig. 2 of this bulletin for the physical location of the compensating condensers underneath and at the rear of the chassis.

The intermediate frequency compensating condensers first should be adjusted. These condensers are identified as ⑩, ⑯, ⑱, and ⑲; they are situated at the rear of the chassis, and are shown in Fig. 2. They are accessible from the rear of the chassis. The intermediate frequency is 460 K.C.

The H.F.; Ant. (Broadcast) ⑧ and H.F.; Osc. ⑨ compensating condensers are situated upon the tuning condenser assembly, and these should next be adjusted. ⑧ is mounted upon the section nearest the front. Both are accessible from top of chassis, as is the H.F.; Ant.; (Police) ⑦, which also should be adjusted at this time. ⑦ is reached through an opening in the chassis sub-base, to the rear and left of the tuning condenser, facing front of chassis.

Next, the L.F.; Ant.; (Police) ⑥ and L.F.; Osc. ⑭ are adjusted. ⑥ is accessible through an opening in the chassis sub-base, to the right of ⑦ and behind the tuning condenser. ⑭ is situated along the rear underside of the chassis, and is accessible from chassis' rear.

Following the adjustments outlined above, the I.F. compensating condensers should finally be re-trimmed.

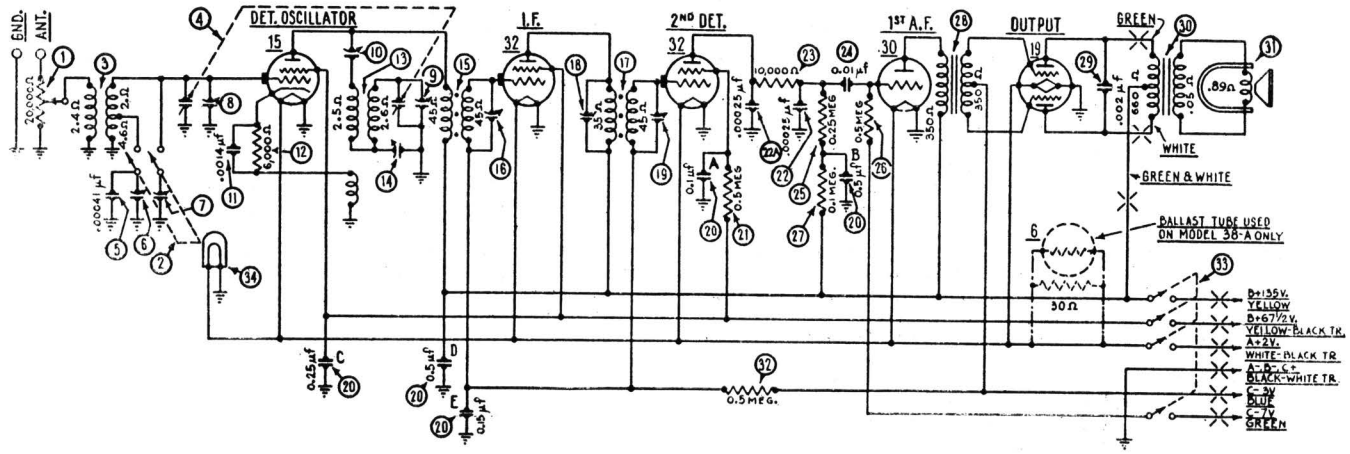
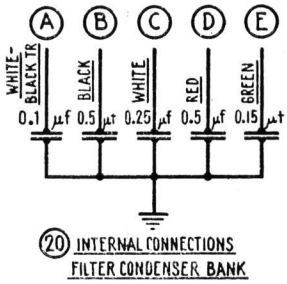


Fig. 3—Schematic Wiring Diagram



REPLACEMENT PARTS FOR MODELS 38 AND 38-A

No. on Figs.	Description	Part No.	List Price
(1)	Volume Control	33-5017	....
(2)	Wave-Band Switch	42-1039	....
(3)	Antenna Transformer	32-1208	....
(4)	Tuning Condenser Assembly	31-1076	....
(5)	Condenser (.00041)	30-1000	$0.20
(6)	Compensating Condenser (Ant.; L.F.; Police)	04000-S	.25
(7)	Compensating Condenser (Ant.; H.F.; Police)	04000-X	.16
(8)	Compensating Condenser (Ant.; H.F.; Part of (4))	.....	....
(9)	Compensating Condenser (Osc.; H.F.; Part of (4))	.....	....
(10)	Compensating Condenser (1st. I.F. Primary)	04000-A	.12
(11)	Condenser (.0014)	7007	.25
(12)	Resistor (6,000) (Blue-Black-Red)	7352	.20
(13)	Oscillator Transformer	32-1209	....
(14)	Compensating Condenser (Osc.; L.F.)	04000-S	.25
(15)	1st. I.F. Transformer	32-1251	....
(16)	Compensating Condenser (1st. I.F. Secondary)	04000-A	.12
(17)	2nd. I.F. Transformer	32-1252	....
(18)	Compensating Condenser (2nd. I.F. Primary)	04000-A	.12
(19)	Compensating Condenser (2nd. I.F. Secondary)	04000-A	.12
(20)	Filter Condenser Bank	03915	1.10
(21)	Resistor (.5 meg.) (Yellow-White-Yellow)	4517	.20
(22)	Condenser (.00025)	3082	.20
(22)A	Condenser (.00025)	3082	.20
(23)	Resistor (10,000) (Brown-Black-Orange)	4412	.20
(24)	Condenser (.01)	3903-Z	$0.14
(25)	Resistor (.25 meg.) (Red-Yellow-Yellow)	4410	.20
(26)	Resistor (.5 meg.) (Yellow-White-Yellow)	4517	.20
(27)	Resistor (.1 meg.) (White-White-Orange)	4411	.20
(28)	Input Transformer	7233	1.50
(29)	Condenser (.002)	7296-C	.12
(30)	Output Transformer	2565	1.40
(31)	Voice Coil and Cone Assembly (KR-2)	36-3014	....
(32)	Resistor (.5 meg.) (Yellow-White-Yellow)	4517	.20
(33)	Switch ("On-Off"; Battery)	42-1040	....
(34)	Pilot Lamp (Station Selector)	5316	.30
	Resistor (30 ohm) [(Used across Type 6 ballast tube filament; Model 38-A, only)]	7155	.20
	Shorting Jumper (Model 38; across filament terminals; Type 6 tube socket)	28-8061	....
	Tube Shield	28-1107	.10
	Four-prong Tube Socket	7545	.08
	Five-prong Tube Socket	7546	.10
	Six-prong Tube Socket	7547	.10
	Speaker Socket	4957	.08
	Battery Cable Assembly (including multi-plug)	38-5265	....
	Station Selector Dial-scale	27-5019	....
	Knob (large)	03063	.08
	Knob (small)	03064	.06

PHILCO RADIO & TELEVISION CORPORATION
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