EXTERNAL AERIALS for 1946 MODEL PHILCO RADIOS

In order to assure the best radio reception for various localities, most Philco radios have provisions for the use of more than one type of aerial. Many different operating conditions are encountered in the use of radios in isolated rural areas, congested urban areas, private homes or apartments, and factories or offices. For this reason, it is advantageous to use the type of aerial which will insure the best reception, in a given locality, for the particular model of radio being installed.

In general, a long, single-wire aerial gives the best results for standard broadcast and short-wave reception in isolated 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, if used with a special coupler, will also provide increased signal pickup on the broadcast and short-wave bands.

The majority of Philco radios can be operated with one or more of three general types of external aerials. These are: the Philco Outdoor Aerial and the Philco Farm Aerial (single-wire types designed for horizontal installations) and the Philco Dipole Outdoor Aerial. An inexpensive expedient which may, in some cases, improve 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. Such makeshifts, however, will not usually provide any great improvement over the reception obtained form 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 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. The aerial kits also contain stand-off insulators, for attaching the lead-in to a building; a lead-in strip, for fitting under a window sash so that a hole in the wall is unnecessary, 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 maximum signal pickup is desired. Aerial Installation Diagram No. 1 shows a typical installation of a Philco Outdoor or Farm Aerial.

Philco portable radio Model 46-350 has provisions for an external aerial. Because of the excellent sensitivity of this set, the use of an external aerial is advisable only in an extremely unfavorable receiving location, in which case the use of the Philco Farm Aerial or the Philco Outdoor Aerial is advised.

The Philco Dipole Aerial is designed for use with Philco radios which are built for FM reception on 88 to 108 mc. This aerial 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 two directions with good signal strength; second, the single dipole combined with a reflector element, Philco Reflector Kit, Part No. 45-1464.

A reflector assembly of this type can be used advantageously to eliminate noise from unwanted signals, since it increases the directivity of the aerial. By directing this type of aerial "broadside" toward the desired transmitting station, an exceptional increase in signal strength results, while signals from other directions are 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 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, additional 200-foot lengths of Philco Transmission Line, Part No. 45-1495 (500-foot, Part No. 45-1495-1) can be obtained. The transmission lines can be spliced. A staggered splice, as shown in Installation Diagram No. 3, is recommended. Care should be taken to avoid breaking any of the strands when stripping the insulation, twisting and soldering the wires, and wrapping with rubber and friction tape.

Chance location of an FM dipole aerial often results in unsatisfactory reception, because the signals from an FM transmitter may arrive at the aerial from several somewhat different directions. This "multiple-path" reception is the result of reflections, since signals at FM frequencies often reflect from solid substances along or near the direct path from the transmitter to the receiver. Hills, large buildings, or large objects of metallic construction can produce reflections of an FM signal in such a manner that the receiver obtains signals from more than one direction. Because of the different distances travelled by the direct signal and a reflected signal, the signals are usually out of phase when picked up by the aerial; this effect may cause partial, or complete, cancellation at the aerial, the net result being dependent upon the relative strengths of the two signals, and the degree of phase difference between them. To correct 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 only a few feet. The exact aerial placement is best determined 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 for 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 provides 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 the 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 kit is intended for use with the lightning arrester 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 a ground connection with the AC/DC models, as excessive hum will result.

To determine the proper aerial for a particular 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. If improved FM reception is desired, the Philco Dipole Outdoor 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. References to drawings which illustrate the installation of aerials and couplers are included in the table.

EXTERNAL AERIAL DATA

Philco Radio Model	Type of Aerial Connection (See Drawing)	Aerial Coupler Part No.	Type or Types of Recommended Aerials
46-131	A	None	
46-132	A	None	
46-142	A	None	
46-200, 200-I	B	None	
46-250, 250-I	B	None	
46-350*	B	None	
46-420, 420-I	B	None	
46-421, 421-I	B	None	
46-427	D	45-1492	For these models, use Philco Outdoor Aerial, Part No. 45-1494, or Philco Farm Aerial, Part No. 45-1469. Refer to Aerial Installation Diagram No. 1.
46-431	E	76-2353	
46-451	E	76-2353	
46-1201	B	None	
46-1203	B	None	
46-1209	E	76-2353	
46-1226	E	76-2353	
46-806	A	None	
46-816	A	None	
46-817	C	None	
46-818	A	None	
46-860	F	None	
46-888	F	None	

EXTERNAL AERIAL DATA (Cont.)

Philco Radio Model	Type of Aerial Connection (See Drawing)	Aerial Coupler Part No.	Type or Types of Recommended Aerials
46-480	E	76-2353	To improve FM reception only, use Philco Dipole Outdoor Aerial, Part No. 45-1462, with or without Philco Reflector Kit, Part No. 45-1464, and without the coupler. To improve AM reception also, use the coupler. Refer to Aerial Installation Diagram No. 2. To improve AM reception only, Philco Outdoor Aerial, Part No. 45-1494, or Philco Farm Aerial, Part No. 45-1469, may be used, with the coupler. Refer to Aerial Installation Diagram No. 1.
46-1213	E	76-2353	
47-1227	E	76-2353	
47-1230	E	76-2353	

* This model requires an external aerial only in isolated locations.

CAUTION: Do not use any ground connection for AC/DC models.

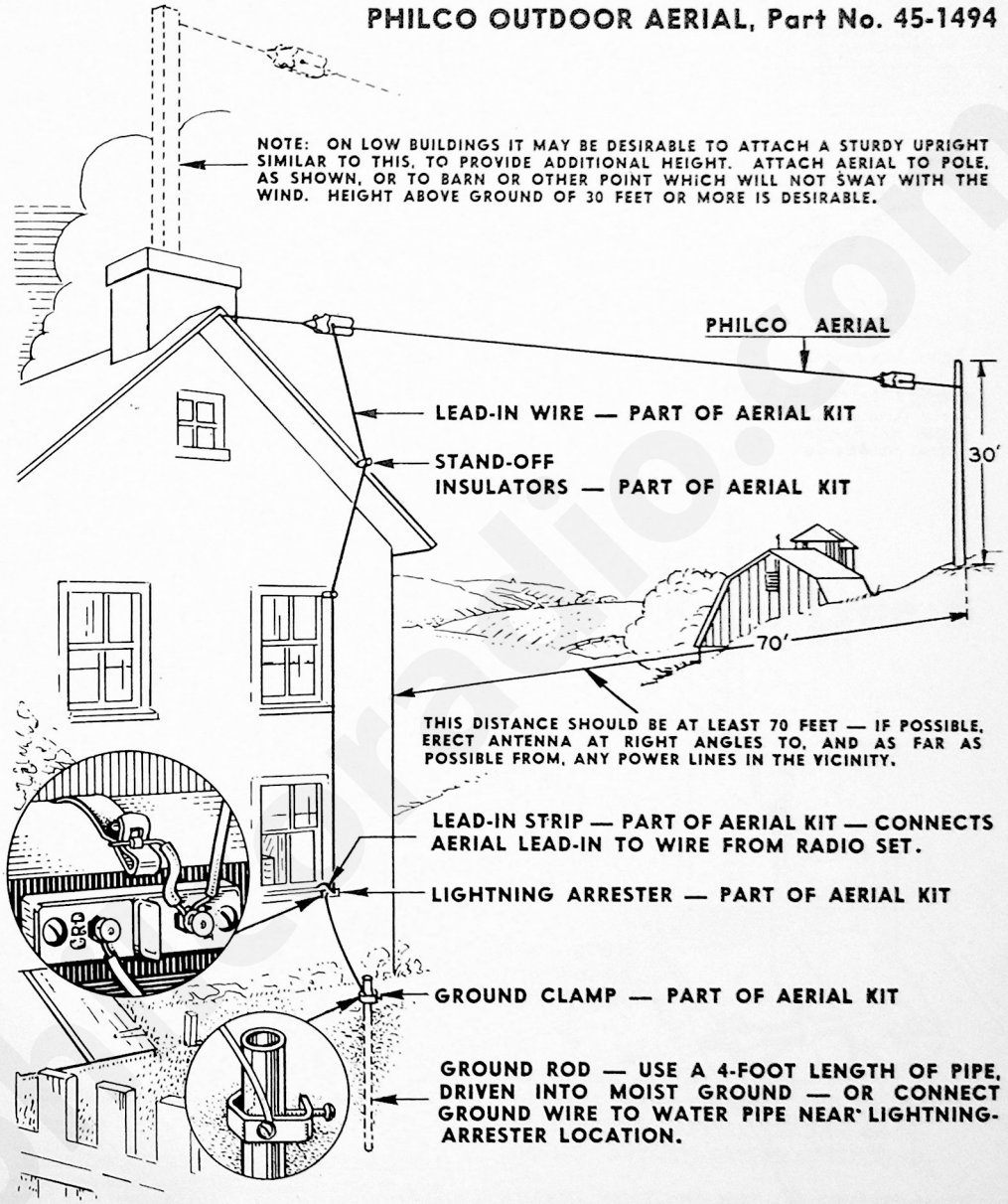
Aerial kits contain lead-in wire or transmission line of sufficient length (50 feet) for normal installations.

Additional 200-foot lengths of FM transmission line, Part No. 45-1495 (500-foot, 45-1495-1) may be ordered through the Philco Distributor.

Export models do not have built-in loop aerials.

Aerial Installation Diagram No. 1

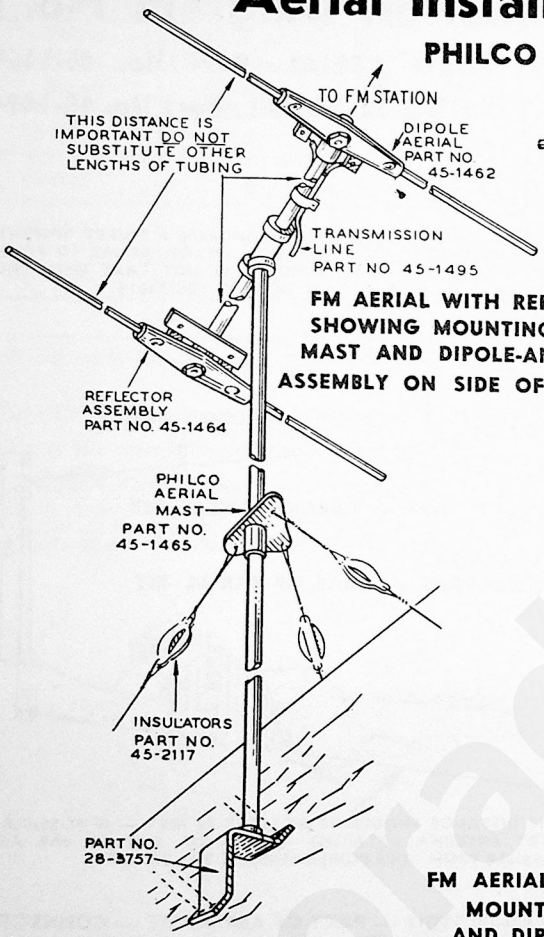
PHILCO FARM AERIAL, Part No. 45-1469
PHILCO OUTDOOR AERIAL, Part No. 45-1494



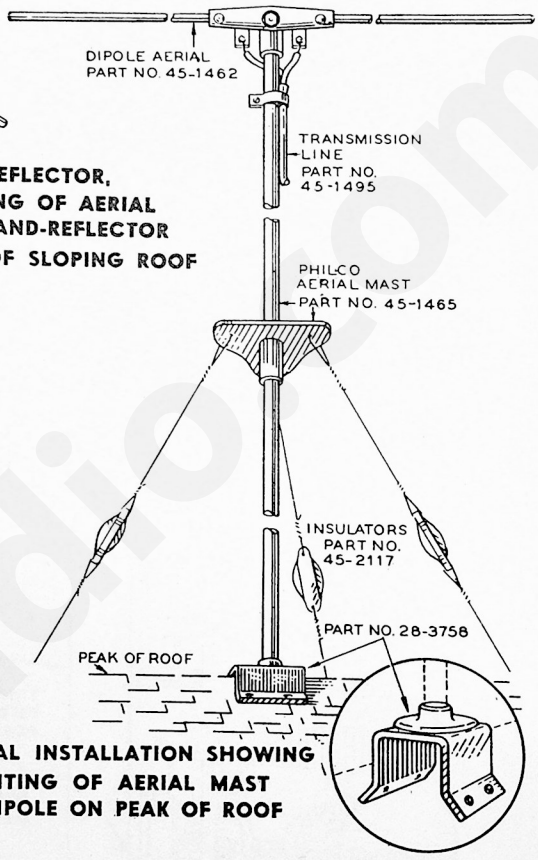
EXTERNAL GROUND CONNECTION IS NECESSARY ON ALL PHILCO BATTERY-OPERATED RADIOS. DO NOT USE WITH AC/DC SETS.

Aerial Installation Diagram No. 2

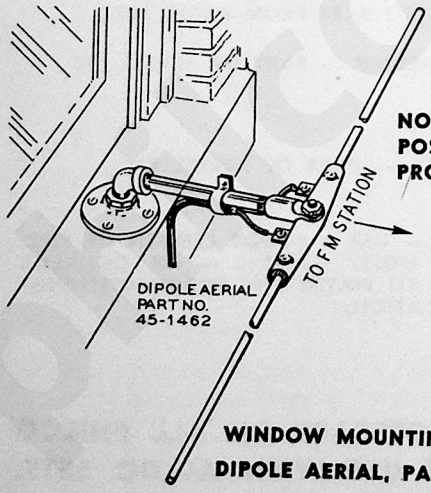
PHILCO FM DIPOLE AERIAL, Part No. 45-1462



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

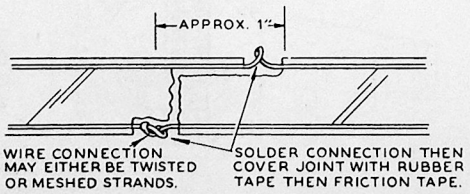


FM AERIAL INSTALLATION SHOWING MOUNTING OF AERIAL MAST AND DIPOLE ON PEAK OF ROOF



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.

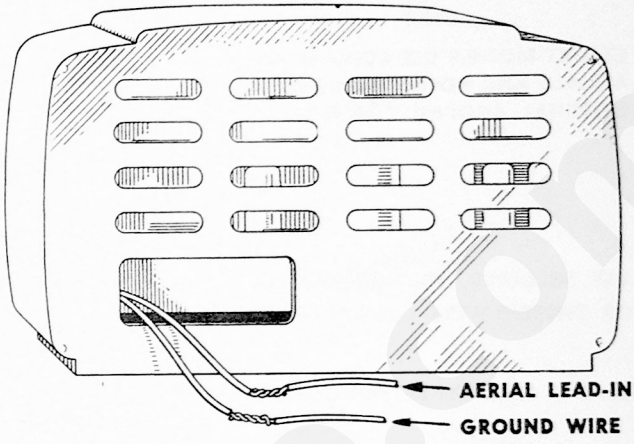


STAGGERED SPLICE OF TRANSMISSION LINE

Aerial Connection — Type A

CONNECT BLUE LEAD TO EXTERNAL AERIAL LEAD-IN WIRE

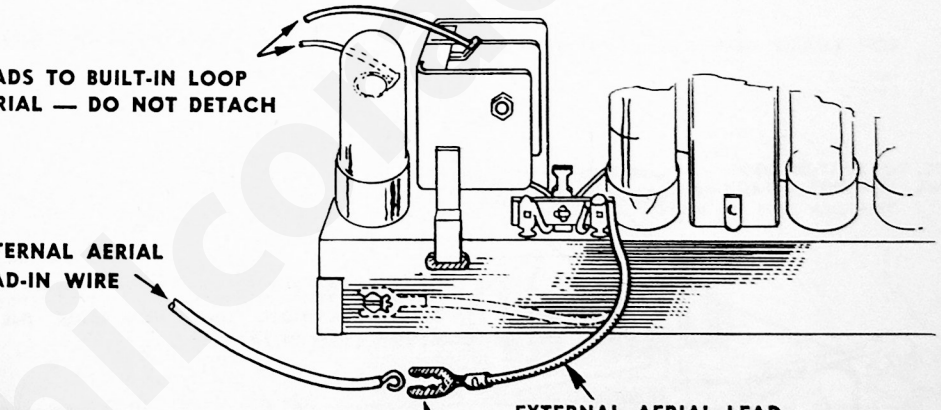
CONNECT BLACK LEAD TO GROUND WIRE. USE SOLDERED SPLICE CONNECTION. TAPE COMPLETED JOINT TO PREVENT SHORTING.



Aerial Connection — Type B

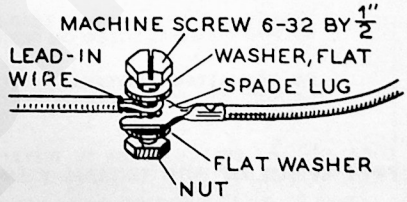
LEADS TO BUILT-IN LOOP AERIAL — DO NOT DETACH

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.

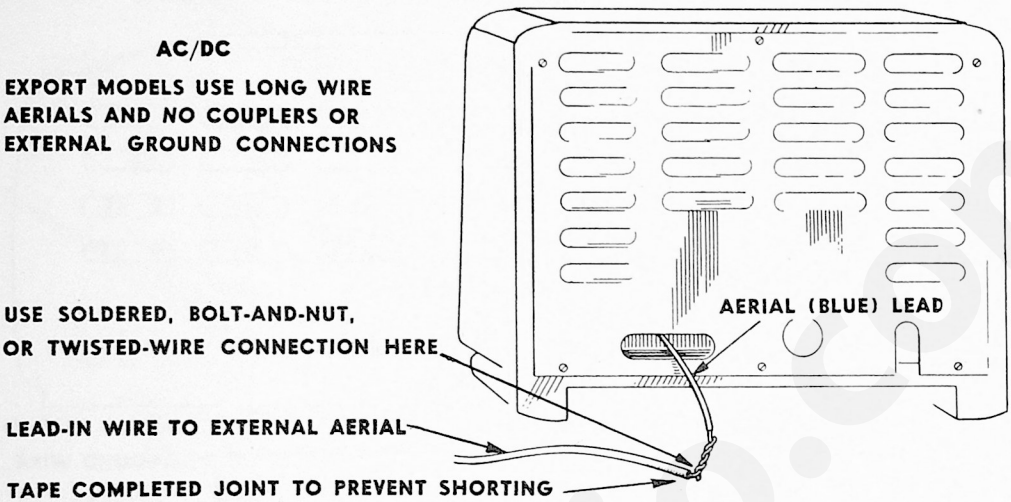


DETAIL OF SUGGESTED BOLT-AND-NUT CONNECTION

Aerial Connection — Type C

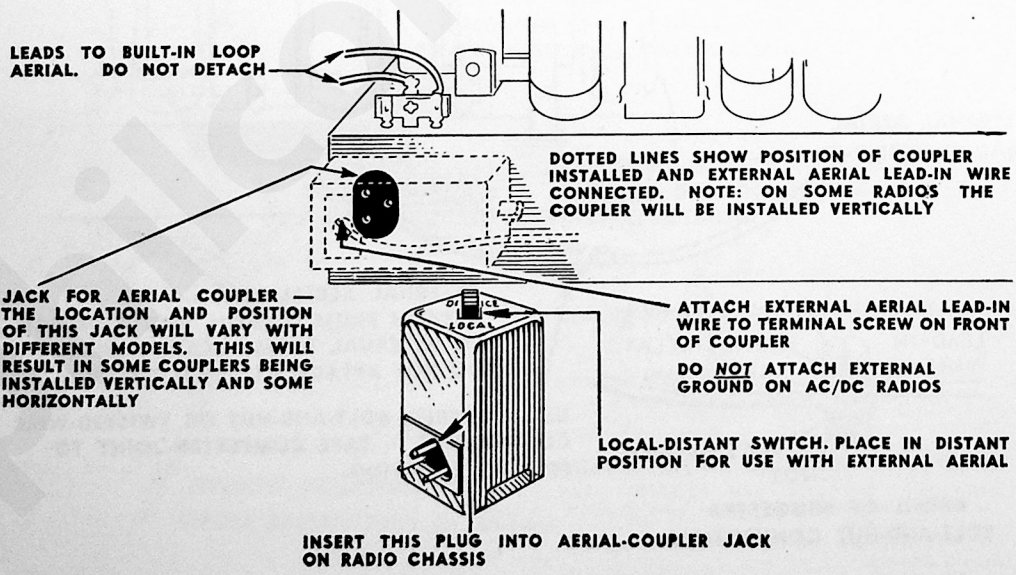
AC/DC

EXPORT MODELS USE LONG WIRE AERIALS AND *NO* COUPLERS OR EXTERNAL GROUND CONNECTIONS



Aerial Connection — Type D

USE COUPLER, Part No. 45-1492



Aerial Connection — Type E

USE COUPLER, Part No. 76-2353

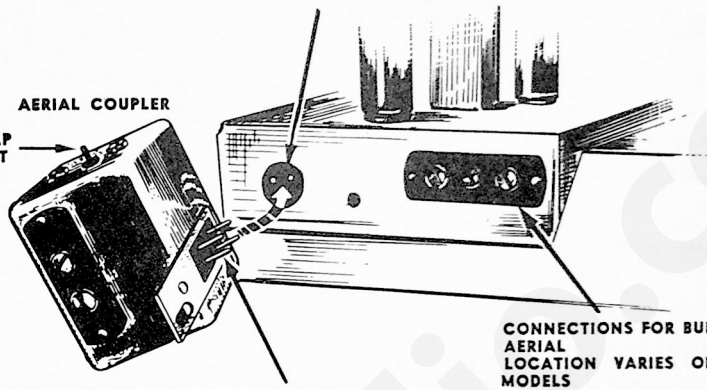


DIAGRAM SHOWING AERIAL COUPLER INSTALLED AND READY FOR CONNECTION OF EXTERNAL AERIAL

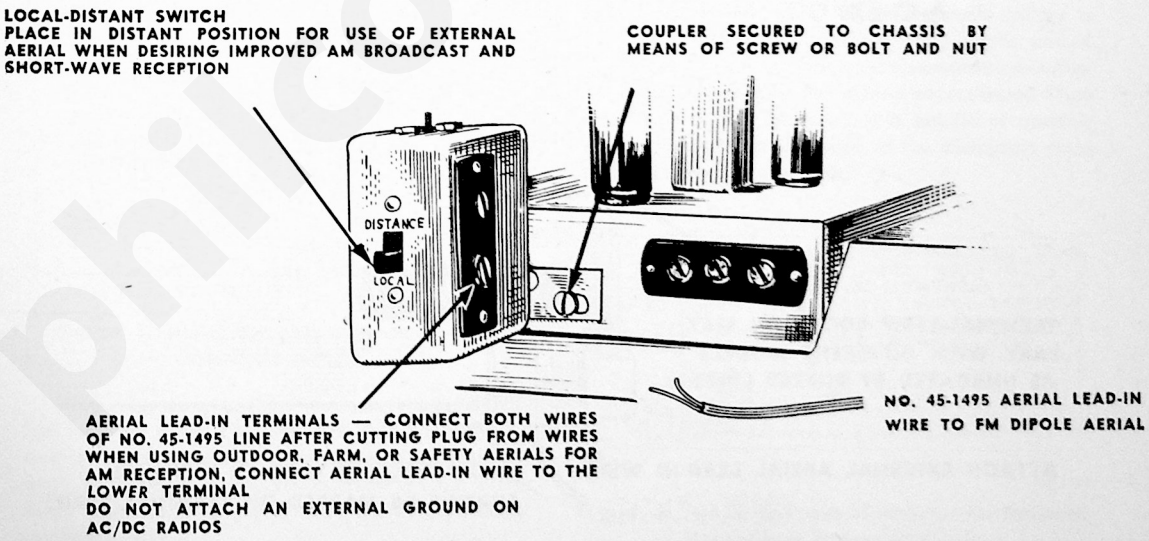
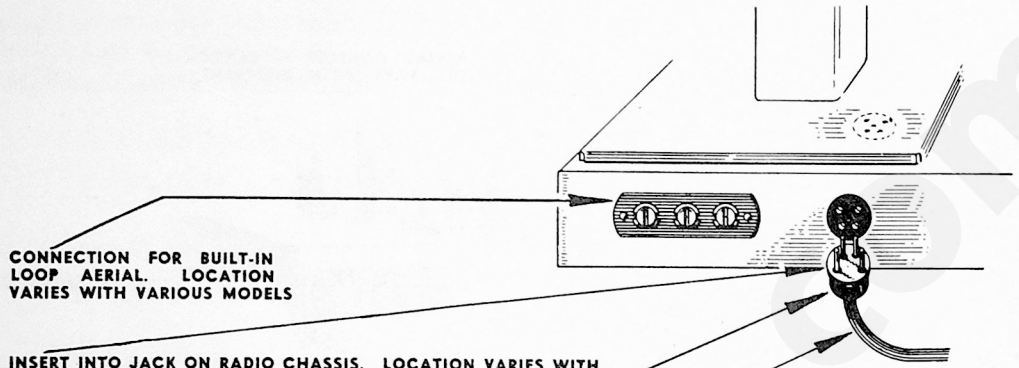


DIAGRAM SHOWING DIRECT COUPLING OF DIPOLE-AERIAL TRANSMISSION-LINE PLUG TO RADIO WHEN COUPLER IS NOT USED



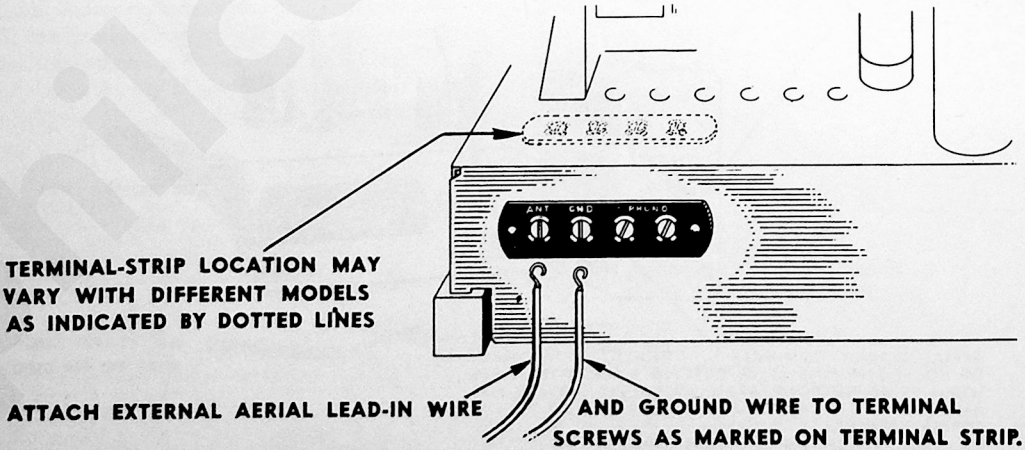
CONNECTION FOR BUILT-IN LOOP AERIAL. LOCATION VARIES WITH VARIOUS MODELS

INSERT INTO JACK ON RADIO CHASSIS. LOCATION VARIES WITH VARIOUS MODELS

TRANSMISSION-LINE PLUG, PART NO. 27-4788
DIPOLE-AERIAL TRANSMISSION LINE, PART NO. 45-1495
COMBINATION OF LINE AND PLUG IS PART NO. 41-3753

Aerial Connection — Type F

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



TERMINAL-STRIP LOCATION MAY VARY WITH DIFFERENT MODELS AS INDICATED BY DOTTED LINES

ATTACH EXTERNAL AERIAL LEAD-IN WIRE AND GROUND WIRE TO TERMINAL SCREWS AS MARKED ON TERMINAL STRIP.