



PHILCO

REG. TRADE MARK

Service Bulletin No. 212

Model 339

(Battery Operated—Standard and Short Wave)

PHILCO Model 339 is a battery-operated radio receiver covering two ranges of frequencies: (1) 550 to 1720 kilocycles, which includes standard broadcasts and some police stations; and (2) 5.5 to 16.0 megacycles (5500 to 16000 kilocycles) which includes the majority of American and foreign Short-wave broadcasting stations.

The Model 339 is operated from a 2-volt storage battery or the Eveready SA600 Special air cell (this is not the regular air cell), three 45-volt "B" batteries, and three 4½-volt "C" batteries. The colour code of the battery connections is given in the schematic diagram on page 2.

The lead for the A + Storage is marked with a tab, and the lead for the A + Air Cell is also marked. Use the proper lead for the battery used and tape up the remaining one so that it will not come in contact with any other batteries. The 4½-volt "C" battery used with the red, and red and white tracer wires must not be connected to any other batteries, as this is in the automatic volume control circuit.

Tubes Used—Type 1C6 detector oscillator, type 34 intermediate frequency, type 30 2d detector and A. V. C., type 32 1st audio, type 30 driver and type 19 output (class B).

Current Consumption—A battery: 670 M.A.; B battery: 19 M.A. **Intermediate Frequency**—460 K.C.

Tube Socket Voltages
obtained with PHILCO 025 Tester
(All Voltages Measured to Ground)

	1C6	34	30	32	30	19
Plate.....	130	130	....	45	130	130
Screen Grid.....	66	66	....	30	....	130
Osc. Plate.....	112	....	....	....	....	....

Above voltages obtained by use of Philco type 025 Circuit Tester or 048 All-purpose Tester. Both of these units incorporate a high-resistance voltmeter. Tests made by applying test prods to socket terminals underneath chassis (see Fig. 1).

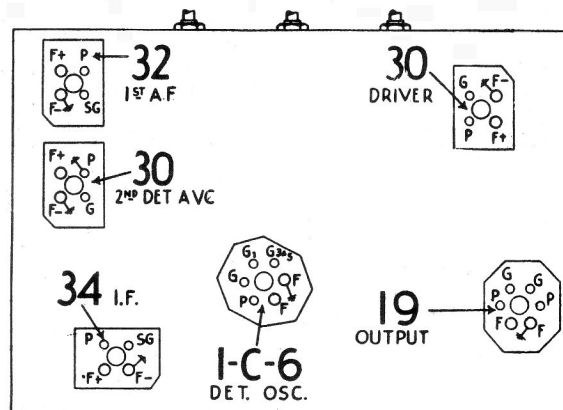


FIG. 1—Bottom View of Tube Sockets for making Voltage Tests

Adjusting Compensating Condensers

The adjustment of compensating condensers in Model 339 requires the use of a signal generator capable of producing a signal on standard broadcast frequencies, and another for the short-waves or high frequencies. For the former we suggest

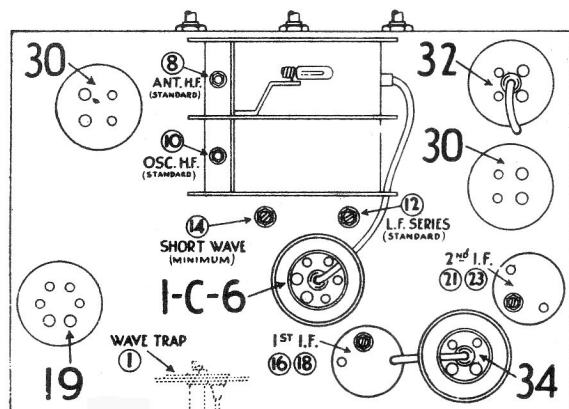


FIG. 2—Locations of Compensating Condensers

Philco Model 024 Signal Generator, and for the Short-wave, Model 091 Crystal Controlled Oscillator. The Model 024 covers frequencies from 105 to 2000 K. C. and the 091 has a fundamental frequency of 3600 K. C. (3.6 M. C.) any harmonic (multiple) of which may be used.

Other equipment needed includes some form of output meter, and a suitable insulated handle wrench and screwdriver for adjusting the condensers. Philco equipment available includes Model 025 or 012 output meter and Part 3164 wrench and 27-7059 screwdriver.

First connect the output meter to the plate contacts of the type 19 output tube.

Adjustments are then made in the following order; positions of all compensators (except number 9 visible in Fig. 4) are shown in Fig. 2.

Adjustment of the Intermediate Frequency

Remove the grid clip from the type 1C6 tube and connect the "ANT." output terminal of the 024 signal generator to the grid cap of the tube. Connect the "GND" terminal of the signal generator to the "GND" terminal of the receiver chassis.

Set the signal generator at 460 K. C. (the intermediate frequency of Model 339) and with the receiver and signal generator turned on, the wave band switch at left and dial at 600

I. F.—460 K. C.

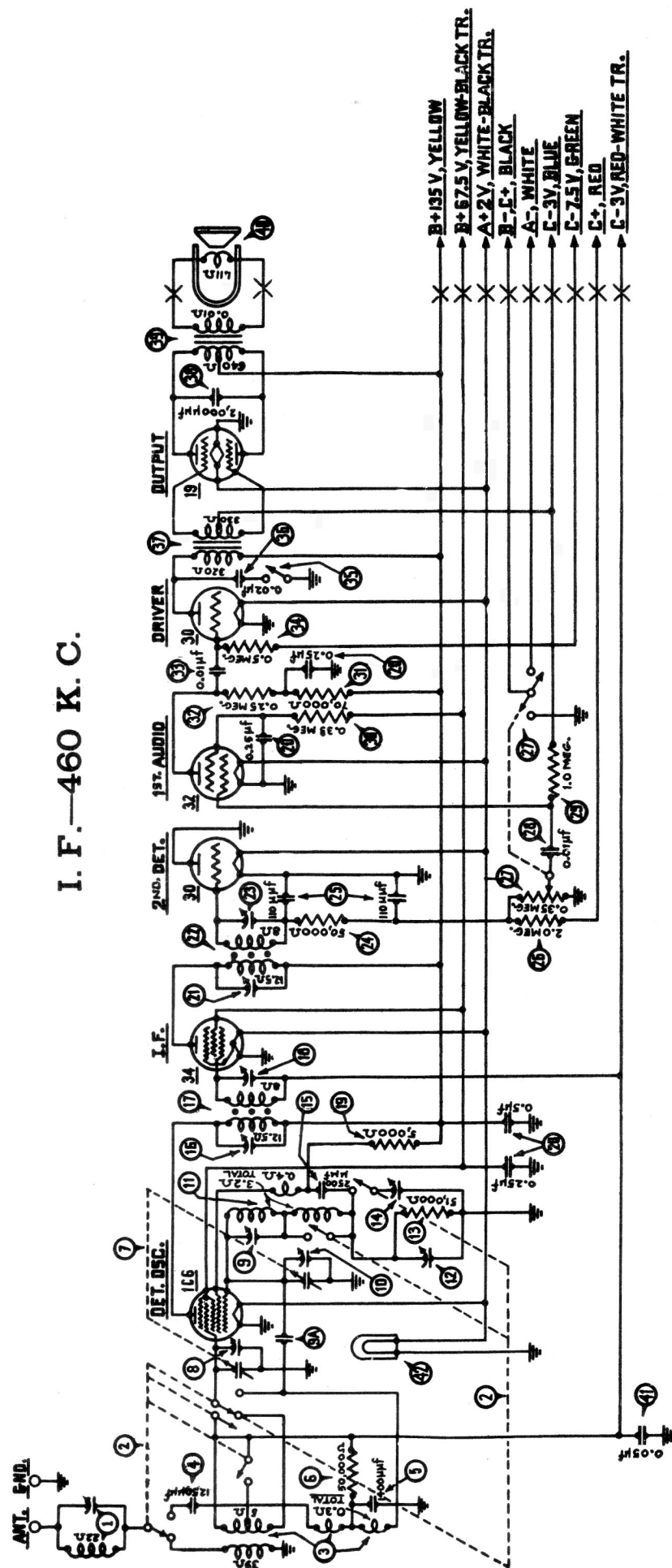


FIG. 3—Schematic Wiring Diagram

K. C., adjust each of the I. F. compensating condensers in turn, to give maximum response in the output meter. If the needle on the meter goes off scale, turn back the attenuator on the signal generator. The two pairs of I. F. compensating condensers are located one pair at the top of each of the two I. F. transformer shields. These are the two metal "cans" near the rear corner of the chassis. Each of the I. F. transformers has a dual compensating condenser mounted at its top, and accessible through a hole in the top of the coil shield. In the dual compensators, the Primary circuit is adjusted by turning the screw; the Secondary circuit is adjusted by turning the hex-head nut. The condenser numbers, referring to Figs. 2 and 3 are ⑩, ⑪, ⑫ and ⑬.

Adjustment of the Wave Trap

Replace the grid clip upon the Detector-Oscillator tube (Type 1C6). Connect the output leads from the 024 signal generator directly to the antenna and ground terminals of the receiver. Set the Wave-Band Switch of the receiver to the standard broadcast band (left position) and the Station Selector at the low frequency (600 K. C.) end. Adjust the Wave Trap condenser to give MINIMUM response to a 460 K. C. signal from the signal generator. The Wave Trap ① is located at rear and underneath the chassis, and is shown in Figs. 2 and 4. It is reached from the rear of the chassis, by inserting the fibre wrench through the hole near rear center of sub-base.

Adjustments for Standard Waves

H. F. end: Set signal generator at 1500 K. C. and dial at 150 (lower scale). Now adjust condensers ⑧ (Antenna) and ⑩ (Oscillator H. F.) to get maximum response. These condensers are located on the tuning condenser assembly and visible in Fig. 2.

L. F. (series): Turn dial to 60 and set signal generator at 600. Adjust condenser ⑫ for maximum output. This is reached from the top, through hole in chassis at rear of tuning condenser (see Fig. 2).

Adjustment of Short-Wave Compensators

The crystal controlled signal generator is used for these adjustments. Connect its leads to antenna and ground posts

of set. Turn the wave band switch to the right, and the 091 signal generator "on." H. F. or maximum: Turn the dial of the set to about half way between 14 and 15 megacycles (top scale) and you should there pick up the 4th harmonic (14.4) of the 3.6 M. C. signal. Adjust the S. W. (maximum) compensator ⑥ (see Fig. 4) to give maximum response in the output meter. This compensator is reached from underneath the chassis.

S. W. (minimum): Turn dial of set to a little more than 7 megacycles at which point the second harmonic of the signal generator (7.2 M. C.) should be heard. Adjust condenser ⑭ (S. W. series) for maximum response. This condenser is reached from above, through hole in top of chassis (see Fig. 2).

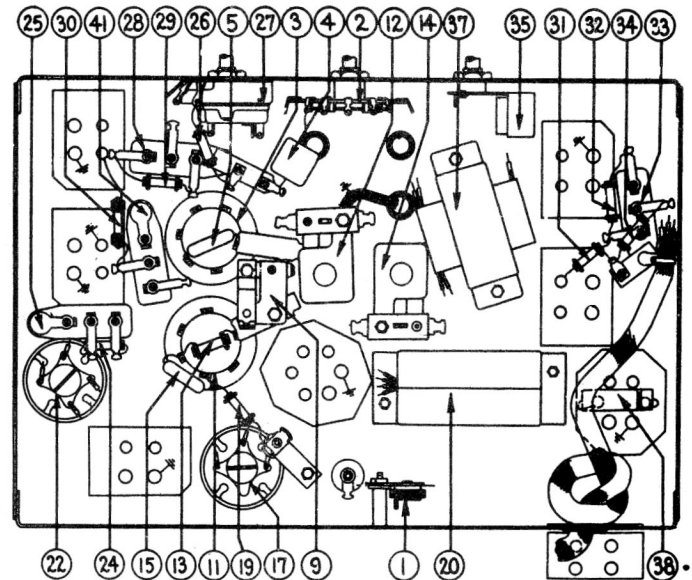


FIG. 4—Bottom View of Chassis

Replacement Parts—Model 339

Nos. on Fig. 3 & 4	Description	Part No.	Canadian List Price
①	Wave Trap.....	38-5994	\$0.70
②	Wave Band Switch.....	42-1092	1.30
③	Antenna Transformer.....	32-1548	2.10
④	Condenser (.00125 mfd. mica).....	5886	.35
⑤	Condenser (.0014 mfd. mica).....	7007	.35
⑥	Resistor (50000 ohms) (Green-Brown-Orange).....	6098	.25
⑦	Tuning Condenser Assembly.....	31-1440	.....
⑧	Compensating Condenser (Ant.).....	Part of ⑦	.....
⑨	Compensating Condenser (S. W. Maximum).....	04000-V	.22
⑨a	Condenser (capacity from twisted wires).....	.....	.....
⑩	Compensating Condenser (Osc. H. F. Bdcst).....	Part of ⑦	.....
⑪	Oscillator Transformer.....	32-1549	1.40
⑫	Compensating Condenser (Osc. L. F. Bdcst).....	04000-S	.45
⑬	Resistor (50000 ohms) (Green-Brown-Orange).....	6098	.25
⑭	Compensating Condenser (Short-wave Minimum).....	04000-R	.55
⑮	Condenser (.0025 mfd. mica).....	7006	.40
⑯	Compensating Condenser (1st I. F. pri.).....	Part of ⑰	.....
⑰	1st I. F. Transformer.....	32-1550	2.45
⑱	Compensating Condenser (1st I. F. sec.).....	Part of ⑰	.....
⑲	Resistor (5000 ohms) (Green-Black-Red).....	6096	.25
⑳	Condenser (Metal Case, 4 sec.: .5, .25, .25, .25 mfd.).....	30-4253	1.70
㉑	Compensating Condenser (2nd I. F. pri.).....	Part of ㉒	.....
㉒	2nd I. F. Transformer.....	32-1551	2.40
㉓	Compensating Condenser (2nd I. F. sec.).....	Part of ㉒	.....
㉔	Resistor (50,000 ohms) (Green-Brown-Orange).....	6098	.25
㉕	Condenser (.0001 mfd. twin bakelite block).....	8035-C	.30
㉖	Resistor (2 meg.) (Red-Black-Green).....	33-1025	.25
㉗	Volume Control & On-Off Switch.....	33-5020	2.10

*Do not show in Fig. 4.

Nos. on Fig. 3 & 4	Description	Part No.	Canadian List Price
㉘	Condenser (.01 mfd. bakelite block).....	3903-AD	\$0.30
㉙	Resistor (1 meg.) (Brown-Black-Green).....	33-1096	.30
㉚	Resistor (330000 ohms) (Orange-Orange-Yellow).....	6046	.25
㉛	Resistor (70000 ohms) (Violet-Black-Orange).....	33-1115	.25
㉜	Resistor (.25 meg.) (Red-Yellow-Yellow).....	33-1097	.30
㉝	Condenser (.01 mfd. bakelite block).....	3903-AD	.30
㉞	Resistor (5 meg.) (Yellow-White-Yellow).....	6097	.25
㉟	Tone Control (2 pt.).....	30-4251	.70
㊱	Condenser (in tone control).....	Part of ㉟	.....
㊲	Audio Transformer.....	7223	2.25
㊳	Condenser (.002 mfd. tubular).....	30-4177	.35
㊴	Output Transformer.....	32-7286	2.60
㊵	Cone & Voice Coil Assembly (KR-7 Speaker).....	36-3159	1.10
㊶	Condenser (.05 mfd. bakelite block).....	3615-BC	.40
㊷	Pilot Lamp (dial).....	5316	.30
㊸	Dial Assembly.....	31-1471	.55
㊹	Tube Shield (fits over base).....	8005	.10
㊺	Tube Shield (fits inside base).....	28-1107	.10
㊻	Tube Socket (4-prong).....	7545	.20
㊼	Tube Socket (6-prong).....	7547	.15
㊽	Chassis Mounting Screw.....	W-567	per C 3.36
㊾	Chassis Mounting Washer (339-S).....	5058	per C .85
㊿	Chassis Mounting Washer (339-L).....	W-315A	per C .50
1	Chassis Mounting Washer (rubber).....	5189	.04
2	Knob.....	27-4052	.10
3	Battery Cable Assembly.....	L-1837	3.15
4	Ballast Tube Jumper Wire.....	28-8061	.03