

PHILCO SERVICE



EXTERNAL AERIALS for 1946 MODEL PHILCO RADIOS

In order to provide best radio reception in varying localities, most Philco radios have provisions for use of more than one type of aerial. Varying operating conditions are encountered in the use of radios in isolated rural areas, congested urban areas, in trains or automobiles, private homes or apartments, and factories or offices. For this reason, it is advantageous to use the aerial insuring the best reception in each of these specific localities, for the particular model radio being installed.

In general, the long single-wire aerial gives best reception for standard broadcast and short-wave reception in isolated areas. The vertical single-pole-type aerial will generally provide increased sensitivity over the built-in loop aerials for both short-wave and standard broadcast reception, and this type is especially convenient for use in congested areas. For FM reception, the dipole-type aerial should be used. All Philco FM radios include built-in dipole aerials. However, an external FM dipole aerial will improve reception, especially in areas remote from the transmitter. This aerial will also provide increased signal pickup on broadcast and short-wave reception if used with a coupler.

The majority of Philco radios can be operated with one or more of four general types of external aerials. These are: the Philco Outdoor Aerial and Philco Farm Aerial, single-wire types, designed for horizontal installations where adequate space is available; the Philco Safety Aerial, a single-rod type, designed for vertical installations; and the Philco Dipole Outdoor Aerial. An inexpensive expedient which may, in some cases, im-

prove reception, is the use of a short piece of flexible insulated wire (such as #16 or #18 stranded) of approximately 20-foot length. Such a wire, laid under a rug or fastened along a baseboard, should be kept as far as possible from radiators or other large metal objects. These installations, however, will not usually provide any great improvement over the reception obtained from the built-in loop aerials of most Philco radios. (Export models do not contain loops.)

The Philco Outdoor Aerial, Part No. 45-1494, or the Philco Farm Aerial, Part No. 45-1469, can be used for standard broadcast reception on Philco radios where space and convenience permit an installation of 60-foot length. These aerials are prefabricated long-wire types, including strain insulators and a 40-foot lead-in wire. In the aerial kits are also included stand-off insulators for attaching the lead-in to a building or house; a lead-in strip for fitting under a window frame so that holes in house or building walls are not necessary; a protective lightning arrester and a ground clamp. In general, these types of aerials are highly recommended for use in standard broadcast and short-wave reception where best possible performance is desired. Aerial Installation Diagram No. 1 sketches a typical installation of a Philco Outdoor or Farm Aerial.

The Philco Safety Aerial is also used for standard broadcast and short-wave reception on Philco radios. This is a prefabricated vertical "buggy-whip", or rod aerial. The aerial kit includes mounting clamps and insulators for attaching to a building or house; a lead-in wire with stand-off insulators; a lead-in strip, lightning arrester and a ground clamp like those used with the

Philco Farm or Outdoor Aerials. The Safety Aerial is generally recommended for use in standard broadcast and shortwave reception when installation of the longer aerials is not feasible. Aerial Installation Diagram No. 2 shows a sample installation of the Philco Safety Aerial.

The Philco portable radio Model 46-350 is provided with jacks for use of an external loop aerial. Because of the sensitivity of this set, the use of an external aerial is advisable only in extremely unfavorable receiving locations, where the use of the Philco Safety Aerial, the Philco Farm Aerial or the Philco Outdoor Aerial is advised. For this reason, no Philco External Loop Aerial will be made available for use with the Philco Model 46-350 Radio during 1946.

The Philco Dipole Aerial is designed for use with Philco model radios which are built for frequency modulated reception on 88 to 108 mc. It is specifically intended for use in locations where the built-in dipole aerial does not provide sufficient signal pickup. Two types of Philco FM aerials are available; first, the single dipole type, Philco Dipole Outdoor Aerial, Part No. 45-1462, which provides for reception from more than one direction with good signal strength. The second type is the single dipole combined with a reflector element, Philco Reflector Kit, Part No. 45-1464. A reflector assembly of this type can advantageously be used to eliminate undesired noise of unwanted signals as it provides the aerial with additional directivity. By directing this type of aerial "broadside" at the desired transmitting station, exceptional signal strength should result with signals from other directions greatly diminished or eliminated. A mast unit, Philco Aerial Mast, Part No. 45-1465, is available for installation of the dipole aerials and must be used when the reflector element is included in the installation. For mounting the mast on a peaked or sloped roof, Philco Mounting Brackets, Part No. 28-3757 and Part No. 28-3758, can be obtained. The Philco Dipole Outdoor Aerial, Part No. 45-1462, is furnished with 50 feet of transmission line, Part No. 41-3753, with attached plug for connection to the set. If greater lengths of line are needed, an additional length of Philco Transmission Line, Part No. 45-1495, must be obtained. Splicing of transmission line can be done if necessary. A staggered splice, as shown in Installation Diagram No. 3 is the recommended procedure. Care should be taken when stripping the insulation, twisting and soldering the wires, and wrapping with rubber and friction tape.

Chance location of an FM dipole aerial can provide unsatisfactory reception. This is due to the fact that signals broadcast from an FM transmitter can arrive at an FM receiver along multiple paths. This multiple-path reception is the result of signals at FM frequencies reflecting from solid substances along or near the direct path of reception from the transmitter to the receiver. A hill, large building, or large objects of metallic construction can reflect an FM signal such that a receiver will obtain an audible signal from more than one direction. If these two or more signals arrive at the receiving aerial electrically out-of-phase the result will be cancellation of signal strength. In order to remedy this condition it is necessary to move the aerial toward or away from the transmitter until a signal of satisfactory strength is obtained. This aerial adjustment is not too critical and involves an actual relocation of a few feet. The exact distance is determined best by the trial and error method.

Where the Philco Dipole Aerial and mast are installed in a high and exposed location, it is advisable to ground the aerial mast in order to minimize the lightning hazard. This precaution may prevent damage to the transmission line and radio in case of electrical disturbances.

The serviceman undertaking an installation of an FM aerial should carefully survey the job so that the proper parts and units can be obtained to fit the specific situation. Since the best reception of FM signals is directly dependent upon the quality of the installation, care and thought should be given to this work. Aerial Installation Diagram No. 3 will provide further data regarding use of the Philco FM aerials.

Although all Philco aerial kits include ground clamps and attached wire, no provision is made for use of an external ground connection to any of the Philco radios except those designed for operation with batteries. The ground clamp and wire in the kits are intended for use with the lightning arresters as a part of the aerial installation. However, all the "Farm" models and the portable-model radio, when operated on batteries, should employ an external ground connection. It is important that no attempt be made to use such a ground connection with the AC/DC models as excessive hum will result.

For determining the proper aerial to be used for any specific type of locality with any specific Philco model radio, refer to the following table of aerial data. In cases where more than one type of external aerial is recommended, the aerial listed first is preferred for the particular radio. For example, Philco Radio, Model 46-454 may be used with any one of three types of aerials. If improved FM reception is desired, the Philco FM external dipole aerial can be used. Improved reception of the AM standard broadcasts will also result from this aerial when it is used with Coupler, Part No.

76-2353. In locations where FM reception is not available, installation of the Outdoor or Farm aerial is recommended. In case the installation of one of these aerials is not practicable, the third choice is the Philco Safety Aerial. Drawings covering the installation of the various types of aerials and couplers are included in the reference tables.

NOTE: Due to the present shortages of materials, the Philco Safety Aerial is not yet available for distribution.

EXTERNAL AERIAL DATA CHART FOR 1946 PHILCO RADIOS

Philco Model No.	Type of Aerial Connection	Type or Types of Recommended Aerials	Aerial Part No.	Aerial Installation Diagram	Aerial Coupler Part No.
46-131 -132 -133 -134 -142	A A A A A	Philco Outdoor Aerial Philco Farm Aerial, or Philco Safety Aerial	45-1494 45-1469 *	1 1 2	
46-200 -200-I -250 -250-I	B B B B	Philco Safety Aerial, or Philco Outdoor Aerial Philco Farm Aerial	* 45-1494 45-1469	2 1 1	
46-300 -350	B B	Philco Safety Aerial for operation in steel frame buildings. Philco Outdoor or Philco Farm Aerial for operation in isolated areas.	* 45-1494 45-1469	2 1 1	
46-420 -420-I -421 -421-I -431 -451	B B B B E E	Philco Outdoor Aerial Philco Farm Aerial, or Philco Safety Aerial	45-1494 45-1469 *	1 1 2	76-2353 76-2353
46-427	D	Philco Safety Aerial	*	2	45-1492
46-1200 -1201† -1203† -1209 -1226	B B B E E	Philco Outdoor Aerial, Philco Farm Aerial, or Philco Safety Aerial	45-1494 45-1469 *	1 1 2	76-2353 76-2353

EXTERNAL AERIAL DATA CHART FOR 1946 PHILCO RADIOS—Continued

Philco Model No.	Type of Aerial Connection	Type or Types of Recommended Aerials	Aerial Part No.	Aerial Installation Diagram	Aerial Coupler Part No.
46-806 816 -817 -818 -824 -860 -861 -888 -1824 -1860 -1888 -2860	A A C A A F F F A F F F	Philco Outdoor Aerial, or Philco Farm Aerial	45-1494 45-1469	1 1	
46-454 -480 -1208 -1213† -1214† -1215† -1216 -1217 -1227S	E E E E E E E E E	Philco Dipole Outdoor Aerial for improved FM reception. When the Dipole Aerial is installed with the proper coupler, improved AM reception also results. If no FM reception is available, use with proper coupler. Philco Outdoor Aerial, Philco Farm Aerial, or Philco Safety Aerial	45-1462 45-1494 45-1469 *	3 1 1 2	76-2353 76-2353 76-2353 76-2353 76-2353 76-2353 76-2353 76-2353

Caution: Use an external ground connection only on battery-operated radios.

Aerial kits contain lead-wire or transmission line sufficient for normal installations. Additional lengths of FM transmission line, Part No. 45-1495, may be ordered through the Philco distributor.

Export models of Philco radios do not include built-in loop aerials.

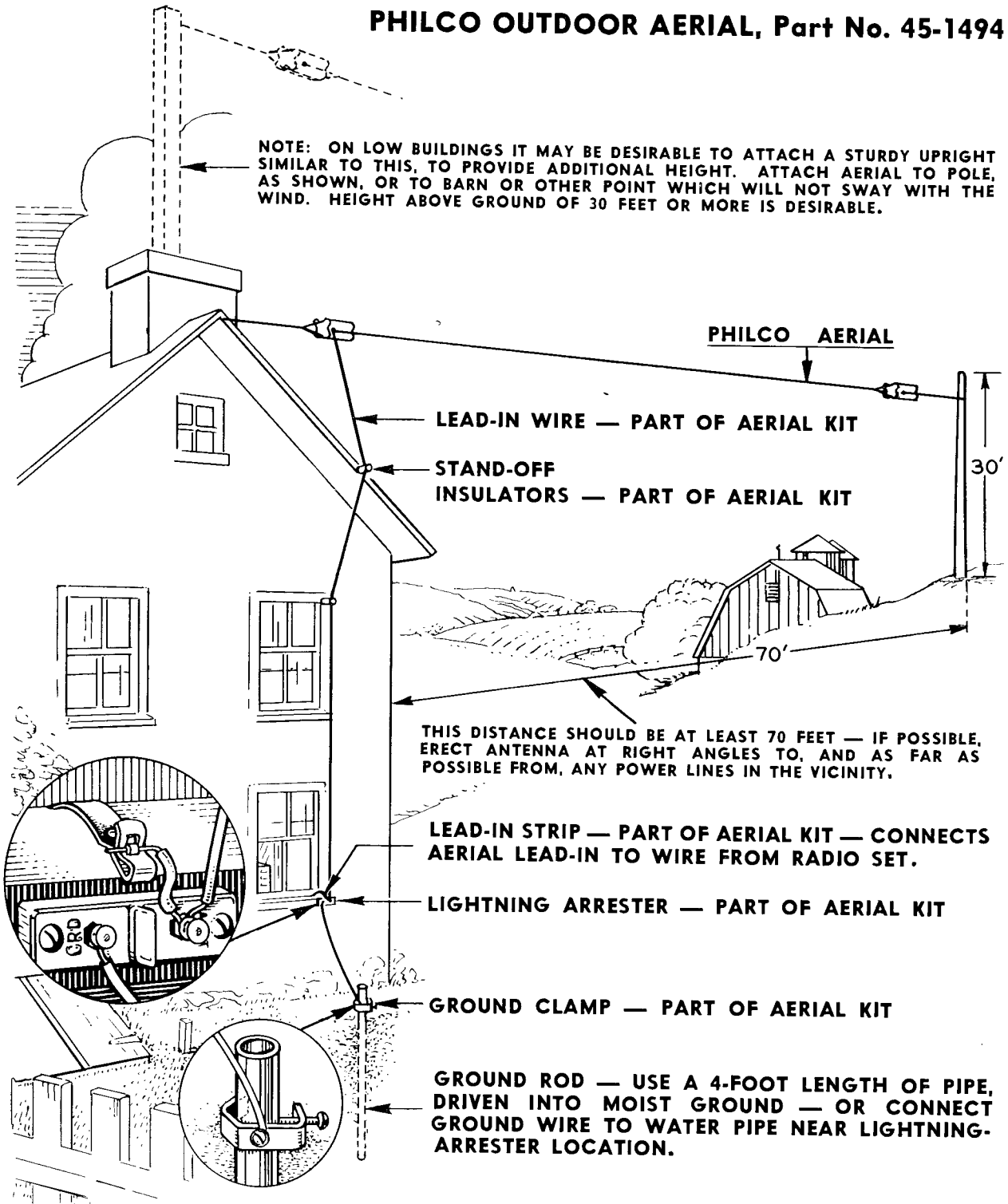
*Due to the present shortage of materials, the Philco Safety Aerial is not yet available for distribution.

†Receiver models with suffixed numbers or letters use the same aerials as the parent receiver. Example: Model 46-1201T, 1201-5, 1201-5T use the same as model 46-1201.

Aerial Installation Diagram No. 1

PHILCO FARM AERIAL, Part No. 45-1469

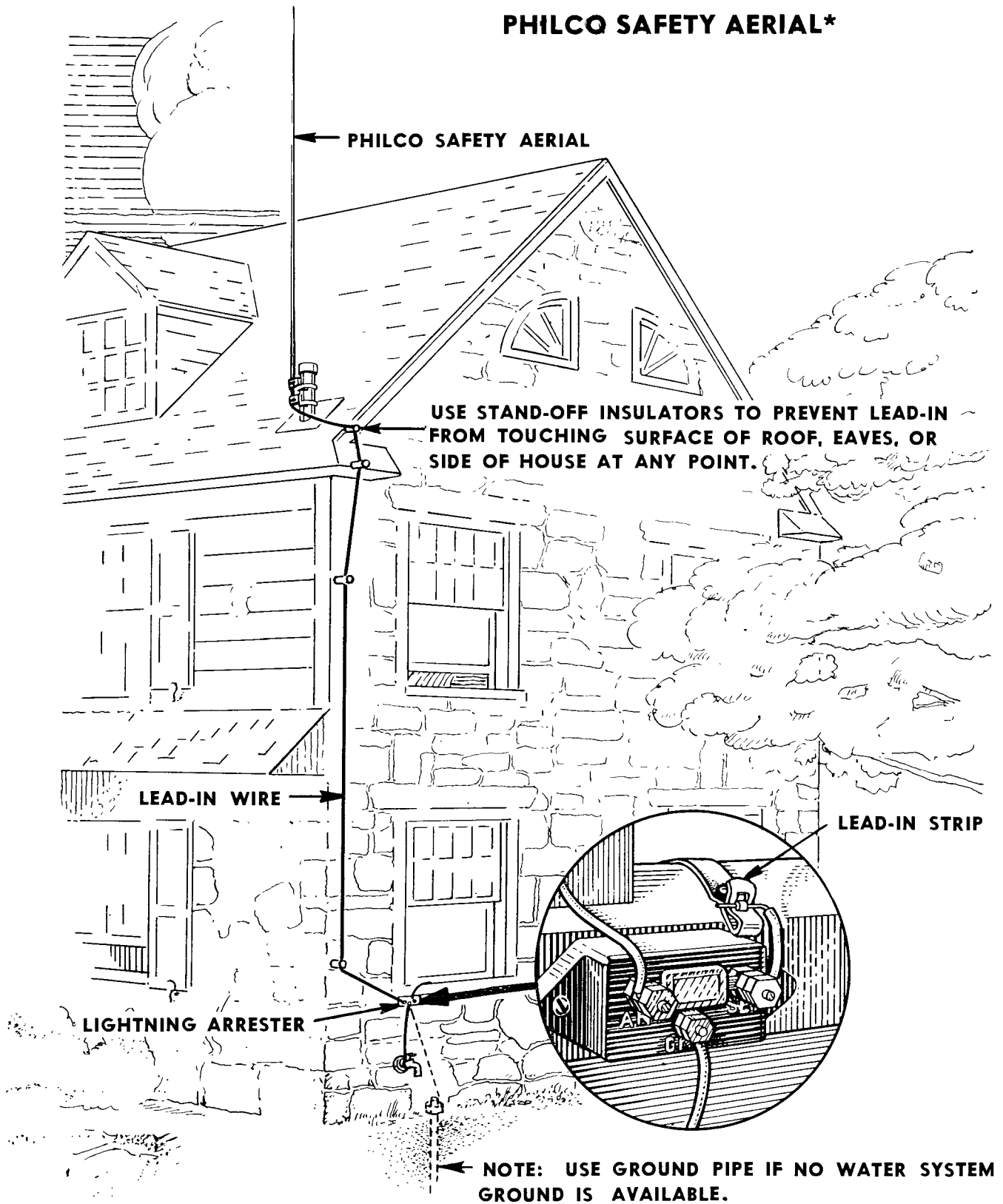
PHILCO OUTDOOR AERIAL, Part No. 45-1494



EXTERNAL GROUND CONNECTION IS NECESSARY ON ALL PHILCO BATTERY-OPERATED RADIOS. DO NOT USE WITH AC/DC SETS.

Aerial Installation Diagram No. 2

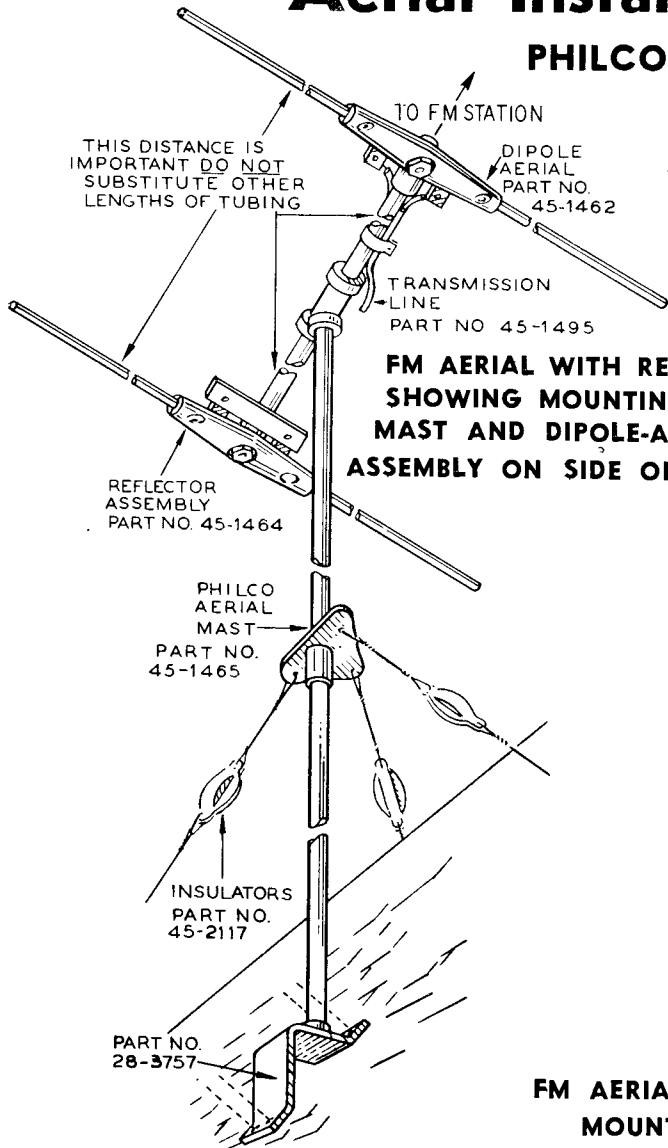
PHILCO SAFETY AERIAL*



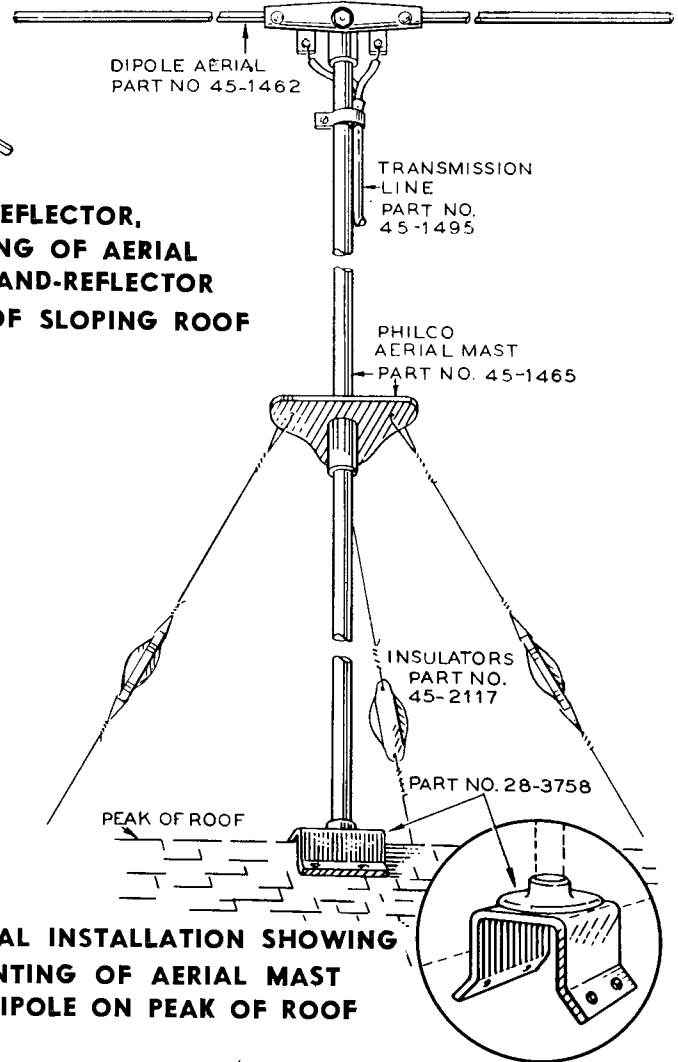
NOTE:* DUE TO MATERIAL SHORTAGES, THE PHILCO SAFETY AERIAL IS NOT YET AVAILABLE

Aerial Installation Diagram No. 3

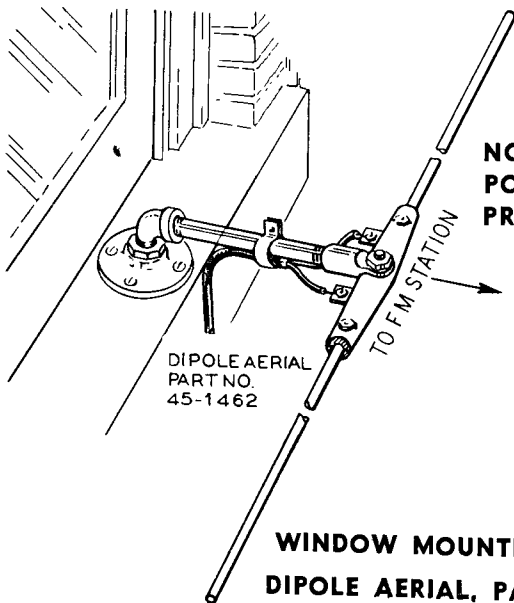
PHILCO FM DIPOLE AERIAL, Part No. 45-1462



FM AERIAL WITH REFLECTOR, SHOWING MOUNTING OF AERIAL MAST AND DIPOLE-AND-REFLECTOR ASSEMBLY ON SIDE OF SLOPING ROOF

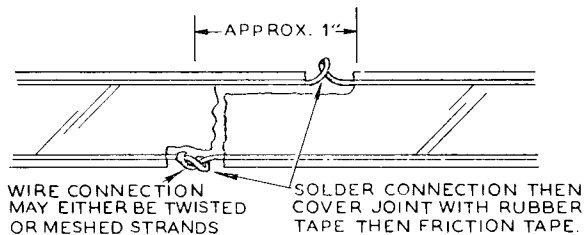


FM AERIAL INSTALLATION SHOWING MOUNTING OF AERIAL MAST AND DIPOLE ON PEAK OF ROOF



WINDOW MOUNTING OF DIPOLE AERIAL, PART No. 45-1462

NOTE: WHEN AERIAL MAST IS LOCATED IN A HIGH, EXPOSED POSITION, IT IS ADVISABLE TO GROUND THE MAST AS A PROTECTION AGAINST LIGHTNING.

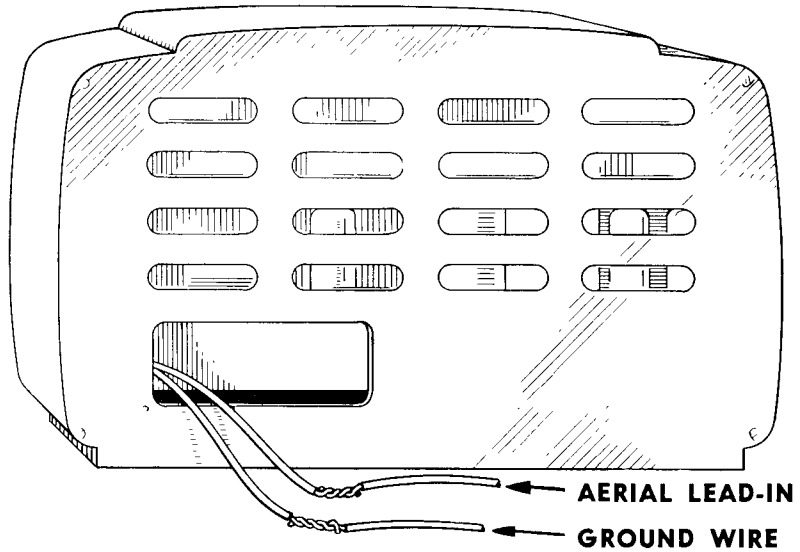


STAGGERED SPLICE OF TRANSMISSION LINE

Aerial Connection – Type A

CONNECT BLUE LEAD TO
EXTERNAL AERIAL LEAD-IN WIRE

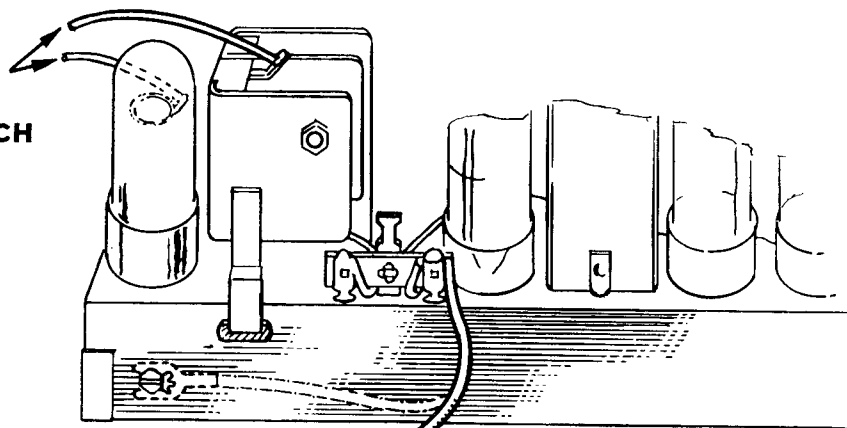
CONNECT BLACK LEAD TO
GROUND WIRE. USE SOLDERED
SPLICE CONNECTION. TAPE
COMPLETED JOINT TO PREVENT
SHORTING.



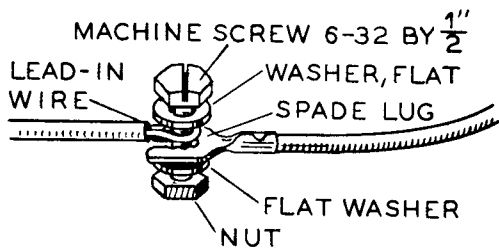
Aerial Connection – Type B

LEADS TO BUILT-IN LOOP
AERIAL — DO NOT DETACH

EXTERNAL AERIAL
LEAD-IN WIRE



EXTERNAL AERIAL LEAD —
DETACH FROM CHASSIS AND CONNECT
TO EXTERNAL AERIAL LEAD-IN WIRE.
DO NOT ATTACH EXTERNAL GROUND.



USE SOLDERED, BOLT-AND-NUT OR TWISTED-WIRE
CONNECTION. TAPE COMPLETED JOINT TO
PREVENT SHORTING.

DETAIL OF SUGGESTED
BOLT-AND-NUT CONNECTION

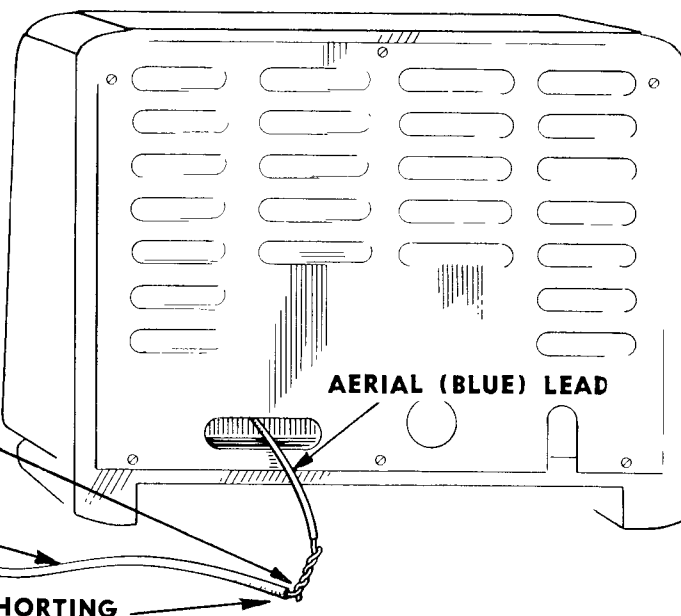
Aerial Connection – Type C

AC/DC
EXPORT MODELS USE LONG WIRE
AERIALS AND NO COUPLERS OR
EXTERNAL GROUND CONNECTIONS

USE SOLDERED, BOLT-AND-NUT,
OR TWISTED-WIRE CONNECTION HERE

LEAD-IN WIRE TO EXTERNAL AERIAL

TAPE COMPLETED JOINT TO PREVENT SHORTING



Aerial Connection – Type D

USE COUPLER, Part No. 45-1492

LEADS TO BUILT-IN LOOP
AERIAL. DO NOT DETACH

JACK FOR AERIAL COUPLER —
THE LOCATION AND POSITION
OF THIS JACK WILL VARY WITH
DIFFERENT MODELS. THIS WILL
RESULT IN SOME COUPLERS BEING
INSTALLED VERTICALLY AND SOME
HORIZONTALLY

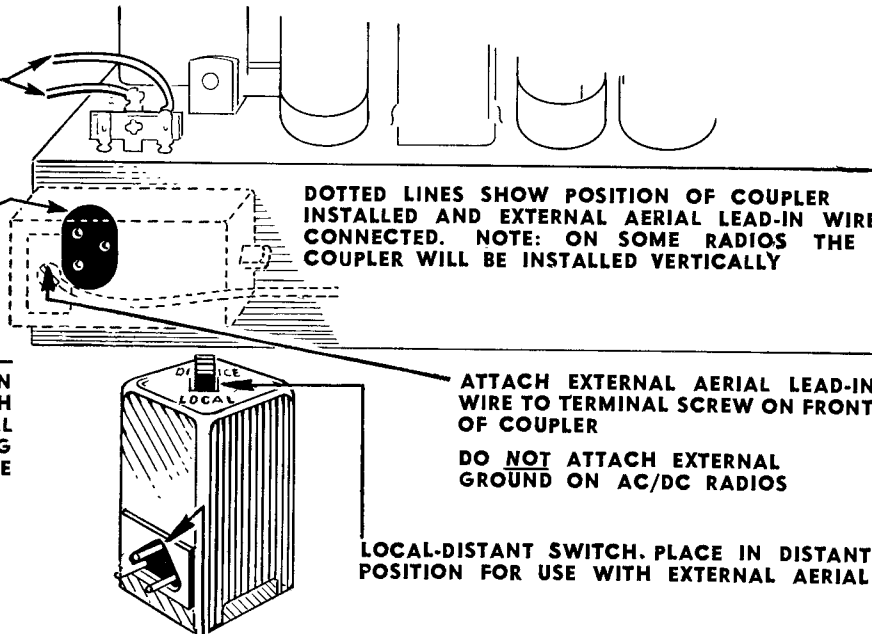
DOTTED LINES SHOW POSITION OF COUPLER
INSTALLED AND EXTERNAL AERIAL LEAD-IN WIRE
CONNECTED. NOTE: ON SOME RADIOS THE
COUPLER WILL BE INSTALLED VERTICALLY

ATTACH EXTERNAL AERIAL LEAD-IN
WIRE TO TERMINAL SCREW ON FRONT
OF COUPLER

DO NOT ATTACH EXTERNAL
GROUND ON AC/DC RADIOS

LOCAL-DISTANT SWITCH. PLACE IN DISTANT
POSITION FOR USE WITH EXTERNAL AERIAL

INSERT THIS PLUG INTO AERIAL-COUPLER JACK
ON RADIO CHASSIS



Aerial Connection – Type E

USE COUPLER, Part No. 76-2353

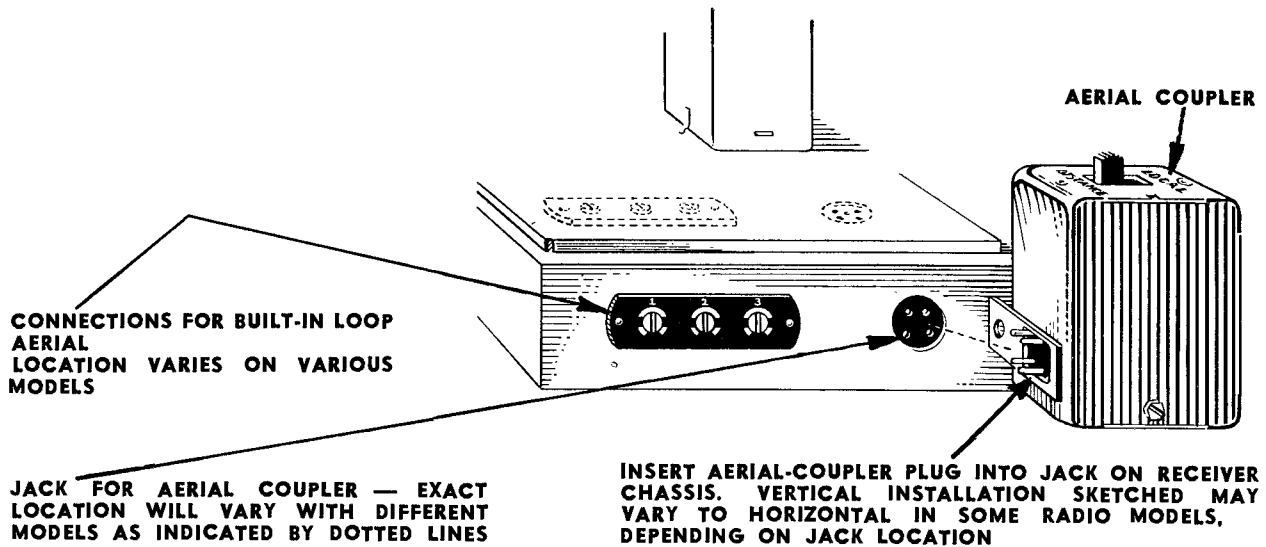


DIAGRAM SHOWING AERIAL COUPLER INSTALLED AND READY FOR CONNECTION OF EXTERNAL AERIAL

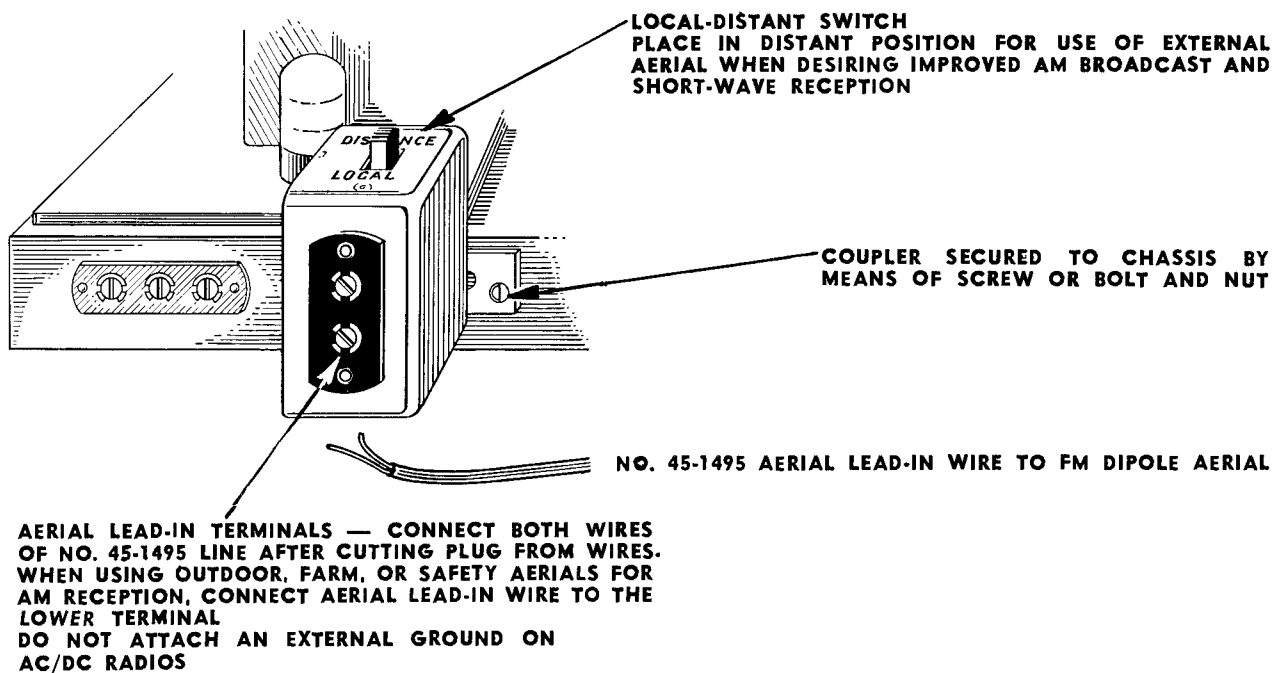
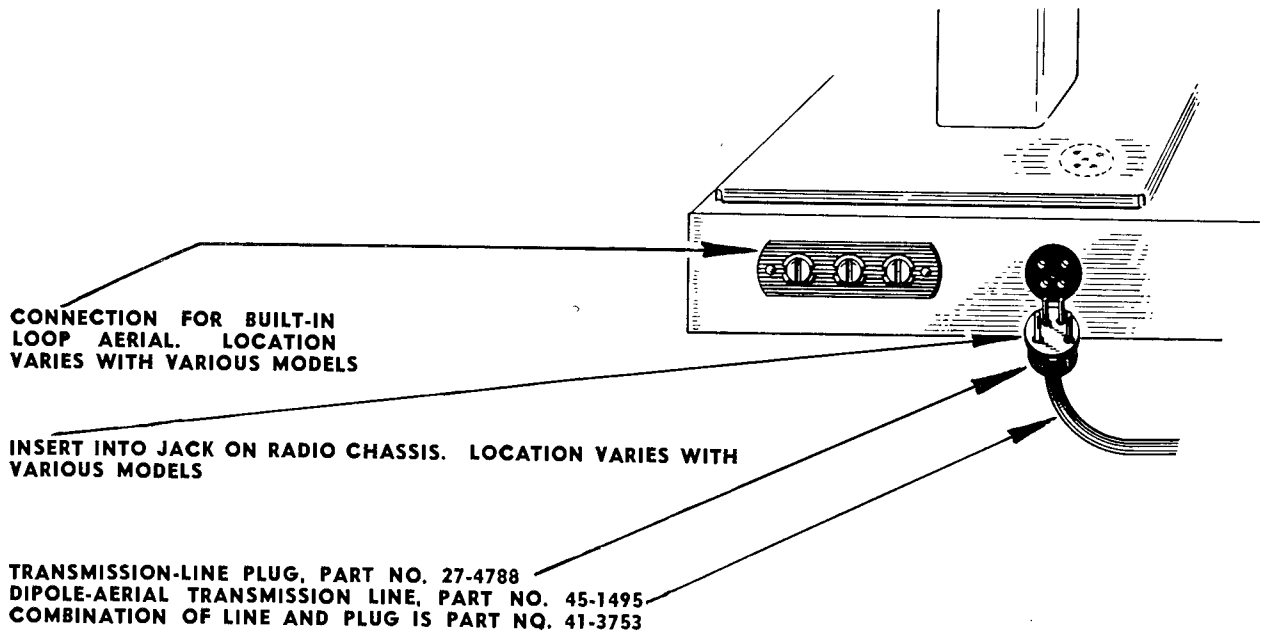


DIAGRAM SHOWING DIRECT COUPLING OF DIPOLE-AERIAL TRANSMISSION-LINE PLUG TO RADIO WHEN COUPLER IS NOT USED



Aerial Connection – Type F

A-C EXPORT MODELS. Use Long-Wire Aerials and No Couplers

