PHILCO Service Manual . . . . Model 623

SERVICE BULLETIN
No. 225

For Members of
RADIO MANUFACTURERS SERVICE
A PHILCO SERVICE PLAN

Model 623

General Specifications

Type Circuit: Superheterodyne, with Class B output; built in connections for Philco All-wave aerial; aerial selector built into and operated by wave-band switch.

Power Supply: Battery operated; Model 623 uses a 2-volt storage battery (Philco 172-R). Model 623-A uses dry A battery (Philco P-896). Both sets use a dry combination "B" & "C" battery unit (Philco P-9068). This has a socket into which the plug on the battery cable attached to chassis is to be inserted.

Tubes Used: 1 type 1C6, Detector-Oscillator; 1 type 34, I.F.; 1 type 30, 2d Detector and A.V.C.; 1 type 32 1st A.F.; 1 type 30, driver; 1 type 19 output. Model 623-A has also a ballast tube, type 6, to maintain constant filament voltage on all tubes. The socket for this tube exists in both 623 and 623-A chassis, but in the former, the type 6 tube is not used, and the filament contacts of the socket are shorted by a metal jumper.

Wave Bands: Three—(1) Standard (with some Police); (2) Police; (3) Short-wave.

Coverage of Each Band: Band 1, 530–1720 K.C.; Band 2, 2300 to 2500 K.C. (2.3–2.5 M.C.); Band 3, 5700–18,000 K.C. (5.7 to 18.0 megacycles).

Tuning Drive: Dual gear drive, ball bearing. 50 to 1 ratio for slow-speed tuning, 6 to 1 on main shaft.

Tone Control: 2-Position.

Intermediate Frequency: 460 K.C.

Current Consumption: A battery, .67A; B battery, 19 M.A.

TUBE SOCKET VOLTAGES

(Measured from Tube Contact to -B)

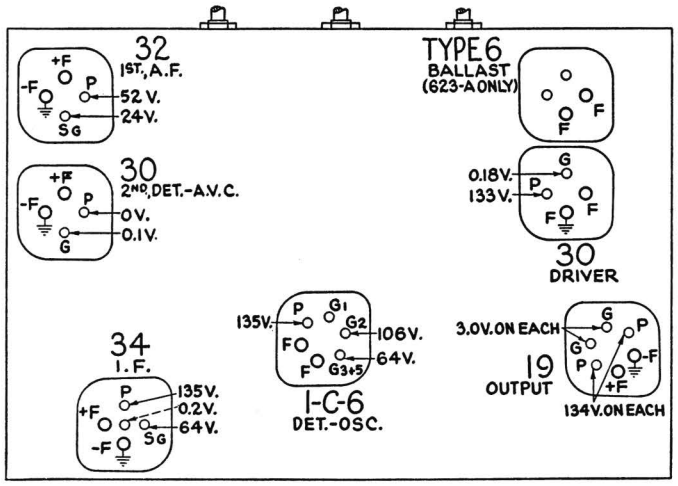

Fig. 1

Bottom View of Sockets, Showing Voltage

The voltages at the points indicated by the arrows above were obtained with a Philco type 025 Circuit Tester which contains a high resistance (1000 ohms per volt) voltmeter. Volume control at minimum, waveband switch at standard broadcast. KR-8 speaker.

Adjusting Compensating Condensers

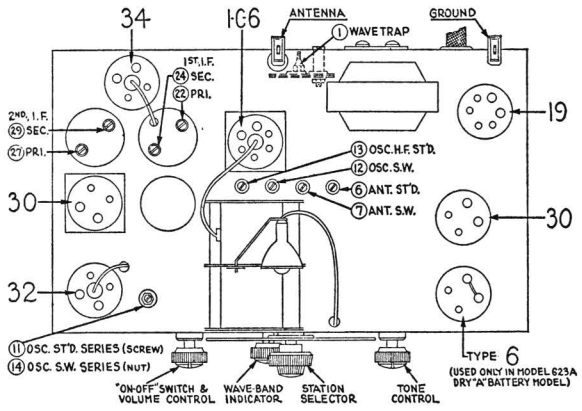

Fig. 2

The adjustment of the compensating condensers in Model 623 requires a signal generator covering the broadcast and police band, and also one capable of producing a signal at certain frequencies in the short wave band. The Philco Model 088 All-Wave Signal Generator covers these requirements perfectly. An output meter is also required. Philco Model 025 or 012 unit is recommended. The location of all compensating condensers is shown in Fig. 2.

Adjustment of I.F.

1. Remove the antenna connection from the receiver, disconnect the grid clip from the first detector (type 1C6 tube), and connect the "ANT" output terminal of the signal generator to the grid cap of this tube; connect the "GND" terminal of the signal generator to the "GND" terminal of the receiver.

2. Connect the "025" output meter adapter leads to the plate and one filament contact of the type 30 driver tube. Set it at the 0–30 volt range.

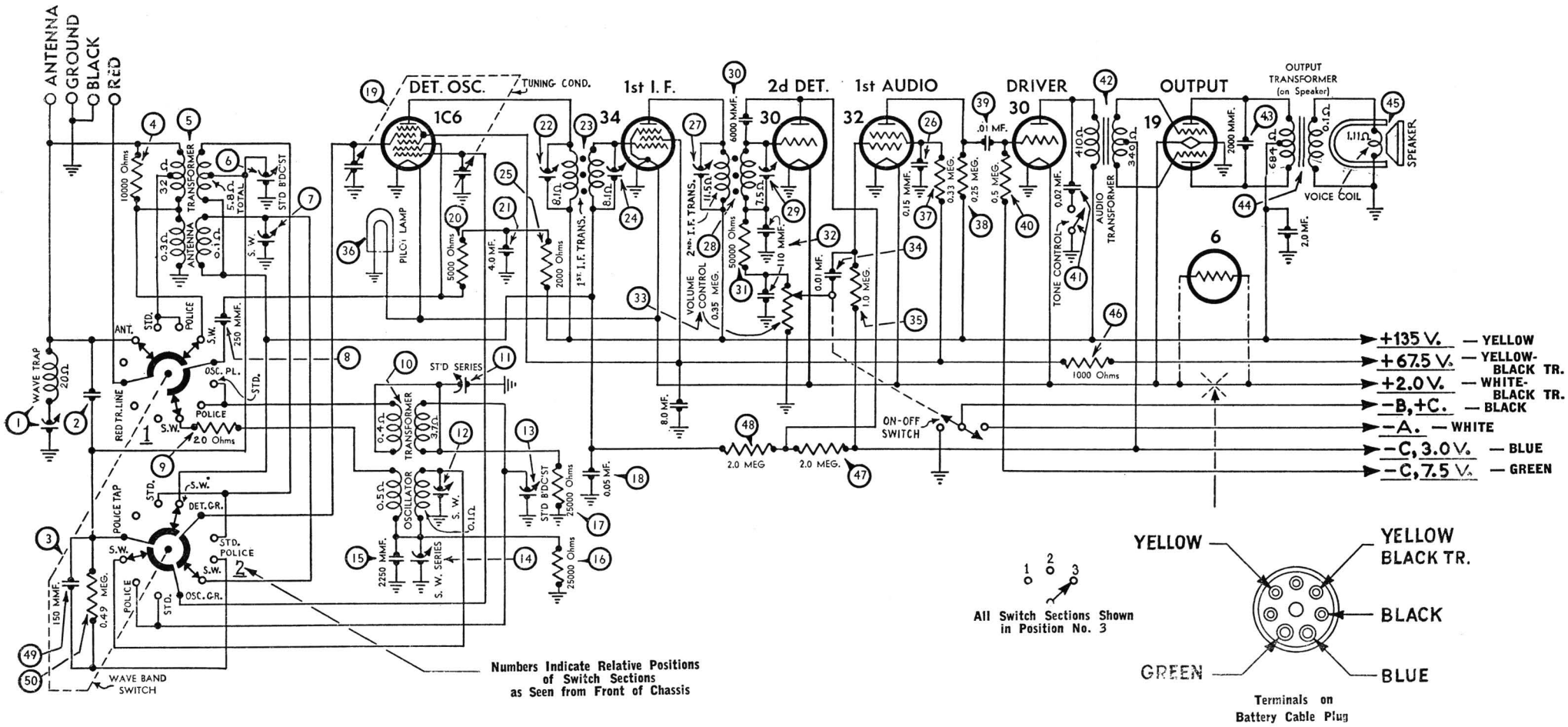

Fig. 3 — Schematic, Model 623

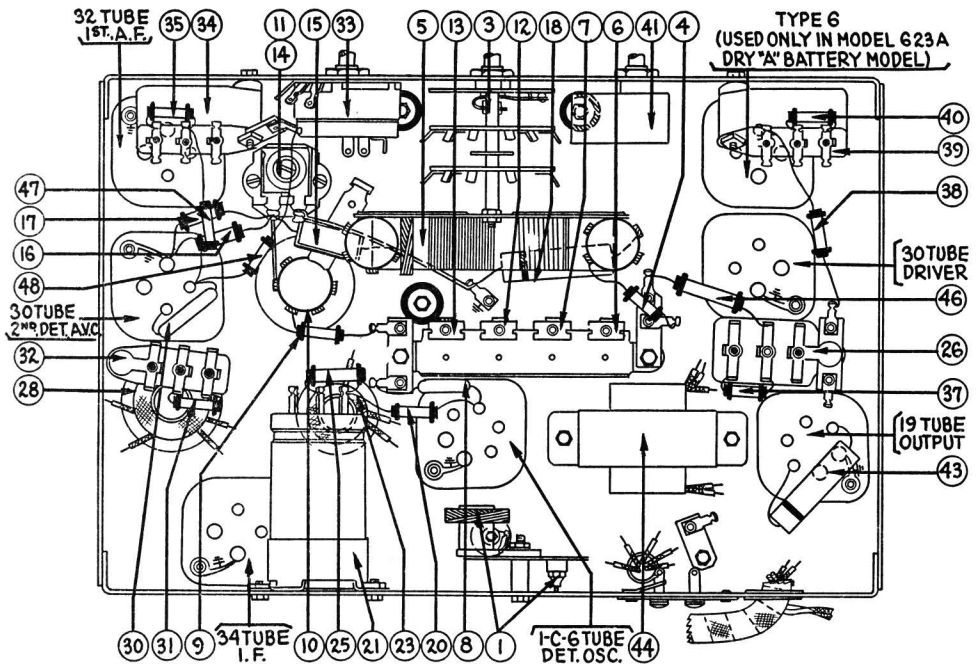

Fig. 4

Replacement Parts—Model 623

Nos. in Figs. 3 & 4	Description	Part No.	List Price
①	Wave Trap	38-6850	$1.10
②	Condenser (Capacity obtained by Twisted Wires)	.....	....
③	Waveband Switch	42-1112	1.10
④	Resistor (10000 ohms) (Brown, Black, Orange)	33-1000	.20
⑤	Antenna Transformer	32-1669	1.15
⑥	Compensating Condenser (Ant. Standard)	Part of 31-6047	.50
⑦	Compensating Condenser (Ant. S.W.)	Part of 31-6047	
⑧	Condenser (.00025 Mfd. Mica)	30-1032	.35
⑨	Resistor (20 ohms) (Red, Black, Black)	33-1206	.20
⑩	Oscillator Transformer	32-1831	1.50
⑪	Compensating Condenser (Osc. L.F. Standard)	Part of 31-6027	.70
⑫	Compensating Condenser (Osc. S.W., H.F. End)	Part of 31-6047	.50
⑬	Compensating Condenser (Osc. H.F. Standard)	Part of 31-6047	
⑭	Compensating Condenser (Osc. S.W. Series)	Part of 31-6027	.70
⑮	Condenser (.00225 Mfd. Mica)	30-1055	.40
⑯	Resistor (25000 ohms) (Red, Green, Orange)	33-1013	.20
⑰	Resistor (25000 ohms) (Red, Green, Orange)	33-1013	.20
⑱	Condenser (.05 Mfd. Tubular)	30-4020	.35
⑲	Tuning Condenser Assembly	31-1526	2.75
⑳	Resistor (5000 ohms) (Green, Black, Red)	6096	.20
㉑	Condenser (Electrolytic) (4 Mfd., 8 Mfd., 2 Mfd.)	30-2127	1.50
㉒	Compensating Condenser (1st I.F. Primary)	Part of ㉓	....
㉓	1st I.F. Transformer	32-1793	1.35
㉔	Compensating Condenser (1st I.F. Secondary)	Part of ㉓	....
㉕	Resistor (2000 ohms) (Red, Black, Red)	33-1028	.20
㉖	Condenser (.15 Mfd. Bakelite Block)	6287-SG	.35
㉗	Compensating Condenser (2nd I.F. Primary)	Part of ㉘	....
㉘	2nd I.F. Transformer	32-1672	1.35
㉙	Compensating Condenser (2nd I.F. Secondary)	Part of ㉘	....
㉚	Condenser (.006 Mfd. Mica)	6359	.60
㉛	Resistor (50000 ohms) (Green, Brown, Orange)	6098	.20
㉜	Condenser (.00011 Mfd. Twin Bakelite Block)	8035-DG	.25
㉝	Volume Control and On-Off Switch	33-5115	1.45
㉞	Condenser (.01 Mfd. Bakelite Block)	3903-SU	.25
㉟	Resistor (1 Meg.) (Brown, Black, Orange)	33-1096	.20
㊱	Pilot Lamp	34-2065	.35
㊲	Resistor (330000 ohms) (Orange, Orange, Yellow)	33-1200	$0.20
㊳	Resistor (250000 ohms) (Red, Yellow, Yellow)	33-1097	.20
㊴	Condenser (.01 Mfd. Bakelite Block)	3903-SU	.25
㊵	Resistor (.5 Meg.) (Yellow, White, Yellow)	6097	.20
㊶	Tone Control	30-4344	.50
㊷	Audio Transformer (On Top of Chassis)	32-7454	1.60
㊸	Condenser (.002 Mfd. Tubular)	30-4177	.25
㊹	Output Transformer (On Chassis)	32-7453	1.50
㊺	Cone & Voice Coil Assembly (KR-8 Speaker)	36-3159	.80
㊻	Resistor (1000 ohms) (Brown, Black, Red)	5837	.20
㊼	Resistor (2 Meg.) (Red, Black, Green)	33-1025	.20
㊽	Resistor (2 Meg.) (Red, Black, Green)	33-1025	.20
*㊾	Condenser (.00015 Mfd. Mica)	30-1033	.35
*㊿	Resistor (.5 Meg.) (Yellow, White, Yellow)	6097	.20
	Dial Scale	27-5097	.25
	Dial Hub Assembly	31-1550	.15
	Dial Spring Clamp	28-2837	.10
	‡Bezel (623-B)	‡28-3163	.50
	‡‡Bezel Glass (623-B)	‡‡27-8006	.55
	Tube Socket (4-Prong)	27-6044	.10
	Tube Socket (6-Prong)	27-6036	.11
	Tube Shield (Round)	8005	.10
	Tube Shield Base (Round)	8004	.01
	Tube Shield (Square)	28-2726	.10
	Tube Shield Base (Square)	28-2725	.03
	Knob (Waveband)	27-4219	.10
	Knob (Tone, Volume)	27-4208	.10
	Knob (Station Selector)	27-4206	.12
	Knob (Slow Speed)	27-4207	.10
	Chassis Mtg. Screw	W-1496A	1.60 C
	Chassis Mtg. Washer (Rubber)	27-4198	.01
	Chassis Mtg. Bumper (Rubber)	27-4197	2.50 per C
	Battery Cable	41-3143	1.25
	Ballast Tube Socket Jumper Wire	28-8061	.014
	‡623-F Bezel	28-3164	.50
	‡‡623-F Bezel Glass	27-8007	.55

*Not shown in Fig. 4.

3. Adjust the signal generator to a frequency of 460 K.C. Place the receiver in operation with the dial turned to the low frequency end of the standard broadcast band, wave band switch to extreme left (clockwise), and have the volume control adjusted near its maximum setting. Adjust the signal generator attenuator for approximately half-scale reading of the output meter.

4. The I.F. compensating condensers are located at the tops of the I.F. coil shields and adjusted by turning the two screws in top. Adjust condensers (27) and (28) (2d I.F. primary and secondary) for maximum reading in the output meter, and then condensers (22) and (24) (1st I.F. primary and secondary).

Adjustment of Wave-Trap

1. Connect the signal generator leads to the antenna and ground terminals of the receiver. Replace the grid clip on the 1C6 grid cap.

2. With the wave-band switch of the receiver still in the extreme left (broadcast position), turn the station selector to 550 K.C.

3. With the signal generator in operation at 460 K.C., adjust the wave-trap (1) condenser until a MINIMUM reading is obtained on the output meter. The wave-trap compensator is reached from rear of chassis.

Adjustment of High and Low Frequency Compensators

1. With the wave-band switch still at Position No. 1 (broadcast band), set the dial at 150 K.C. Set the signal generator at 1.5 M. C. and adjust compensators (13) and (6) for maximum output. These are the oscillator and antenna "H.F. standard" compensators respectively.

2. Tune the receiver and the signal generator to 600 K.C. and adjust compensator (11) (screw) for maximum output. This is the oscillator standard series (L.F.) compensator.

3. Turn the wave-band switch to the extreme right (short-wave band) and adjust the station selector to 18.0 megacycles. Set the signal generator at 18 M.C. Adjust the oscillator S.W., and antenna S.W. compensators for maximum reading in the output meter. These are numbered (12) and (7) respectively in figure No. 2.

4. Turn the tuning dial to 6.0 M.C., set the signal generator at 6.0 M.C., and adjust condenser (14) osc. series (S.W.) (nut) to maximum signal.