

# PHILCO SERVICEMAN

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RADIO · MANUFACTURERS · SERVICE · NEWS



MAY, 1937

## EDITORIAL

### 100% Performance?

THE increasingly large number of dealer sales of radio sets in the higher-priced brackets brings a problem of vital interest to the entire radio industry. It is unfortunate, but nevertheless true, that a large percentage of the higher-priced sets made by radio manufacturers and sold through their various distributing outlets are being installed in such a manner that the owners are only getting from 40 to 60 per cent of the performance of which the set is capable. This condition is caused in most cases by the attitude of the dealer and of the serviceman.

We are not attempting to say here where the blame lies, but we think the problem should be brought forcibly to the attention of everyone in the business. All of us in the radio industry, whether we are manufacturers, distributors, dealers, servicemen or radio broadcasters, must face this situation squarely and realize that an unhealthy condition is being allowed to exist in our industry.

There has been much talk about this subject ever since radio broadcasting came into being, but there has been far too little done to correct the condition. It is not necessary for us to tell you how a good installation should be made, so that the customer will get 100 per cent performance instead of only 50 per cent performance—you already know. We believe that those dealers and servicemen who take the necessary steps within their own business organization to correct this situation will be the successful ones to get the bigger share of the business and to make more money for themselves.

## SERVICEMEN MAKE EFFECTIVE USE OF R·M·S ELECTROS

MANY servicemen prefer to have their own letterheads and envelopes printed locally instead of using the R. M. S.



**M. A. RIEMANN  
REPAIRS  
RADIOS**

3431  
INDIANA  
AVENUE  
ST. LOUIS,  
MISSOURI

letterheads and envelopes which are available to all members.

Some interesting typographical arrangements have been employed using the standard Radio Manufacturers Service electros, which can be obtained upon or-

der from the PHILCO distributor. M. A. Riemann employs a novel and inexpensive design by tying in the thought of radio aerials and grounds with the Radio Manufacturers Service emblem.

There are many possibilities of this kind. If you are not now using the standard R. M. S. stationery or are not employing the R. M. S. insignia electro in your own stationery, you are missing a good bet. These electros can be obtained for as little as 30 cents from your PHILCO distributor, and they will certainly add to the prestige of your business stationery.



Parts Department, Columbia Wholesalers, PHILCO Distributors in Baltimore, Md.

# Two New Philco Aerials Recently Announced

## Utility Aerial a Quantity Plus Sales Item

## Auto Radio Cowl Aerial Rounds Out Philco Line

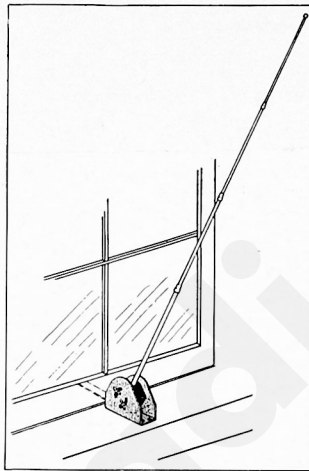
**F**INE performance—great reception—the reaction of thousands of users of the new PHILCO Utility Aerial.

Apartment-house dwellers find the PHILCO Utility Aerial the best answer to their reception problem. Where it is impossible to arrange for the installation of a good outdoor roof aerial, the utility aerial is better than anything else that can be used for all types of reception.

In practically every home there are small radios being used in bedrooms, children's rooms, kitchens, dens, recreation rooms and other points in the house, in addition to the main radio in the living room. The owners today are in most cases operating these extra radios on unsatisfactory indoor aerials. These indoor aerials are unsatisfactory, both from a "nuisance" standpoint and also because of performance. Poor pick-up and noisy reception invariably result from using an indoor aerial.

The PHILCO Utility Aerial is the ideal solution for these extra radio installations, and it can be quickly and easily installed by the customer himself.

The telescopic rod is stainless steel of the highest quality. It is made in four sections so that it can be any length from 18 inches out to the full, extended position. The mounting bracket is adjustable by means of thumb screws so that the angle from the building can be varied at will. A flexible, weatherproof window lead-in strip is provided with the aerial.



PHILCO Utility Aerial, Part 45-2450  
List Price \$5.00

There are no connections to make except clipping the lead-in strip to the radio; no installation expense, but particularly good radio reception.

### Philco Cowl Aerial

PHILCO'S newly announced auto radio cowl aerial offers remarkable performance qualities as well as an attractive appearance.

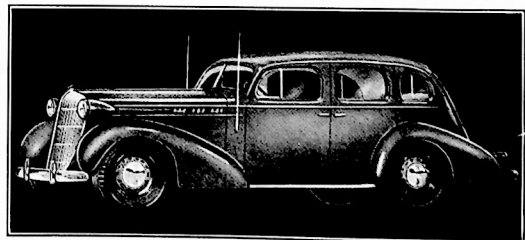
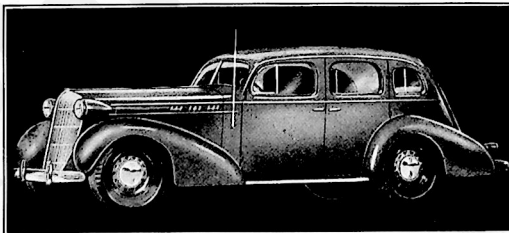
This aerial has been developed in answer to those who wanted the greatest ease of installation, plus maximum signal pickup. Installation on the side of the car is extremely simple and can usually be done in a few minutes' time. The signal pickup, because of the aerial clearance away from all parts of the car, is especially good. The interference pickup from the ignition system is very slight because the lead-in from the aerial to the radio is short.

The appearance of the new cowl aerial is most attractive, the rod being one-piece, tapered, 7/32-inch solid steel, chromium plated, 54 inches long. The two insulating supports are black bakelite.

The list price of this aerial, Part No. 45-2470, is \$3.75, subject to your standard parts discount.

The cowl aerial does not replace the standard under-car aerial nor the standard car-top aerial, but is an additional aerial giving you a complete line of the three popular types now in use. Don't forget that in all three of these PHILCO car aerials, quality and performance are put first. An aerial, to be used on an automobile, should be as fixed in position and as permanent as any part of the car itself. The three PHILCO Auto Radio Aerials have been designed with this point in mind.

Quality, performance, appearance and price will enable PHILCO dealers and servicemen to get the lion's share of the auto radio aerial business.



PHILCO Auto Radio Cowl Aerial, Part 45-2470

Showing two PHILCO Cowl Aerials installed. Engineering tests show that double the signal pickup may be obtained when two aerials are used. Appearance is greatly improved.

COLOR CODE.

# COLOR CODE for PHILCO MICA CONDENSERS

Part No.	Capacity u.u.f.	Capacity Mfd.	Color Code	Part No.	Capacity u.u.f.	Capacity Mfd.	Color Code
3082	250	.00025	Yellow	30-1031	110	.00011	Blue Yellow
3774	50	.00005	White	30-1032	250	.00025	Yellow
3910	500	.0005	Green	30-1033	150	.00015	Yellow Yellow White
4059	2000	.002	Blue	30-1034	45	.000045	Yellow Yellow Green
4519	110	.00011	Blue Yellow	30-1035	100	.0001	Yellow Yellow Blue
4520	700	.0007	White Yellow	30-1036	130	.00013	White White White
4587	50	.00005	Blue White	30-1037	235	.000235	White White Yellow
4990	35	.000035	Green Yellow	30-1038	250	.00025	White White Green
5120	410	.0004	Yellow Orange	30-1039	30	.00003	White White Blue
5215	1000	.001	Green White	30-1040	60	.00006	White White Orange
5858	250	.00025	Yellow	30-1041	150	.00015	Green Green Green
5863	700	.0007	White Yellow	30-1042	2000	.002	Green Green Yellow
5877	1650	.00165	Green Blue	30-1043	6000	.006	Green Green White
5878	-800	.0008	Green Orange	30-1044	35	.000035	Green Yellow
5886	1250	.00125	Blue Orange	30-1045	55	.000055	Green Green Blue
5981	6000	.006	Orange	30-1046	90	.00009	Green Green Orange
6009	3000	.003	Orange White	30-1047	200	.002	Green Green Red
6018	1800	.0018	White White	30-1048	35	.000035	Red Red Red
6021	800	.0008	Green Orange	30-1049	600	.0006	Red Red Yellow
6022	1800	.0018	White White	30-1050	130	.00013	Red Red White
6359	6000	.006	Orange	30-1051	1000	.001	Red Red Blue
6773	1000	.001	Green Green	30-1052	4700	.0047	Red Red Green
6853	2000	.002	Yellow Yellow	30-1053	75	.000075	Blue Blue Blue
6897	25	.000025	Blue Blue	30-1054	2900	.0029	Blue Blue Red
6898	600	.0006	Orange Orange	30-1055	2250	.00225	Blue Blue Yellow
7006	2500	.0025	Red	30-1056	250	.00025	Blue Blue Orange
7007	1400	.0014	Red Red	30-1057	2200	.0022	Blue Blue White
7139	1500	.0015	Red White	30-1058	5200	.0052	Blue Blue Green
7301	3000	.003	Red Orange	30-1059	30	.00003	Orange Orange Orange
8311	300	.0003	Red Green	30-1060	900	.0009	Orange Orange Blue
30-1000	410	.00041	Yellow Orange	30-1061	3250	.00325	Orange Orange Green
30-1001	6000	.006	Orange	30-1062	1400	.0014	Orange Orange White
30-1002	6000	.006	Orange Green Orange	30-1063	1000	.001	Orange Orange Yellow
30-1004	325	.000325	Red Blue	30-1064	600	.0006	Orange Orange Red
30-1005	110	.00011	Red Yellow	30-1065	10	.00001	Violet Violet Violet
30-1006	110	.00011	Blue Yellow	30-1066	80	.00008	Violet Violet Red
30-1007	1000	.001	Green White	30-1067	25	.000025	Violet Violet White
30-1026	2500	.0025	Red	30-1068	70	.00007	Violet Violet Green
30-1027	410	.00041	Yellow Orange Green	30-1069	765	.000765	Violet Violet Green
30-1020	110	.00011	Blue Yellow	30-1070	60	.00006	Violet Violet Blue
	250	.00025	Yellow	30-1076	40	.00004	
30-1008	30	.00003	Stamped with Capacity	30-1078	200	.0002	Green Green Red
30-1009	40	.00004	Stamped with Capacity	30-1081	1150	.00115	Yellow Yellow Orange
30-1010	70	.00007	Stamped with Capacity	30-1082	80	.00008	Yellow Yellow Red
30-1011	80	.00008	Stamped with Capacity	30-1083	5	.000005	White White Red
30-1012	100	.0001	Stamped with Capacity	30-1084	4000	.004	White White Brown
30-1013	200	.0002	Stamped with Capacity	30-1085	2675	.002675	White White Violet
30-1014	400	.0004	Stamped with Capacity	30-1086	500	.0005	Green
30-1015	900	.0009	Stamped with Capacity	30-1088	130	.00013	Yellow Yellow Violet
30-1016	4000	.004	Stamped with Capacity	30-1089	410	.00041	Yellow Orange
30-1017	5000	.005	Stamped with Capacity	30-1090	19	.000019	Violet Red Violet
30-1018	8000	.008	Stamped with Capacity	30-1091	10	.00001	Violet Green Violet
30-1019	10,000	.01	Stamped with Capacity	30-1092	550	.00055	Violet Orange Violet
30-1028	3000	.003	Red Orange	30-1093	410	.00041	Violet Yellow Violet
30-1029	50	.00005	Blue White	30-1094	3500	.0035	Violet Blue Violet
30-1030	15	.000015	Yellow Yellow Yellow				

## Causes of Cross-Modulation Explained

IN A recent issue of SUCCESSFUL SERVICING, John Rider featured an interesting article on tracing cross-modulation and various means for correcting this type of interference.

It was pointed out that cross-modulation interference is very often caused in localities adjacent to powerful broadcasting stations by certain types of rectifying action in the R.F. circuit. In many instances it has been found that an unsoldered break in the aerial or lead-

in wire will produce a rectifying action between the copper oxide and the copper at the break. When rectification of this kind takes place on a very powerful signal, cross-modulation results, and there is nothing in the way of wave traps or other filters in the radio chassis that will help. It was found, for example, in the Newark area, which is adjacent to the 50 K.W. transmitters of WJZ and WOR, considerable cross-modulation resulted. It will be noted from the chart on page 4 that WJZ on 760 K.C. and WOR on 710 K.C. have a frequency difference of 50 K.C. Various combinations of points at which cross-modulation is obtained seem to result when

rectifying action takes place in the aerial or A.C. power wiring.

This condition has been noted in various other cities throughout the country in neighborhoods adjacent to powerful stations.

If trouble of this kind has been experienced, it is necessary to eliminate all poor contacts and joints which may be present in the antenna and ground circuits. These connections should be cleaned and properly soldered. If the cross-modulation still persists, one or more of the following remedies will clear up the situation:

- (1) Ground the neutral of the house  
(Continued on Page 4)

# More Service Helps from Philco

THE service hints published in the April issue of the PHILCO SERVICEMAN were so well received that we are again listing some additional helps taken from practical experience in the PHILCO National Service Department at Philadelphia.

**37-9 Distortion at Minimum Volume.** Dress the green-and-white wire connecting the volume control No. 67 center lug to the automatic tuning dial audio switch No. 93 away from compensator No. 54 and the diode circuit of the second detector and first audio tube 6Q7G tube. Numbers referred to are to be found on Service Bulletin No. 269.

**37-10-11X No Magnetic Tuning Action.** Check for open coil in oscillator control circuit. This is broadcast coil No. 28, Part No. 32-2336, Service Bulletin No. 268.

**Audio Interference.** Remove the green-and-white wire of audio switch No. 37 from the volume control center lug and connect to the high side of the control.

**37-38 Oscillation.** This condition can be traced to the I.F. circuit. Elimination is accomplished by connecting a .05 mfd. condenser, Part No. 30-4020, from the screen supply to the 1C7G detector-oscillator and 1D5G I.F. tubes to ground.

**37-620 Distortion at Minimum Volume.** Connect a 110 mmfd. condenser, Part No. 30-1031, from the volume control center lug to ground.

**37-116X Distortion.** Check bias resistor No. 96, Service Bulletin No. 222A. This is a three-section resistor (flat, wire-wound type), Part No. 33-3212, having a resistance of 17.6, 90.4 and 257 ohms respectively. Some have been found to be shorting intermittently through the insulator to ground. The quickest and most effective remedy is to remove the wiring leads and substitute a new resistor.

**37-660 No Reception.** Referring to Service Bulletin No. 257, check for open or shorted coupling condenser, Fig. 22, in detector-oscillator stage. This is condenser Part No. 30-1032, 250 mmfd. capacity.

**37-640 No Reception on Third or S.W. Band.** Check coupling condenser, Fig. 12, Service Bulletin No. 253. This is condenser Part No. 30-1073, 14 mmfd. capacity.

**37-650 Intermittent Reception.** Re-

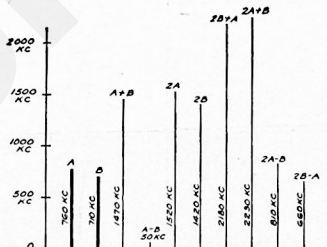
ferred to Service Bulletin No. 254, check mica insulating material in oscillator compensating condenser block assembly. This is assembly Part No. 31-6111, shown as Fig. 16, and consists of six sections which serve to tune all ranges on this model.

**16 (121-122) I.F. Frequency Drift.** In order to alleviate frequency drift with this model, it is recommended that the first and second I.F. transformers be replaced with Part No. 32-1186, using compensating condenser assemblies, Part No. 31-6030, with shunt condensers, Part No. 30-1036, connected across both the primary and secondary sections. The third I.F. transformer should be replaced with Part No. 31-1866, using compensating condenser assembly, Part No. 31-6003, no shunt condensers being used.

## Causes of Cross-Modulation

(Continued from Page 3)

- wiring at the house in addition to retaining the ground at the distribution transformer.
- (2) Use an improved ground at the receiver.
  - (3) Install R.F. bypass condensers from the power line to ground at the point where the line enters the house, near the receiver, or in both places.
  - (4) In some cases it is necessary to install R.F. chokes in the line, as well as bypass condensers.
  - (5) Relocate the antenna so that there is less pickup from the power line to the antenna or lead-in. Use a noise-eliminating aerial wherever possible.



The two original frequencies which represent two different stations are indicated by the heavy black lines. As a result of rectification, eight new frequencies are introduced. These frequencies are responsible for the cross-modulation effect, as explained in the text.

# Philco Pilot Light Part Numbers

THE new PHILCO pilot light merchandiser, part 45-1300, is now being displayed by thousands of PHILCO dealers. This new selling method for pilot lights makes it possible for the customer to purchase these lights over the counter for the first time. The list below will be extremely helpful in assisting PHILCO dealers to supply the correct pilot lights for the various models.

PHILCO Model No.	Pilot Light	PHILCO Model No.	Pilot Light
3	6608	89	6608
5	6608	90	3463
6	6608	91	6608
7	6608	95	3463
8	6608	96	3463
9	6608	97	34-2031
10	6608	111	3463
10 (122)	34-2039	112	3463
11	6608	116	34-2039
12	6608	118	6608
14	6608	144	6608
15	6608	200	6608
16 (121-2-3)	6608	201	2040
16 (125-6-7)	34-2031	490	3463
17	6608	511	6608
18	6608	600	34-2064
19	6608	602	34-2068
20	3463	604	34-2068
21	3463	610	34-2064
22	3463	611	5316
28	4567	620	34-2064
29	6608	625	34-2064
40	3463	630	34-2064
41	3463	635	34-2039
42	3463	640	6608
43	6608	641	34-2068
44	6608	642	34-2068
45	6608	645	34-2039
46	3463	650	34-2064
47	6608	651	34-2068
48	6608	655	34-2039
49	4567	660	34-2039
50	3463	665	34-2039
51	3463	680	34-2039
52	3463	37-600	34-2039
54	4567	37-61	34-2039
58	6608	37-89	34-2039
59	6608	37-116	34-2039
60	6608	37-600	34-2064
65	3463	37-602	34-2068
66	6608	37-604	34-2068
70	3463	37-610	34-2039
70	3463	37-611	34-2068
71	6608	37-620	34-2039
76	3463	37-630	34-2039
77	3463	37-640	34-2039
80	6608	37-650	34-2039
81	6608	37-660	34-2039
84	6608	37-670	34-2039
86	6608	37-675	34-2039
87	3463	37-690	34-2039

Look for the announcement in the June PHILCO SERVICEMAN of the biggest thing in radio service since the organization of R. M. S.

## DEVLIN-DREW COMPANY

718 "F" Street

Fresno, California

Service Department