PHILCO SERVICEMAN

RADIO : MANUFACTURERS : SERVICE : NEWS

APRIL, 1942

Servicemen Acclaim New Tester For Speed-up Results

EDITORIAL

RADIO WARRIORS

Everywhere we go these days people are realizing more and more the tremendous job which we have ahead in the war effort and they are doing something about it. Radio is playing one of the most important parts in the war activity because every branch of the Armed Services is dependent upon radio for its communication.

We talked recently to the head of the largest home study radio training school in the country and learned that this school has more students enrolled at present than they have ever had in their history. Instead of anticipating the usual Spring and Summer lull in educational interest, the school is planning even greater activity for the coming months than they have had during the Fall and Winter.

Thousands Needed

The demand for trained radio men will far exceed the present supply and it will be necessary, therefore, to train additional thousands for radio work with the Armed Forces both in the Army and the Navy and for important radio trouble-shooting, repairing and inspection work in vital defense industries. In addition to this tremendous new demand on the radio industry, there is still its great responsibility of keeping the millions upon millions of civilian radios in operation.

Refresher Courses

Many radio servicemen are taking refresher courses offered by various vocational schools and many others, particularly those in the outlying sections, are taking home study school training in order to improve their knowledge of radio. It was interesting for us to note that the above mentioned home study school has among its students a large number of men in the Armed Services who are taking the course at their own expense. The fact that the school also had a number of women students was most enlightening.

Women In Radio

Many successful servicemen who now have an established service business and who have definite financial obligations to their dependents naturally hesitate about offering their services to the government as much as

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Greater Accuracy In Radio Trouble Shooting

Increased service output as a result of using the new Philco 030 Dynamic Tester is being reported by servicemen all over the country.

One enthusiastic owner refers to this instrument as "a means of second vision that enables a serviceman to actually **see** what goes on inside a radio. Now for the first time, it is possible", continues this technician, "to use practical methods instead of guesswork or theory in locating some of the more complicated radio troubles such as oscillation, heterodyning, 'motor-boating', etc. This instrument takes all of the mystery out of radio trouble-shooting".

One case of "motor-boating" solved by the Dynamic Tester is especially interesting because the feedback producing this condition has always been difficult to locate. "Upon bringing the test prod of the 030 close to different parts of the chassis, it was noticed that a broadcast signal was picked up by the tester from the vicinity of the AC cord throughout its entire length. In this particular set, the AC cord terminated at a line bypass condenser located near the second detector where it picked up a strong signal because of an open circuit in the bypass condenser. Passing through the chassis near the R.F. stage, the AC cord introduced feedback at this point. Replacement of the open condenser corrected this trouble".

Simplifies Dressing of Leads

Here is what another serviceman had to say about an obstinate case of heterodyning, producing what is commonly referred to as "birdies" at various points on the dial. "Examination of the set with the test prod of the 030 showed a signal from a strong local station to be present in the oscillator circuit of the set at any setting of the tuning condenser. The simple expedient of dressing leads to prevent the pickup of this signal by the oscillator circuit corrected the trouble." Dressing of leads in a chassis subbase has always been a matter of cutting and trying but the Dynamic Tester makes it possible for the serviceman to actually see what he is doing in eliminating coupling between wires.

Servicemen Find Many New Uses For Tester

Many new uses unforseen before the introduction of the Dynamic Tester are mentioned in the reports that are being received from servicemen almost daily. Exploring fields of radiation of all types has already saved servicemen countless hours in tracing AC hum, vibrator "hash" in auto radios, and ignition interference.

The location of a noise set up within a radio due to faulty parts or contacts can be located quickly with the tester. Noise from defective transformers or bias resistors is actually

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Parts Department, H. C. Noll Co. — Philco Distributors in Omaha, Neb.

REFINISHING METHOD OUTLINED FOR WOOD GRAIN REPRODUCTION ON MODEL 42-380

On some cabinets of the model 42-380, checks have appeared in the wood gain reproduction on the apron rail and pilasters. A tinting solution can be applied, effectively coloring the whiteness apparent along the checks by using a piece of clean cheese-cloth and wiping a very small quantity of the tinting solution on the checked area.

The solution should be allowed to dry for about twenty seconds and then should be wiped clean with a dry cloth. The solution is known as Philco part No. 45-2947.

In extreme cases of checking of this kind, the simple tinting procedure may not be sufficient, and it will be necessary to refinish the surface of the wood grain reproduction. This refinishing is done in the following manner:

1. Sand the checked area of the wood grain reproduction with fine sandpaper, such as No. 280.
2. Wipe the surface clean, brush with the tinting solution, and allow to dry for three hours.
3. Apply one coat of clear lacquer and allow to dry for two hours. Then sand lightly with fine sandpaper.
4. Wipe clean and apply a second coat of clear lacquer. Allow to dry overnight.
5. Rub down with pumice and rubbing oil to obtain the desired finish.

Follow this procedure carefully. It will stain the checked area and will fill in the finish on the surface so that the checking will not be noticeable.

Editorial

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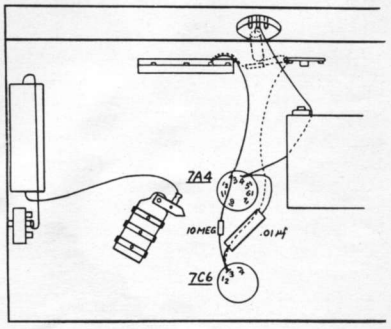
they personally might like to do so. Why not begin now to train the women folks in technical radio so that they can take over and run the business for the duration? It would seem more logical for a woman to be a radio service mechanic than, for example, a garage mechanic — yet many women are now training in automobile repair work.

Now is the time for radio men who are a bit weak on their theory to brush up so that they will be more valuable to the country as able and trained radio servicemen. Likewise, many men and women without any experience or radio knowledge will be taking basic radio training courses so they can fit into this big war effort. We urge every reader of the Philco Serviceman — men and women — to give serious consideration to his radio relationship in the war effort. If you are actively interested, if you want any specific information with regard to such courses, if you want to know the location of nearby schools providing such radio training, if you cannot attend one of these schools either day or night and want information on the home study schools, write to the Editor, PHILCO SERVICEMAN, Tioga & "C" Streets, Philadelphia, Pa.

Hum Removed In Model 42-1010 Radio-Phonograph

Residual hum on the 42-1010 radio phonograph combination can be eliminated by making the following changes:

1. Add an 18 mfd. condenser, Part No. 30-2517. This should be fastened adjacent to the other 18 mfd. condenser, (83) on Figure 3 in Radio Service Bulletin 408. Connect the black lead to the nearest ground terminal and connect the red lead to the wiring panel terminal on the line condenser (85). This connects the 18 mfd. condenser from ground to the low side of the filter choke 81, in parallel with the 8 mfd. section of (32A).



Showing Wiring Changes

2. Remove the .01 mfd. condenser, Part No. 30-4572, which is connected to the center tap of the volume control to the terminal on the wiring panel right below it. Also, remove the 10 meg. resistor which is wired to this terminal and to the second terminal of the bias resistor (82).

3. Remove the wire which formerly connected the resistor and condenser to the No. 3 terminal of the 7C6 tube socket.

4. Connect the center terminal of the volume control to the dummy No. 4 terminal of the 7A4 tube socket. Connect the second terminal of the resistor (82) to the dummy No. 3 terminal of the 7A4 tube socket. Both of these leads must be dressed close to the sub base. Follow the layout shown in the accompanying diagram.

5. Connect the .01 mfd. condenser, Part No. 30-4572, from the No. 3 terminal of the 7C6 tube to the No. 4 terminal of the 7A4 tube. Connect the 10 meg. resistor from the No. 3 terminal of the 7C6 tube to the No. 3 terminal of the 7A4 tube.

In the diagram, the parts and wires indicated by the dotted lines are to be removed. The 10 meg. resistor and the .01 mfd. condensers are shown in their new location. The location of the 18 mfd. condenser and the wiring connections are also shown.

Servicemen Acclaim New Tester

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reproduced with considerable volume by the tester when the test prod is connected directly to the faulty part.

Popular Among "Lab" Workers

Although the Philco Dynamic Tester was not designed to take the place of laboratory equipment, it has become immensely popular in research laboratories, particularly in those where communication equipment for warfare is being developed. In such laboratories where every minute counts, the 030 tester eliminates the laborious use of precision measuring equipment for operations requiring only a general performance test.

Gain measurements in a research laboratory usually involve considerable time for setting up equipment, arranging decoupling networks and dummy antennas etc, to avoid any de-tuning or interaction between the measuring equipment and the circuits under test. With the 030, a positive indication of gain can be obtained in any stage or between the grid and plate of any amplifier tube. The negligible capacity of the test prod has no effect on the circuit.

Gain Indication Replaces Gain Measurements

Mathematical gain calculations in terms of sensitivity in microvolts of various sections of a radio are meaningless to the consumer and to the serviceman. Servicemen who are using the new Philco Dynamic Tester are finding every day that the positive indication of gain it affords is far more valuable than any complicated attempt at actual gain measurements which at best can only be compared to incomplete figures on factory standards that are always subject to tolerances. Radio service work under today's conditions, with more radios being repaired and less men to do the work, is a matter of production rather than engineering.

Servicemen's Opinion

According to the consensus of opinion of all radio servicemen who have used the Philco Dynamic Tester, this instrument has made the foremost contribution to speeding up the repairing of radios during these critical times. When so many servicemen are confronted with the problem of more and more work coming into the shop, anything that can contribute toward the expediting of these repairs through the shop will be a tremendous help. Time is all important, and the 030 is the answer to the necessity for a time saver in radio service.

Line Voltage Surge Test Used To Final Check Radio Repairs

James R. Limbeck, a serviceman in Glendale, California, has offered a final test suggestion which we think is good and which we are passing along to readers of the Philco Serviceman. We quote from Mr. Limbeck's letter:

"In these times of war, customers want to be sure their radios will be in operating condition when they are needed. Therefore, the radio serviceman should have a final test for radios just repaired in the shop. This test would break down weak parts that would soon go bad in the customer's home. Here is one method:

"A heavy-duty flasher is used in series with the 115 volt A.C. line to the radio for about an hour. This is based on the theory that most set failures occur when the on-off switch is used to turn on the radio, the resulting surge doing the damage to weak parts.

"Also some radiomen boost the voltage about 10% for about an hour; then perhaps lower the line voltage 10%."

We think that Mr. Limbeck's suggestions are certainly worthy of thought by every serviceman. We might also offer the additional suggestion of a careful listening test for detection of hum and distortion after the set has been completely serviced. Servicemen working in a noisy shop might otherwise completely overlook a condition of this kind.

AIR RAID WARDEN'S RADIO OFFERS BIG SALES AND SERVICE POSSIBILITIES

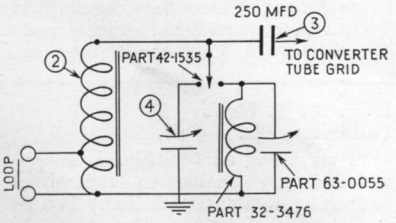
A portable battery-operated radio capable of receiving local police broadcasts offers tremendous sales and service possibilities in almost every section of the country, particularly in the coastal cities and towns.

It is presumed that in the event of an air raid, the local police broadcast stations will remain on the air for the purpose of directing police and fire departments and instructing Civilian Defense Authorities. Inasmuch as the air raid wardens will be moving around from place to place and since it cannot be assumed that A.C. power will be available at all times, it is essential that their radios be portable and battery-operated.

The Philco portable models such as the 42-842, 843 and 844 can be easily adapted to the reception of the 2400 K.C. police band. All of these models are well suited for this type of use inasmuch as the sensitivity is high as compared with some of the smaller but lighter weight battery-operated portables.

The following is the procedure for changing over the antenna circuit: It is only necesary to add a single pole double throw switch, a single padding condenser and a small additional coil.

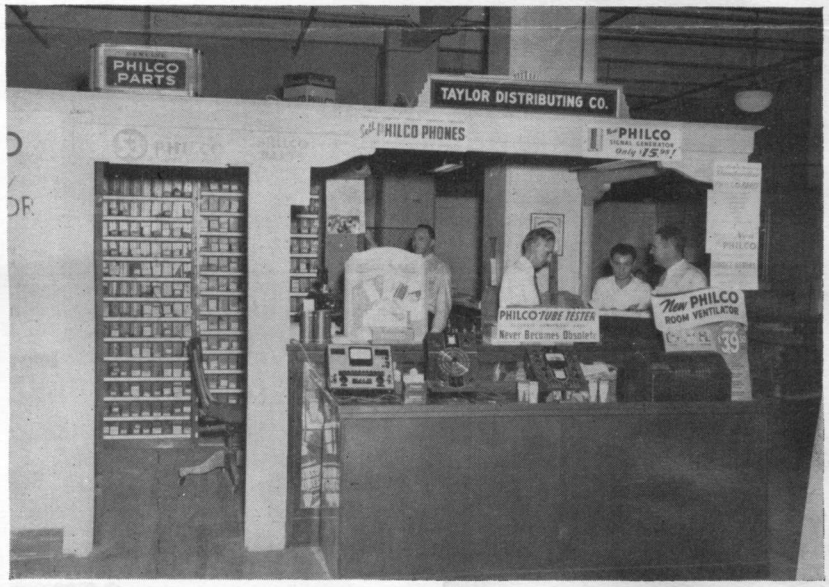
Referring to Philco Service Bulletin No. 391, remove the lead from the broadcast antenna gang condenser from its terminal lug on the converter tube socket and solder this lead to either end lug of the S.P.D.T. switch. Solder another lead from the center



Antenna Circuit Changes

lug on the switch to the terminal lug on the converter tube socket. The switch and the padding condenser can be mounted on a convenient bracket attached to the back of the chassis. The shunt coil should be mounted on the sub-base next to the antenna coil between the antenna coil and the loop terminal panel. This mounting can be accomplished by cutting two slots in the sub-base and using coil mounting clip part No. 28-5002. One lead from the shunt coil is connected to the opposite end lug of the S.P.D.T. switch and the other lead is connected to the No. 2 lug of the loop terminal panel. The padding condenser is shunted across the special coil.

The 2400 K.C. police band will fall between 1500 K.C. and 1600 K.C. on the tuning dial. The "police" padder should be adjusted for maximum gain at this point setting the signal generator for the frequency of the local police station in the 2400 K.C. band. This adjustment should, of course, be done with the "police" shunt coil and padder switched into the circuit.



Parts Department, Taylor Distributing Co., - Philco Distributors in San Antonio, Tex.

ARMY - NAVY RESPONSE FROM RMS TREMENDOUS

Philco thanks Radio Manufacturers Service members for the fine patriotic response to the recent mailing sent out to RMS by the Signal Corps and by the Navy. Thousands of replies have been received and the authorities in Washington are most enthusiastic about the Radio Manufacturers Service group.

Many enthusiastic letters in addition to the questionnaires have been received by the Army, the Navy and at Philco RMS Headquarters in Philadelphia. The general attitude of RMS members toward the war situation is grand and we know that members of RMS will go a long way toward doing their share to win the war.

$ QUESTIONS AND ANSWERS $

Free technical consultation for servicemen. Address all communications to Editor, Philco Serviceman, Tioga and C Sts., Philadelphia, Pa. Letters will be answered individually and those of interest will be published in this column. A $5.00 thrift stamp will be awarded for each question published.

From W. T. Davis
Clarksville, Fla.

"I am using an 088 Signal Generator and am unable to control or attenuate the signal sufficiently low on the later model AC and some of the latest battery sets. Will you please advise me as to the best remedy for this."

Answer —

"If the output of this signal generator is too high, we suggest you take several resistors selected at random and try inserting three or four in series across the output of the signal generator. Attach the ground lead of the signal generator cord to the ground terminal on the 088 and using a clip take the output from any one of the connections between the resistors. This system has been very effective where control is desired beyond that which is provided in the instrument. The best resistance values to use can be obtained experimentally."

From L. A. Miller
Scottsbluff, Nebraska

"I have had several late model Philco radios all acting as though the tuning condenser was shorted out. Upon inspection I found the tuning condenser to be full of aluminum filings or some similar material.

How does it happen that this material gets into the condensers in such great amount and still the set passes factory inspection? These were all new sets. The only successful cure seems to be burning it out with about 300 volts D.C. and tapping the gang while voltage is applied with the condenser closed and taken out of the circuit."

Answer —

"It has been found on some of the sets in the 1942 line that the plating on the tuning condenser plates had flaked off after the set had been shipped from the factory. Fortunately the number of such cases has been relatively small. If high voltage from the high voltage secondary power transformer is used for this purpose, a current-limiting resistor should be inserted in series with one of the leads so as to preclude the possibility of a direct short with the resulting burnout of the transformer. Another possible source of such high voltage power would be obtained by utilizing a Philco vibrator connected to an automobile spark coil."

From Mr. August Steve
Buffalo, N. Y.

"The complaint in a model 116X is frequency drift. For instance, on station WGR on 550 K.C., the station sometimes comes in at 520 or 530. Then it will shift over to 560 and to the end of the dial. This happens on the other Buffalo stations as well."

Answer —

"The frequency drift is no doubt due to a defect in the oscillator stage. Conditions similar to this are frequently caused by defective condensers or coils in the oscillating circuit. We, therefore, suggest that you check very thoroughly the coil and condensers in the oscillator circuit as the defect will probably be found in one of these items."

New Tube Test Information Listed

In line with Philco's policy of keeping servicemen and dealers up to date on tube test data, we are listing below supplemental information on new tube types for the Philco Model 033 Tube Tester.

Many servicemen and dealers have requested Philco to supply a new scroll chart with the up-to-date testing information. Unfortunately, the new tube types have been added so rapidly that it would be most difficult to keep such a chart up to date. We suggest you cut this chart out and keep it with your 033 tester.

TYPE	SETTINGS							
	Fil.	1	2	3	4	5	6	Load
1LE3	1							4
2B6	5	X						4
2B6	5	X			X			5
2W3	5	X	X					7
3A8GT	1	X					X	4
3A8GT	1							4
3C5GT	1	X						4
3Q5GT	1	X						4
4A6G	3	X						4
4A6G	3	X				X	X	4
6A5G	6	X					X	2
6AB7-1853	8	X	X	X				3
6AD7G	8	X						4
6AG7	8		X					1
6SR7	8				X			3
7B4	8	X						3
7D7	8	X						2
7V7	8	X						1
12A6	10	X						4
12B7-14A7	10	X				X		4
12C8	10	X						5
12SC8	10	X	X					6
12SR7	10				X			3
14A7-12B7	10	X				X		4
14B6	9	X	X	X			X	2
14B6	9	X	X	X	X	X		5
14B6	9	X	X		X	X	X	5
14C7	10	X						3
14J7	10	X				X		3
14Q7	10	X				X		4
14R7	10	X						2
XXFM	8	X	X	X			X	4
XXFM	9	X	X	X	X	X		3
XXFM	9	X	X		X	X	X	3

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