Model 655

General Specifications

**TYPE CIRCUIT:** Superheterodyne, with preselector R.F. amplifier, and push-pull triode output (10 watts); built in connections for Philco All-wave aerial; aerial selector built into and operated by wave-band switch.

**POWER SUPPLY:** 115v., 60 cycle A.C.

**TUBES USED:**
- 1 type 78, R.F.
- 1 type 6A7, Detector-Oscillator
- 1 type 78, I.F.
- 1 type 75, 2d Detector and 1st A.F.
- 1 type 42, Driver
- 2 type 42's, Push-Pull, Output
- 1 type 80, Rectifier.

**WAVE BANDS:** Three: (1) Short-wave; (2) Police, aircraft and amateur; (3) Standard.

**COVERAGE OF EACH BAND:**
- Band 1: 5.75-18 M.C.
- Band 2: 1.75-5.8 M.C.
- Band 3: 340-1750 K.C.

**TUNING DRIVE:** Dual planetary, ball bearing, 80 to 1 ratio for slow-speed tuning; glowing arrow wave band indicator.

**PROGRAM CONTROL:** 4-position, with bass compensation effective in first position (counter-clockwise).

**INTERMEDIATE FREQUENCY:** 465 K.C.

**POWER CONSUMPTION:** 100 watts.

**SPEAKER:** 655 Baby Grand Model—K17; Furniture Model—H13.

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**Fig. 1. R.F. Transformers**

**Fig. 2. I.F. Transformers**

**Fig. 3. Tubes as Viewed from Bottom**

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. K17 speaker.
Adjusting Compensating Condensers

Adjustment of compensating condensers in Model 655 requires an accurate signal generator covering I.F., standard-wave, police and short-wave frequencies. The PHILCO Model 088 All-Wave Signal Generator, having a continuous range of from 100 to 20,000 K.C., is ideal for this purpose.

An output meter is also needed. PHILCO Model 023 Circuit Tester includes a high grade output meter.

Philco No. 3104 fibre wrench and No. 27-7059 fibre-handled screwdriver complete the equipment needed for making these adjustments. The locations of the various compensating condensers are shown in Fig. 4. Connect the output meter to the plate contacts of the type 42 output tubes (using the adapters provided with the "025") and set it at the 0-30 volt range.

INTERMEDIATE FREQUENCY: Set the signal generator at 460 K.C. with attenuator set at minimum, connect a 0.001 mf. condenser in series with its antenna lead and attach it to the grid cap of the 78 I.F. amplifier tube. Connect ground lead to ground terminal on set. Set the dial at 55 and turn the waveband switch to position 3 (extreme left). Adjust the volume control of set to almost maximum, and the 088 attenuator so that about one-fourth (1/4) scale reading is had on the output meter. With a fibre screwdriver adjust condensers @ and @ (2nd I.F.) for maximum reading on output meter. Turn attenuator of signal generator to minimum and remove its antenna lead from the grid of the 78 I.F. tube; place it on the grid of the 6A7. Adjust 088 attenuator as before, then proceed to adjust condensers @ and @ (1st I.F.) for maximum output meter reading. Then remove the 088 oscillator lead. Care should be taken to keep the output meter reading during adjustments at about one-fourth scale reading. This should be done by using the 088 attenuator control.

WAVE TRAP: Connect the Signal Generator antenna and ground leads to the antenna and ground posts of the set. With the signal generator operating at 460 K.C. and the set controls adjusted as before for I.F. alignment, adjust wave trap @ until a minimum reading is obtained in the output meter.

SHORT WAVE: In adjusting the short wave or high frequency band, the det. compensator will have a tendency to "pull" or change the frequency of the oscillator. By shunting a padding or variable condenser (about 0.00625 Mf.) across the oscillator section of the gang (front section) and tuning it so that the second harmonic, instead of the fundamental, beats with the incoming signal, this "pull" can be minimized. The procedure for tuning this band is as follows:

Set the dial of the receiver at 18 megacycles (top scale) and the 088 dial at the same frequency. Turn wave band switch to position 1 (extreme right). Connect the shunt condenser to the oscillator section of the gang and tune it so that the second harmonic of the oscillator beats with the 18 M.C. signal from the 088. Next tune condensers @ and @ (antenna and det.) for maximum reading of the output meter. Disconnect shunt condenser and tune condenser @ (osc.) for correct calibration. The set, oscillator frequency, when correctly adjusted, will be higher than that of the incoming signal. In order to check this it should be possible to pick up the 18 M.C. 088 oscillator signal as an image signal by increasing the 088 output and tuning the set to approximately 17.1 M.C.

For the low frequency adjustment of this band, turn the dial to 6.0 M.C. set the signal generator at 6.0 M.C. and adjust condenser @ (nut) for maximum output meter reading. Readjust condenser @ at 18.0 M.C.

POLICE: Turn wave band switch to position 2 (center), set signal generator at 5500 and dial of set at 5.5. Adjust condensers @, @ and @ (osc., ant., and det.) for maximum output. Turn the set dial to 1.8 and the signal generator to 1800. Adjust condenser @ (nut) (osc. series) for maximum output meter reading.

STANDARD WAVE: Turn waveband switch to position 3 (extreme left), set signal generator at 1500 and dial of set at 150. Now adjust the oscillator, antenna and det. "Standard" condensers. These are @, @ and @ respectively.

Turn the dial to 60, set signal generator at 600 and adjust condenser @ (oscillator standard series), (screw) for maximum output meter reading.
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Service Bulletin
No. 235

Fig. 5. Schematic Diagram of Model 655

NUMBERS INDICATE RELATIVE POSITIONS OF SWITCH-SECTIONS
FROM FRONT OF CHASSIS.
# Model 655

## Schematic Number | Part and Description | Part No. | List Price
--- | --- | --- | ---
1 | Power Transformer (115 V, 60 cycle) | 32-7403 | 4.50
2 | Condenser (.015 Twinline Res.) | 33-8515 | 4.95
3 | Phono-motor switch assy. | 33-131 | 5.40
4 | Phono-motor (115 V, 50 cycle) | 33-131 | 5.35
5 | Motor (50,000 ohm, 1 watt) | 33-33944 | 2.20
6 | Electrolytic Condenser (1.0 mF) | Part of § | 
7 | Motor (15,000 ohm, 1/2 watt) | 33-33944 | 2.20
8 | Electrolytic Condenser (2.0 mF) | Part of § | 
9 | Resistor (32,000 ohm, 1/2 watt) | 33-351143 | 2.20
10 | Shadow Tuning Meter | 45-1093 | 2.50
11 | Pilot lamp (shadow meter) | 34-2048 | 2.00
12 | Condenser (.05 mf. Tubular) | 30-4020 | 1.50
13 | Cable lamp (dia.) | 34-2049 | 1.25
14 | Phono-radio switch assy. | 33-3014 | 1.50
15 | Condenser (.05 mf. Tubular) | 30-4020 | 1.50
16 | Condenser (.09 mf. Bakelite) | 49-85-97 | .35
17 | Resistor (5,000 ohm) | 33-31113 | 2.20
18 | Pickup head | 33-3614 | 7.25
19 | Pickup arm | 33-3620 | 7.85
20 | Phono-motor (115 V, 50 cycle) | 33-1007 | 8.30
21 | Phono-motor (115 V, 40 cycle) | 33-1008 | 8.30
22 | Phono-motor (120 V, 50 cycle) | 33-1059 | 8.50
23 | Phono-motor (230 V, 50 cycle) | 33-1050 | 8.50
24 | Conv. Filter (15,000 ohm) | 33-31113 | 2.20
25 | Filter choke | 38-1904 | 4.25
26 | Prelix Condenser | 01-3047 | 50

## Prices Subject to Change Without Notice

### Model 655 Accessories

- Parts and Service Division
- Printed in U.S.A.

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### Fig. 6. Base View

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<th>Schematic Number</th>
<th>Part and Description</th>
<th>Part No.</th>
<th>List Price</th>
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<td>Base, Oven</td>
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### Table of Parts and Service Division

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<tr>
<th>Part No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>01-3047</td>
<td>Prelix Condenser</td>
</tr>
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### Additional Details

- Model 655 schematic and parts list.
- Description of each component and its function.
- Prices listed for each component.

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### Manufacturer Information

- PHILCO
- Service Bulletin No. 235
- Jan. 15, 1936

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### Footnotes

- Code 122—30-3014
- Code 122—30-4379
- Code 122—Use Type "U" (ODG, etc.) Prelix Condensers