

PHILCO SERVICEMAN



RADIO • MANUFACTURERS • SERVICE • NEWS

JANUARY, 1941

Philco Service Accelerated Growth of Auto Radio Industry

EDITORIAL

BIG BUSINESS REVIVED

The tremendous comeback of the phonograph this year has been the basis of practically a new business for many radio dealers. Philco, the world's largest radio manufacturer, has sold more radio phonographs this year than the total for all past years together. Likewise, as in the straight radio field, Philco has done more business in radio phonographs this year than any other competitor, all of which brings up new problems for the dealer and the serviceman.

Dealer's Responsibility

The correct installation and operation of a radio phonograph is definitely a dealer responsibility. It is up to his serviceman to see that the instrument is installed correctly, that it is adjusted so as to operate properly, and that the customer is carefully instructed in the operation. The dealer who simply dumps such a set in the customer's living room and then hopes for the best is in for some trouble.

Adjustments Necessary

Philco radios and Philco phonographs are better engineered and better built than anything else on the market. Your dealer experience through the years has proven that fact beyond a doubt. There are going to be some installation and service troubles from time to time, however, and it is going to be necessary to adjust these troubles before you pronounce the set ready for customer use. Every Philco product when it leaves the factory is carefully adjusted and tested for correct performance. We must remember what a delicate and complicated piece of electrical apparatus the radio set really is and we must appreciate the fine mechanical construction and adjustment that has been made a commercial reality in the Philco radio phonographs at their amazingly low price. When such instruments are shipped hundreds or even thousands of miles, we cannot expect all of them to work perfectly without some adjustments being necessary at the time they are removed from the shipping box.

Big Business

This radio phonograph proposition is big business. It is big for the manufacturer, the distributor, the dealer, and the serviceman. It is something that can make some big money for

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Warranty Labor Service Organization Largest in World

The work which has been done by Philco in pioneering and developing the auto radio business has created within the past ten years an entire new industry in the United States. In addition to the finest engineering and sales development for the design and merchandising of auto radio, Philco has gone the entire way by building up the largest and best qualified independent auto radio service organization in the world to take care of the performance of these sets.

Over 2000 highly trained and well equipped Philco Warranty Service Stations, strategically located over the country, carry out the obligation of keeping in perfect running order the millions of Philco-built auto radio receivers which have been sold. No other manufacturer in the industry can boast of such a fine service organization to care for its products.

To the Philco Warranty Service Station organization goes just as much credit for the tremendous expansion and development of the auto radio industry as to the great engineers who design these Philco radios. Certainly without such highly skilled and well equipped service facilities, the auto radio business could not have grown and prospered to the extent that it has today. We can truthfully say that the work of the Philco Warranty Service Stations has contributed greatly to the increased use of the automobile in modern American life. The pleasure which the car owner derives from auto radio adds to the pleasure and desirability of driving his car.

Car Manufacturers' Service

The primary purpose of the Warranty Service Stations is to provide reliable auto radio service for the custom-built sets which Philco supplies to the various leading car manufacturers. This nation-wide service to car owners makes it possible for a person who bought his radio-equipped car in New York, for example, to obtain satisfactory service, should the occasion arise, in Phoenix, Arizona. There are a number of stations in each key city throughout the country and there are also individual stations in various towns and smaller cities so that the customer need never be without radio service for his custom-built set.



A Typical Philco Drive-In Auto Radio Service Station

High Standards

One of the requirements for the Warranty Service Stations is that they be adequately equipped with the necessary radio test instruments, a sufficient stock of parts and replacement tubes, and that they have adequate technical personnel to take care of the necessary service work. There must also be drive-in facilities so that the customer can drive his car directly to the station and have the work done in a convenient location off the street. On every contract which is signed by Philco and by the Warranty Service Station there appears a diagram giving the approximate physical dimensions and layout of the Warranty Service Station auto radio service shop. There is also an elaborate questionnaire in the contract which is filled out by the Philco representative and which outlines the service station's technical and physical qualifications for the appointment.

Complete Technical Information

Philco Service Headquarters in Philadelphia is constantly supplying technical information and service helps to the Warranty Service Stations. Complete service bulletins on the various car manufacturers sets are mailed directly from Philadelphia to the Warranty Service Stations. In addition to these service bulletins, the stations also receive, regularly, confidential service summaries in which specific service problems or installation questions are discussed and explained. This information is prepared in Philadelphia and

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"R.M.S. and the War" From Philco in England

The following is reprinted from the Philco Serviceman published by the Philco Radio and Television Corporation of Great Britain Ltd., London, England.

"Perhaps some of our members are wondering what has become of R.M.S. since the outbreak of war. Certainly we have been unable to maintain the publication of the "Serviceman" with the same regularity, but this is not due to the fact that the organization is dead. For various reasons, which will be easily understood, regular publications have been curtailed. However, we will naturally get back to our old stride as soon as possible.

"In the meantime, we wish to assure members that Philco and R.M.S. is very much alive and we are still ready to give all the advice possible to engineers.

"There is still a steady influx of new members and great interest has been taken in the training of young engineers who have qualified for membership. This training by older members is very important and R.M.S. helps by admitting the trainees who are thus able to take advantage of the Technical Training Scheme.

"So do not forget that in spite of the war, the finest Service organization in existence carries on."

Big Business Revived

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everybody in the industry if we get set up to handle it properly. Radio phonographs are not over-the-counter package merchandise and they must not be sold, installed, and serviced as such. They require plenty of attention, but in return for this attention some really handsome profits are made.

The dealer's serviceman must know about the servicing of these instruments. He must be able to put his finger on the source of any trouble immediately. Service information on Philco light beam pickups and automatic record changers has been furnished to every member of Radio Manufacturers Service which means all the better-class servicemen throughout the country. Dealers can obtain extra copies of these bulletins from the Philco distributors and they must not be sold, installed, and serviced as such. Practical service information on record changers and home recording has been published lately in various issues of the Philco Serviceman. Philco distributors and Philco Field Service Engineers have conducted service schools during the past few months for the purpose of explaining these new instruments to servicemen and dealers. Any serviceman who is actively interested in learning more about phonographs can go to his Philco distributor's Service Department at any time for willing assistance.

The radio phonograph business has greatly increased the average unit list price of radio sales. Certainly a business of this kind is worth hanging on to and the responsibility for keeping it going is largely up to the serviceman.

SERVICE INFORMATION ON NEW PHILCOPHONE

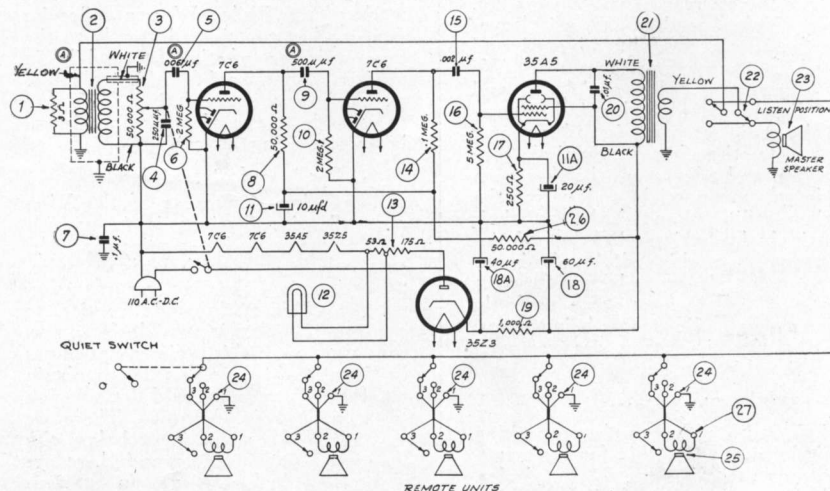
The new Model 908 Philcophone is an improved efficient system for voice communication between a central point and one or more remote points. The 908 operates on 115 volts A.C. or D.C. power supply. The power consumption is 20 watts.

Up to five remote stations can be used in connection with one master unit. A three-wire cable connects between the master unit and each of the remote units. Fifty feet of this cable is supplied with each remote unit. By observing the remote speaker connections in the wiring diagram below, it

will be seen that the wiring from the master unit out to the remotes can be common to a large extent. In other words, if it will facilitate wiring, it is possible to make connections between the remote speakers and the master through a total of two wires more than the number of remote speakers being used. If five remotes are being employed, it is only necessary to actually run seven wires to the master unit. Additional three-wire cable is available in 50-foot lengths (Part No. L-3278) list price \$2.00, and in 100-foot lengths (Part No. L-3283) list price \$3.75.

REPLACEMENT PARTS MODELS 908, 909

1 Resistor (3 ohms)	33-930356	14 Resistor (.1 megohm)	33-410339
2 Input Transformer	32-3626	15 Condenser (.002 mfd., 400 volts)	30-4579
3 Volume Control & Power Switch	33-5431	16 Resistor (.5 megohms)	33-450339
4 Mica Condenser (250 mmfd.)	60-125157	17 Resistor (250 ohms, 1 watt)	33-125438
5 Tubular Condenser (.006 mfd.) Later production 30-4445 (.001 mfd.) Early production 30-4592		18 Electrolytic Condenser (60-40 mfd.)	30-2449
6 Resistor (2 megohms)	33-520339	18a Electrolytic Condenser (40 mfd.)	Part of 18
7 Condenser (.1 mfd., 400 volts)	30-4572	19 Resistor (1000 ohms, 2 watts)	33-210539
8 Resistor (50,000 ohms, 1 watt)	33-350439	20 Condenser (.01 mfd.)	30-4572
9 Condenser (500 mmfd.) Later production 60-150157 (.002 mfd.) Early production 30-4579		21 Output Transformer	32-3602
10 Resistor (2 megohms)	33-520339	22 Talk-Listen Switch	42-1638
11 Electrolytic Condenser (10-20 mfd.)	30-2453	23 Cone Assembly (For 36-1536-2 Speaker)	36-4194
11a Electrolytic Condenser (20 mfd.)	Part of 11	24 Push Button Switch	42-1637
12 Pilot Lamp	34-2068	25 Cone Assembly (Remote Speaker 36-1532-2)	36-4193
13 Filament Resistor (53,175 ohms)	33-3367	26 Resistor (50,000 ohms, 1 watt)	33-350439
		27 Remote Speaker Call Switch	42-1639
		Terminal Panel (Speakers)	76-1172



Wiring Diagram Philcophone Model 908

Additional Adjustments for Record Changer Used in Models No. 41-605, 41-607, 41-608, 41-609, 41-610

The 10" and 12" record indexing adjustments are both controlled by one single cam. The proper method is to adjust the cam for 10" records and then the 12" records will be taken care of automatically. If after making this adjustment, the tone arm tends to skid off the edge of the record while playing 12" records, then the tone arm rest should be adjusted by bending it so that the jewel on the tone arm will land in the 12" record starting groove.

When the tone arm tends to skid off on a 10" record, either regularly or intermittently, it is most likely due to the guide arm spring (identified on page 3, Bulletin 358 as 'CN') being too weak. This allows the tone arm to be pulled off the record even after it has been properly located on the record and has played three or four turns. The weak spring does not permit the lever that controls this action to become disengaged from the master cam gear when in normal operating position. A spring was added early in production to the tone arm lift rod assembly to assist it in returning to its home position. After this spring was added, it was found that the spring "CN" required more tension to function normally. The new spring was then removed and steps were taken to eliminate friction so that the tone arm lift rod assembly returns to its home arm position by gravity. If trouble is experienced with the tone arm skidding off the 10" records on changers on which the spring has been added to the tone arm lift rod assembly, either the spring on the tone arm lift rod assembly can be removed or the "CN" spring shortened to increase its tension.

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is mailed to the Service Stations within a few days after the question has been brought to the attention of Philadelphia Service Headquarters. There are also general letters sent to the Service Stations from time to time in which new or revised service policies are outlined and explained. Through this mailing service, it is possible for the stations to be up to the minute at all times in having the latest factory information on the car manufacturers sets.

This successful method of handling the auto radio service on millions of sets has been made possible in a large measure through the marvellous cooperation that the Service Stations have given the automobile dealers of America. This same group of Service Stations developed by Philco has become the back-bone of the service organization of all the independent car manufacturers. Philco's engineering, Philco's right pricing, and the Philco Warranty Labor Service Station organization will continue to make Philco auto radio the leader in this great new industry.

BALLAST TUBE TESTING WITH 050

The 050 will give a complete test of all ballast tubes in which one or more ballast sections are open.

To test ballast tubes, first set filament control to position 17. Insert tube and throw indicated switches. If argon bulb glows throughout entire test, tube is good. If bulb goes out during any part of test, one or more

sections of tube is open and the tube should be replaced.

The "Load" control setting is immaterial. The "Test" control is left in the normal "Short" position. The "Line" control must be turned on, but the position for line voltage is unimportant.

Type	Argon Bulb Must Glow for Switch Positions	Substitute Typas Same Test	Type	Argon Bulb Must Glow for Switch Positions	Substitute Types Same Test
1A1	R		K49D	{ GS } { CGS } { CG }	49KD, BK49D, BK49D-10, 5633, 5518, 69116, 115.28, 3334, 3334A
1B1	R		L49B	{ A } { G }	49LB, BL49B, 2UR224, 165LB, 160LB, 69.2033, 5550, 5511
1C1	R		L49C	{ A } { G }	49LC, 160LC, 165LC, L49-5.5C, BL49C, 2905, 5552
1D1	R		L49D	{ GS } { CGS } { CG }	3CR-241, 49LD, 5567, BL49D
1E1	R		55A1	G	KY55A
1E2	{ A } { B }		55A2	{ A } { G }	KY55B
1F1	R		55B2	{ A } { G }	KY55C
1G1	R		K55B	{ A } { G }	55KB, K55BG, K54B, 180KB, 185KB, BK55B, 3613, 5519, 5535
1J1	R		K55C	{ A } { G }	BK55C, 185KB, 5536
1K1	R		K55D	{ GS } { CGS } { CG }	BK55D, 185KD, 115.22
1L1	R		L55B	{ A } { G }	2V4215, 185LB, 2903, 5555, 8598
1N1	R		L55C	{ A } { G }	85LC, L55-5.5C, 185LC, 2904
1P1	R		L55D	{ GS } { CCS } { CG }	85LD, 185LD
1Q1	R		60R30G	{ A } { G }	
1R1G	R		M73B	{ A } { G }	
1S1G	R		140R	R	
1T1G	R		140R4	{ GS } { BGS }	40B2
1U1	R		140R8	{ GS } { BGS }	40A2
1V1	R		165L4	{ GS } { BGS }	
1X1	R		165R	R	
1Y1	R		165R4	{ GS } { BGS }	50B2
1Z1	R		165R8	{ GS } { BGS }	50A2
2	R		185R	R	50X3
3	R		185R4	{ GS } { BGS }	
4	R		185R8	{ GS } { BGS }	50X3T
5	R		879R48	{ BRS } { BGS }	
5E1	R		BKU-126D	{ R } { AR } { ADR } { ABDR } { ABCDR }	
6	R		BKU-172B	{ DRS } { BDRS } { BCDRS }	
7	R		BKV51DJ	{ R } { AR } { ABR } { ABCR }	
8	R		BKX11BJ	{ ARS } { AR } { ARB }	
9	R		BKX21BJ	{ ARS } { AR } { ARB }	
L36B	{ A } { G }	L38B, L39B			
42A	G	K42A, 42AG, K46AG, K43A			
42A1	G	KY42A			
42A2	{ A } { G }	KY42B			
42B2	{ A } { G }	KY42C			
K42B	{ A } { G }	K42BG, K43B, 135K1			
K42C	{ A } { G }	K42CG, BK42C, 95K2, K40C, 5516, 5530			
K42D	{ GS } { CGS } { CG }	K42DG, BK42D, K40D, 3326			
K42E	{ GS } { CGS } { CG } { ECG }	K42E1			
L42B	{ A } { G }	BL42B, L42BG, 5547			
L42C	{ A } { G }	BL42C, L42CG, 69-2037, 5548			
L42D	{ GS } { CGS } { CG }	BL42D, L42DG, 5549			
49A	G	K49A, 49KA, K50A			
49A1	G	KY49A			
49A2	{ A } { G }	KY49B			
49B2	{ A } { G }	KY49C			
K49B	{ A } { G }	49KB, K43B2, 165KB, W43357, 115.41, 5533, 160KB, 5623			
K49C	{ A } { G }	49KC, BK49C, A16040, K50C, 81966-2, 5534			

Questions & Answers

1. Q. What is the correction for line interference in the new model Philcophones?

A. Interference which is picked up on the A.C. power line can be corrected by installing a Philco choke type filter, Part No. 45-2217, in the power line at the master control unit. This choke will eliminate all interference pickup which is coming into the unit over the power line.

2. Q. How can "wow" or speed variation be eliminated on Philco phonograph combinations?

A. This wavering of tone can sometimes be traced to a tight fitting flexible coupling between the motor and the changer mechanism. The coupling may be warped out of shape which causes uneven turntable speed. The motor and mechanism must be lined up so that the coupling is not strained in any way and can be slipped on the shafts easily. Distorted or extremely tight fitting couplings should be replaced. This is Philco Part No. 35-2220.

3. Q. How can excessive motor noise interference be eliminated on the 1941 Studebaker sets after the usual precautions have been taken and the interference persists?

A. A new antenna choke, Part No. 77-0836, has been designed to remove practically all of the motor interference picked up by the antenna. This choke is now being wired into the 1941 Studebaker radios. The choke is available through Philco distributors as a separate part which can easily be added to installations already made. The choke is simply plugged into the antenna socket on the receiver and the antenna lead-in is then connected to the choke, thus putting the choke in series with the antenna.

4. Q. What is the cause of record scratch with the light beam pickup on the new Philco phonograph models?

A. Many dealers and customers have overlooked the fact that there will be scratch reproduced from old records played on the new light beam pickup phonograph models. A record which has been played on a crystal or magnetic type pickup a number of times has a certain amount of scratch in the record itself. This is in no way a reflection on the performance of the light beam pickup. The almost complete freedom from surface noise which is made possible by using the light beam pickup can be demonstrated when a new record is played.

Mike Farad Acts as Interpreter



If Mike Farad could translate for us the mental processes in the Philco radio serviceman's mind, we might hear something like the following as work begins in the morning:

"Business is good. Always a big rush around this time of the year. Plenty of work to do—where's that Philco 41-221?"

"Well, I better pull the chassis and loop out of the cabinet and turn it on. Dead! Let's see. Finger on the rotor contact of the volume control causes plenty of hum, so the audio is probably O.K. Maybe the I.F. is shot. I guess I better stick on the signal generator. Where to connect? These loktal converter tubes don't have any grid cap like the 6A8G. Say, the rotor section of the mixer tuning condenser is connected to the grid I want. That's swell. I can connect the generator to the set without much fuss. There, the I.F. seems plenty good. That leaves only the antenna and oscillator circuits. What now? According to the Service Bulletin there should be around 85 volts on the oscillator plate: 027 reads 89 volts. Cathode should be 1.5 ohms to B—and infinite to the chassis. Those readings are correct. Let me see, 47,000 ohms from oscillator grid to cathode.

"Hey, wait a minute, open! And no wonder, resistor is broken. What's the part number? Schematic number 21 in the diagram—33-347339. Here's one, this kit box is O.K. Saves me a trip and I can get this radio out pronto.

"Well, what's next—a Philco 41-

608. Probably be a good idea to try the changer before I pull the chassis. Let's see, set the blades for a ten-inch record, push the "ten" button and hit the "R" button. Tone arm picks up O.K., but sets down too far out on the edge. That's simple to fix, and it's easier to reach in back of the cabinet and turn the indexing adjustment than use a screw driver through the hole. Stop the mechanism just before the tone arm falls onto the record, turn the adjusting cam. There, that's perfect. Well, try the tone and trip. Say, the thing sounds terrible. Wonder how the light beam is? This opening in the head is swell. Wow! no wonder it sounds awful—the light is all over the cell. Have to take off the cover to get at the lamp assembly. Three screws and that's that. I think it needs to be pushed forward—no, that's worse. Oh! there, that's sharp enough, but the beam is smack in the middle—back off the adjusting screw, half on half off. Should be O.K. now. Put the cover on and give it another try.

"Say! what a difference. Now to use my pet record. Yes, it sure was a good idea to keep this one record to try these new pickups. I know this record so well it's easy to recognize distortion. Boy! no trouble with this baby now. Now to try a stack of records—need ten more records. Here's ten—put them on the spindle. Now I'll let the pile run through while I check the radio.

"I'm going good so far today, but it's still early. Cross my fingers on this next complaint—weak. Try manual broadcast. Tune in station ZZZZ, that's my old standard—if I can hear that station well, the radio is hot. Where are they? Can hardly hear the carrier swish. This radio has something wrong with it. Take out the chassis but the loop is too big to handle, so I'll use my Philco aerial coupler instead. Audio O.K., and I.F.—wait a minute—got a little gain there, and more on this padder. Guess it's better to go right on padding this set. Roll in 580 and recheck 1400. Short wave is O.K. now. Try ZZZZ now. Where are they? Oh, oh, pass the shot gun—that's the second time I padded a set completely before I reset the pointer. Oh well, start all over again.

"There, plenty of hop now—and on KC. Shove the chassis back in and see if ZZZZ is O.K.—Yes sir, and then some. Oh yes, the pile of records went right through and should be O.K. Now I put the records back on and let them play through and listen to them while I get on this next radio."

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