

# INSTRUCTIONS

FOR

# PHILCO

REG. U.S. PAT. OFF.

## Model 16

(Code 125 and 126)

## ALL-WAVE RADIO RECEIVER

**DESCRIPTION**—Philco Model 16 is an eleven tube superheterodyne radio receiver capable of receiving both standard broadcasts and short-wave stations. The latter includes the many popular American and foreign short-wave programs as well as police, aircraft, and amateur stations. Model 16 will receive any frequency from 550 to 22,500 kilocycles (K. C.) which corresponds to wave lengths from 555 to 18 meters. It is designed for use on alternating current (A. C.) only, of the voltage and frequency specified on the chassis nameplate.

**TUNING RANGE**—To facilitate tuning on this wide range of frequencies, there are four separate scales on the tuning dial, each containing a portion of the complete range. The lowest scale contains "standard" frequencies (regular broadcast stations) and the other three scales contain consecutive portions of the short-wave band. In order to enable prompt selection of the desired type of program, the words "standard broadcast," "police," "S. W.," etc., appear directly on the dial, in the approximate position where such stations may be received. Any of the four scales may be instantly selected and automatically illuminated by turning the "wave-band" switch.

**TUBES**—Eleven tubes are supplied with the set, installed in their proper sockets.

**PRELIMINARIES**—Locate the receiver as near as practical to the window thru which the antenna wire will be brought, and also convenient to an A. C. electric outlet.

Remove all packing material from around tubes.

Remove the bolts which hold the chassis in the cabinet. This will allow the chassis to "float" on its rubber supports, permitting full clear undistorted tone.

Make sure all tubes are firmly seated in their sockets. See that the small metal clips are properly secured to the caps on top of five of the tubes. The metal tube shields must also be firmly seated on their bases.

The control knobs, which are in the same envelope with these instructions, are to be mounted on the shafts which project through the front panel. The larger knob goes on the upper shaft, the larger piece being put on first, on the thick rear portion of shaft. Push the knobs on firmly, with the flat side of shaft fitted to flat portion of knob-hole. Lay a blotter or thick piece of cardboard up against the face of receiver, along side knob shaft while putting knob on, so that the knob will not touch the panel when in place, but will be spaced about 1/16 inch from it.

**ANTENNA**—Since satisfactory reception of short-wave stations absolutely requires an efficient antenna, we strongly recommend the use of the Philco Short-Wave Antenna Kit, which was especially designed for this purpose and contains all necessary parts, selected for efficiency in short-wave use. Your Philco dealer or local member of Radio Manufacturers' Service can make the installation for you.

Whether or not the Philco Short-Wave Kit is used, the antenna wire should be as high as possible and as clear as possible of chimneys, trees, other wires and adjoining roofs. It should be supported at the ends by porcelain or better still, glass insulators (as used in the Philco Kit). Joints or sharp bends in the wire should be avoided. If a joint is necessary, both ends of the wire should be carefully scraped and the connection soldered and covered with insulating tape. The best way to avoid joints is to run the antenna wire in one continuous length from the far insulator down to the receiver, or at least to the lightning arrestor. Use a good grade of lightning arrestor, and follow instructions supplied with it.

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Use porcelain knobs or "stand-off" insulators to keep the lower part of the antenna away from the wall; bring the wire into the house by means of a porcelain tube inserted in a hole drilled through the wall or window-frame. Do not use the flat type "window-strip" lead-in for this purpose. Run the antenna wire over to the receiver as directly as possible and attach the bare end to the ANTENNA terminal at rear of chassis. (See Fig. 1.) Scrape or sandpaper the end of the antenna wire, down to clean metal, so it will make proper electrical contact with the ANTENNA terminal of the receiver.

For best results, do not connect another receiver to the same antenna.

**GROUND**—A ground connection is not always necessary. It may sometimes be helpful if there is hum from the power line. If a ground is to be used it can best be made by running a wire from the ground terminal at rear of receiver (marked "GROUND" in Figure 1) to the nearest water pipe or radiator pipe, or to the ground terminal of the lightning arrester, and thence to a good outside ground. Use a ground clamp (purchasable from your Philco dealer) for making the connection to the pipe, and be sure the section of pipe used is scraped clean and shiny before attaching the clamp.

**POWER SUPPLY**—Having made sure your antenna and ground are satisfactory, your power supply is of the correct voltage and cycles, and all tubes and shields are in place, you are now ready to operate the receiver. Insert the attachment plug at the end of the electric cord supplied with the set, into the nearest electric outlet. If a low-pitched hum is noticeable after the tubes become heated (but with the Volume Control turned down), reverse the plug in the electric socket; that is, remove it, turn it half-way around and then re-insert it.

**OPERATING**—First refer to the illustration of control panel (Fig. 2) to familiarize yourself with the function of the four control knobs.

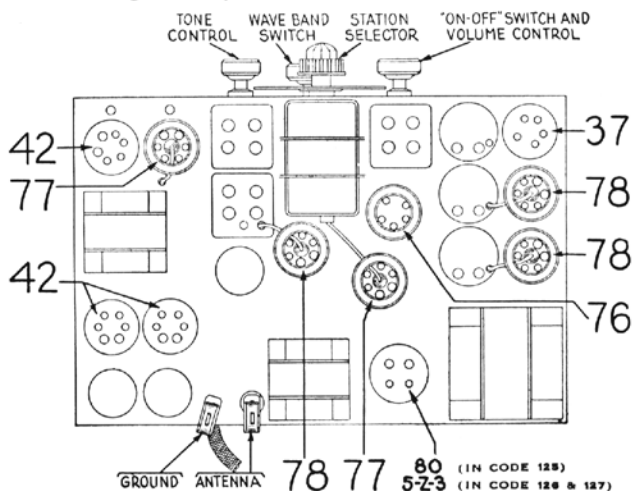


FIGURE 1

The extreme left-hand knob is the combined "on-off" switch and volume control. The first movement of this to the right — (clockwise) turns on the radio and illuminates the dial; further turning will increase the volume. Turn this knob to the right about one-half of its total range of movement, and allow about half a minute for the tubes to become heated.

We suggest that you first become familiar with the tuning-in of standard (American) broadcasts — these are received with the "wave-band" switch (lower central knob) turned to the extreme left (counter clockwise) in which position the lowest scale on the dial is illuminated. Revolve the Station Selector Knob until a suitable program is located. To obtain best reproduction of the desired station use "Shadow-Tuning" as described below.

The numbers on the lowest scale on the dial, by addition of a zero become kilocycles, by which the various standard broadcast stations are listed on radio logs and the radio page of the newspaper. A partial list of standard broadcast stations is contained on one side of the All-Wave Log included with these instructions.

**SHADOW TUNING**—The small window directly above the dial is the Shadow Tuning screen.

After the desired station has been obtained, adjust the Station Selector knob until the dark band on tuning screen is as narrow as it can be made. This will be the point of correct and best tone. Then adjust the volume to suit your taste by means of the volume control.

Do not reduce volume by means of the Station Selector, as this will injure the tone.

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**TUNING-IN SHORT-WAVE STATIONS**— The several classes of short-wave stations are obtained by turning the wave-band switch to one of the three notches to the right. These notches are felt as the knob is being revolved. As each notch is reached, the scale corresponding to that notch is automatically illuminated.

Police and amateur stations will be received on the second notch or scale. See paragraphs on these stations on page 4. A list of Police Stations will be found on the All-Wave Log Card.

The numerals on the police and Short-Wave scales stand for megacycles (a megacycle is 1,000 kilocycles). Refer to the short-wave station list appearing on the other side of the All-Wave Log Card where a number of short-wave stations are listed according to megacycles.

The American and foreign short-wave stations will be found within the portions of the third and fourth scales indicated by the letters "S W" and the brackets appearing along the top of the division lines. Owing to the peculiarities of short-waves, certain bands or groups of stations come in best at certain times of day. The following table will serve as a guide to the best time to tune the various bands:

**This schedule applies to Eastern United States. If you are in Western U. S. or elsewhere, add or subtract to compensate for the time difference.**

Daylight to 1 P. M.	21.3 — 21.7 17.5 — 18.0	} 4th band (top scale)
8 A. M. to 4 P. M.	15.0 — 15.5	
10 A. M. to 7 P. M.	11.2 — 12.0	
1 P. M. to 8 P. M.	9.4 — 10.0	} 3rd band
5 P. M. to Midnight	7.7 — 8.3	} 3rd band
	5.7 — 6.8	
	4.0 — 4.4	

*Note:* The above applies to stations East and South of the United States. Asiatic and Australian stations are heard chiefly between midnight and 9 A. M. Eastern Standard Time.

Having selected the proper band, first turn the volume control well "on" (just below the point where background noise begins to be noticeable).

Turn the large Station Selector knob slowly until a "swishing" sound is heard—this usually indicates the presence of a short-wave station. Now turn the small inner knob marked—"FINE TUNING," this gives a "low gear" or slow-speed motion, enabling accurate tuning of the short-wave stations — which tune very sharply. Turn this back and forth until the voice or music comes out clearly. Finally readjust the volume control as necessary.

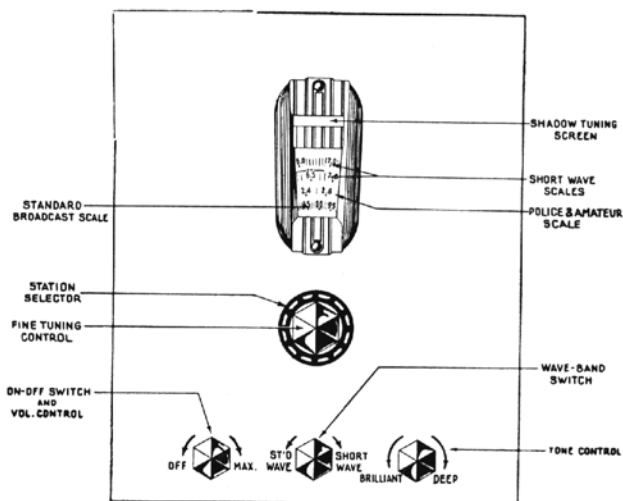


FIGURE 2

When a short-wave station is tuned in with the receiver cold, it is advisable to readjust the tuning after the receiver has warmed up.

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**tone control**— The right-hand knob is the tone control. This control enables you to adjust the tone to suit your taste or the type of program being received. This is a valuable help in getting the best reproduction since the quality of broadcasting varies greatly, and there is also a wide variation in the response of the human ear. The tone control compensates for these differences.

There are four positions of this knob, which can be "felt" as the knob is revolved and the tone control switch (behind panel) settles into each notch or position. The variations or "degrees" of tone which are produced by the four settings of the tone control, proceeding from left to right, may be described roughly as: 1. Brilliant, 2. Bright, 3. Mellow, 4. Deep.

Position 1 emphasizes the high notes and makes speech especially sharp and clear. Positions 2 and 3 are generally best for music, the choice depending on the type of program. Position 4 gives special emphasis to the low notes and adds depth to the reproduction where necessary or desired. Position 3 and 4, particularly the latter, also tend to subdue static and background noises, and are consequently desirable where these noises are present.

**BASS COMPENSATION SWITCH**—The switch on the right side of the cabinet controls the use of the bass compensation feature of Model 16; that is, the automatic increase of bass response at low volume. Normally, for best reproduction, the switch should remain in the up, or "on" position. On some stations, however, which have considerable "background hum" or "station hum," it is desirable to eliminate the bass compensating effect. For reception of these stations this switch should be turned down or "off."

## INFORMATION ON SHORT-WAVE STATIONS

**TIME DIFFERENCE**—Those who have been accustomed to listening to distant stations in the *standard broadcast* band know that they get the best results at night. However, in short-wave tuning this rule does not apply as the shorter of the short waves travel best through daylight. Owing to the difference in time between the place where you are located and the place where the broadcast comes from, you will hear the various distant short-wave stations at different times during the twenty-four hours. For example: England, France, Germany, Spain and Italy are heard best here during the day and evening; Siberia, Japan and Australia in the early morning hours; Central and South American Stations are heard thruout the evening. North American short-wave stations may be heard at various times of the day or night.

The table on the previous page and the chart on the last page of this folder will give you an idea as to when and where to tune in the most frequently heard European Stations which broadcast regularly. Always remember that stations usually broadcast during *their evening*, which may be morning or afternoon when you are listening.

**AMATEUR STATIONS** are heard around 1.87, 4.0 and 14.0. These can be readily recognized by the personal style of conversation.

**AIRCRAFT STATIONS** are quite frequently heard. They come in around 2.3, 3.0 and 5.6. Weather reports to planes are often heard. These broadcasts are usually short and "snappy." In the case of both amateur and aircraft stations, sometimes only one end of the conversation will be heard.

**SHIP STATIONS** and other commercial radio telephone stations (sending paid messages or conversations) generally use a "chopper" which distorts or scrambles the voice so you cannot understand it. Occasionally, however, these stations may be picked up transmitting voice or music, especially between 4.0 and 4.4 megacycles and 8.2 to 8.8.

Many stations will be heard transmitting in Morse code. These are amateur, ship, or aircraft stations depending on their position on the dial.

**POLICE STATIONS** are heard on the second band, at about 1.7, 2.1 and 2.4. They transmit messages to police cars and sign off rapidly, usually mentioning the time, and sometimes the call letters or the city. After dark, police stations may be heard over greater distances, the same as standard broadcast stations.

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**AN ALL-WAVE RADIO LOG CARD** is supplied with these Instructions. On one side of this card you will find a list of some of the more powerful "standard" wave stations and a list of police stations; the other side contains a list of short-wave broadcast stations which are best known and most likely to be heard at the present time. For a complete list of active Short-Wave and "phone" stations, information on program schedules, etc., refer to "International Short-Wave," published monthly by the International Short-Wave Club, East Liverpool, Ohio.

The short-wave stations are arranged according to megacycles (frequency) and also according to meters (wave length). Some short-wave stations when "signing off" mention their wave-length in meters. The two columns can be used as a cross-reference table to convert meters into megacycles or vice versa.

**RECOGNIZING FOREIGN STATIONS**—Many foreign stations sign off or announce in their own language and afterwards in English, for the benefit of American and English listeners. In cases where you do not hear them sign off, you may be able to tell by their frequency, the language used, or type of program, just what short-wave station you have tuned in. You will find that once you have heard a station a few times, you will readily recognize it when you tune it in. A little practice will make you proficient in the art of short-wave tuning.

**SERVICE**—Your Philco dealer is equipped to provide service for your receiver. Complete radio satisfaction requires that your receiver be checked by an expert radio serviceman at least once every six months.

Experts, trained by Philco, are available in your neighborhood. These men are members of **RADIO MANUFACTURERS' SERVICE** (a Philco Service Plan) and they have all the necessary test equipment to properly adjust or service your Philco.

These men have received instructions on the proper type of antenna to use or install. They have been trained to help you obtain excellent reception even in congested neighborhoods where man-made static may mar or interfere with the program you wish to hear.

Should you or your friends require immediate, courteous radio service — call a member of Radio Manufacturers' Service.

**WHEN REPLACING TUBES: TO MAINTAIN ORIGINAL PERFORMANCE,  
USE ONLY GENUINE PHILCO TUBES.**

## STANDARD WARRANTY

*We warrant each new Radio Receiver and Speaker manufactured by us to be free from defects in material and workmanship under normal use and service, our obligation under this warranty being limited to making good at our factory or factory depots any part or parts thereof which shall, within ninety (90) days after delivery of such Receiver to the original purchaser, be returned to us with transportation charges prepaid, and which our examination shall disclose to our satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties, expressed or implied, and of all other obligations or liabilities on our part, and we neither assume nor authorize any representative or other person to assume for us any other liability in connection with the sale of our Receivers or Speakers.*

*This warranty shall not apply to any Receiver or Speaker which shall have been repaired or altered outside of our factory or factory depots in any way so as, in our judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident, nor which has had the serial number altered, effaced or removed. Neither shall this warranty apply to any Receiver or Speaker which has been connected otherwise than in accordance with the instructions furnished by us.*

**PHILCO**  
REG. U. S. PAT. OFF.

TORONTO — PHILADELPHIA — LONDON

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## SUGGESTIONS FOR TUNING-IN

### THE MORE POWERFUL SHORT-WAVE STATIONS

Mornings, try 15.0 to 15.3; afternoons and early evenings try 11.7 to 11.9, and 9.5 to 9.6; evenings, try 6.0 to 6.5. Many of the more powerful stations are grouped within these narrow bands. **TUNE VERY SLOWLY.** The schedule below will be found helpful in locating special cities.

Note: Schedule below is for Eastern United States. Add or subtract as necessary to compensate for time differences if you are located elsewhere.

Eastern St'd Time	Daventry (London)	Paris	Madrid	Zeesen (Berlin)	Rome and VaticanCity	South America
7 A.M. to 3 P.M.	GSG 17.77 GSF 15.13	FYA 15.24		DJB 15.20	HVJ* 15.11	
10 A.M. to 7 P.M.	GSE 11.86 GSD 11.75	FYA 11.90 FYA 11.71		DJD 11.76	I2RO 11.81	
1 P.M. to 9 P.M.	GSC 9.58 GSB 9.51		EAQ 9.87	DJA 9.57		LSX 10.35
5 P.M. to 11 P.M.				DJC 6.02		HJ1ABB 6.45 YV3RC 6.15

\*5:00 to 5:15 A. M., week days.

In addition to the above, several of the more powerful Central and South American stations can be heard during the afternoon or evening. Try the following:

5.95	HJ4ABE	Medellin, Colombia
6.06	HIX	Santo Domingo, R. D.
6.08	CP-5	La Paz, Bolivia
6.11	YV2RC	Caracas, Venezuela
6.23	HI1A	Dominican Republic
6.25	HJ3ABF	Bogota, Colombia
6.48	HJ5ABD	Cali, Colombia
6.62	PRADO	Rio Bamba, Ecuador
6.67	HC2RL	Guayaquil, Ecuador
7.14	HJ4ABB	Manizales, Colombia
7.22	HKE	Bogota, Colombia
7.40	HJ3ABD	Bogota, Colombia
8.19	PSK	Rio de Janeiro, Brazil