

CONFIDENTIAL SERVICE PHILCO



SUMMARY

TO ALL PHILCO DISTRIBUTORS' SERVICE MANAGERS

RADIO No. 26

DATE: 9-16-41

*THIS SPECIAL ISSUE OF THE CONFIDENTIAL SERVICE SUMMARY IS BEING SENT
TO ALL RMS MEMBERS*

COMPLETE INFORMATION ON THE 1942 RECORD CHANGERS

The Record Changer is an electrically powered, mechanical device performing a varied number of functions. It must be used by all kinds of people, on all kinds of records and under these conditions, the mechanical adjustments are quite critical. It is only reasonable to assume that a record changer must be tried out in the owner's home by the dealer and re-adjustments made wherever necessary.

The first requisite when installing a radio phonograph is to remove all of the packing material. Then loosen the four shelf mounting screws. The record changer must float freely on the four mounting springs.

All adjustments are carefully made at the time the record changer is assembled and it is given other thorough check tests when it is installed in the phonograph cabinet. These checks are actual working checks using records, and the operation of the record changer is carefully observed. When a record changer is finally delivered and set up in the home, it is possible that it may be necessary to touch up some of the adjustments. These adjustments are fully covered in the Radio Service Bulletin No. 402, dated August, 1941, and every serviceman should be thoroughly familiar with all of these adjustments.

THE NEW PHILCO RECORD CHANGER FOR 1942 is such a big improvement over all other record changers, in its simplicity of design and construction, that all of the adjustments are easy to make and there is no likelihood of any particular part failure. Some changes were made in production to further improve the performance and reliability of the record changers. It will not be necessary to add these improvements to all record changers, but each serviceman should be aware of them and should take advantage of these improvements in case of some serious service complaint.

Basically, changes were made to overcome three conditions:

- A — Rumble in the early production sets, particularly on the Models 42-1010 and 1016.
- B — Erratic operation of the trip mechanism.
- C — Flutter and change of speed.

A. The rumble in the Models 42-1010 and 1016 can be easily corrected by replacing the turntable bearing. Remove the turntable and the spindle and then take out the brass cone and the ball bearings and washers. Rebuild the bearing, using the old washers and the new flat fiber washer and the concave steel washer. (See Figure 1). Add "Stay-Put Grease" or "Lubriplate" between the washers to eliminate friction. When replacing the spindle assembly, the spindle must be more than $\frac{1}{2}$ turn loose while lining it up with the record support shelf.

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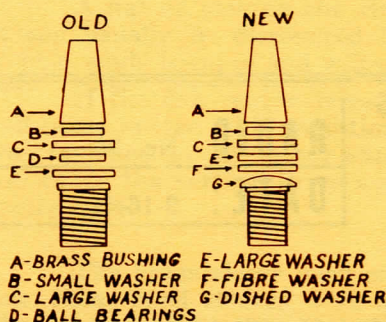


FIGURE 1

B. The pulsating plate in the trip mechanism is actuated by the pulsating arm and the cam on the underside of the turntable. If the pulsating arm is loosely riveted to the bracket, the screw on the end of the pulsating arm will move back and forth over the pulsating plate. This changes the distance the plate is lifted by the pulsating arm and affects the trip adjustment. A spring has been added in production to hold the end of the lever under tension so that it does not move "in" and "out" and change the trip adjustment. On record changers not equipped with this spring, use the lead spring Part No. 28-8919 and connect as shown in Figure 2. Attach the spring to the wiring terminal on the end of the bracket and to the adjusting screw. Check to make sure that the pulsating roller does not scrape the hub on the under side of the turntable.

C. Flutter and change of speed is caused by friction in the vertical drive assembly and by the action of the regeneration spring (item 21 in Service Bulletin No. 402). The following changes involving the regeneration spring and the vertical drive assembly should be made on every changer on which there is an opportunity to do so.

Remove the regeneration spring and the threaded adjusting screw and nuts. (See Figure 3).

Loosen the two, bell drive disc bearing screws on the bottom of the motor mounting bracket.

Push the motor drive disc and armature to the extreme right, against the thrust spring. Allow $\frac{1}{16}$ " clearance between the rim of the bell drive disc and the motor drive disc and tighten the two bearing screws securely. (See Figure 4).

The change consists of removing the cupped washer and the flat washer below the upper bearing plate and adding two fiber washers, one on each side of the steel washers above the oilless bearing. The collar should be reset allowing approximately $\frac{1}{8}$ " clearance between the collar and the upper bearing support. The oilless bearing should seat in the upper bearing support and should not turn with the vertical shaft. (Figure 5).

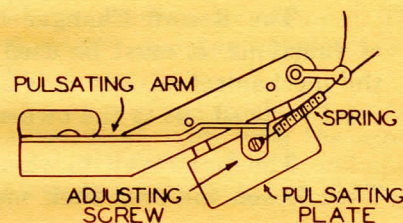


FIGURE 2

There is a small fiber washer which is used to limit the motion of the upper bearing support assembly. (See Figure 3). Loosen the screw holding this eccentric washer. Hold the vertical drive shaft at approximately 3° to the right of perpendicular and adjust the washer and fasten in place. (See Figure 6).

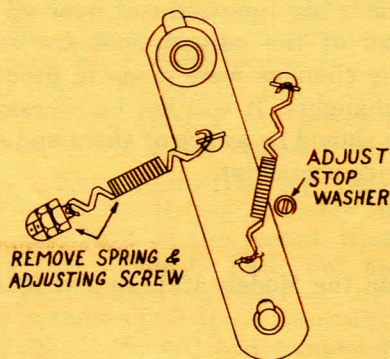


FIGURE 3

REFER TO ADJUSTMENTS GIVEN IN RADIO SERVICE BULLETIN 402

CLUTCH ROLLER AND LEVER ADJUSTMENT — The only change in the adjustment as given in the record changer bulletin 402 is that instead of spacing the clutch teeth $\frac{1}{16}$ " apart, the clutch should be adjusted in the cycling position. The teeth should be meshed but should have a slight clearance between the upper and lower teeth. In the playing position there should be $\frac{1}{16}$ " or more clearance between the two sections of the clutch.

The purpose of the clearance between the teeth when they are meshed is to insure that the turntable will not be lifted by the operation of the solenoid. Turntables are not interchangeable without readjusting the clutch lever and also the trip mechanism.

SOLENOID ADJUSTMENT — There are no changes to the instructions given in the bulletin. The action of the clutch and lever assembly should be checked for free operation. It should not require a pull of more than seven or eight ounces at the roller to bottom the solenoid. Solenoid brackets are easily bent out of adjustment when handling record changers. When a record changer is removed from

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a radio phonograph, set it down on its front edge, never lay it down on the top or bottom.

FORWARD SHELF MOTION ADJUSTMENT —

There may be a tendency when making this adjustment, to overpush the record against the spindle, causing wear of the hole in the record.

ADJUST TONE ARM TO INDEX ON 10" AND 12" RECORDS — If the shelf plate string is loose, the spring will not change the guide track properly on the large cam. The pulley on the corner of the motor mounting bracket can be moved to take up the slack.

PULSATING PLATE ADJUSTMENT — The spring should be installed to take up side play in the lever. The roller may roll freely or it may be tight and bind. Either way will be all right. Simply put some "Lubriplate" on the cam on the bottom of the turntable hub.

It is important that clearance be maintained between the pulsing plate and the main plate to prevent clicking but, in conjunction with this adjustment, the pulsing plate should first be checked for tension. Rotate the turntable until the roller is off the crown on the cam. Place the tone arm on the rest and back up the adjusting screw. The pulsing plate should project down at an angle of approximately 30°. Then proceed with the adjustments given in Bulletin 402. If for any reason, a turntable is replaced, readjust the pulsing plate.

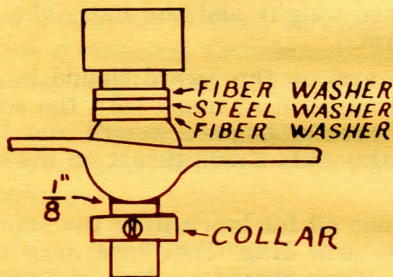


FIGURE 5

Bulletin 402. Some records are known as swingers because the playing grooves are not concentric with the hole in the record. These records cause the tone arm to swing back and forth with each revolution, requiring more latitude in this adjustment. Turn the screw back and, in severe cases, remove the screw entirely. If the adjustment originally specified is maintained, a swing record may cause pre-trip and will cause the tone arm drag and light beam pull-off.

TURNTABLE SPEED ADJUSTMENTS — In addition to the adjustments given in Radio Service Bulletin 402, there are some other precautions to observe. First, the change for the vertical drive assembly specified in the first part of this Service Summary should be made on all record changers worked on.

The record changers are adjusted for a minimum speed of 78 RPM and, in the slow speed position they can be adjusted for 39 RPM. The Neon lamp should be turned so that one of the plates faces the rim of the turntable, otherwise it will not indicate the markings on the turntable when running at slow speed.

Excess paint on the inside of the turntable rim will cause WOW's. A flat on the rim on the turntable, due to its being dropped, will cause the same trouble.

The upper bearing bracket of the vertical drive should have a soft gentle action against the turntable rim. If the action of this bracket is stiff the result will be WOW's. This can be freed up by striking the rivet with a center punch.

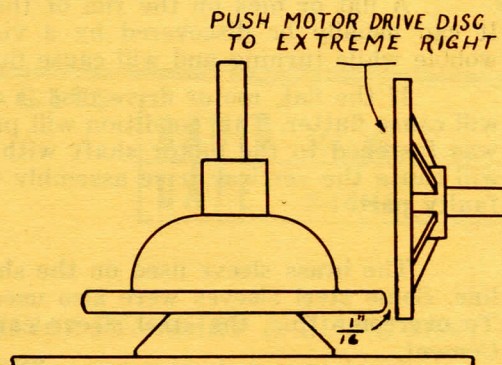


FIGURE 4

TRIP ARM ADJUSTMENT — Particular attention should be paid to obtain a slight clearance between the plate adjusting screw and the pulsing plate when adjusting the screw on the trip arm for the correct roller height. The edge of the pulsing plate should be parallel to the record changer base.

REJECT CONTACT TRAVEL ADJUSTMENT — It often is necessary to disregard the adjustment as given in the Radio Service

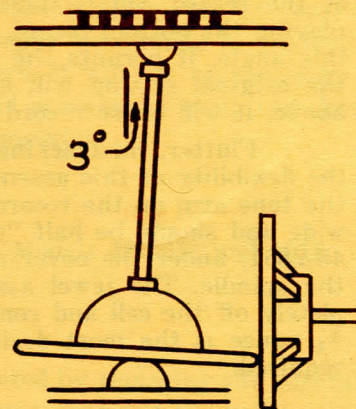


FIGURE 6

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Flutter is caused by vibrations set up in the changer drive mechanism which in turn are transmitted to the tone arm and cause the light beam to shift back and forth across the photo electric cell at the frequency of the vibrations.

A flat or nick on the rim of the bell drive assembly or on the rim drive pulley will cause flutter. It can usually be discovered by a visual inspection of the parts. An unbalanced bell drive disc will wobble while turning and will cause flutter also.

If the flat, motor drive disc is not assembled properly on the motor shaft and is not true, this will cause flutter. This condition will probably only occur on the earlier models on which the drive disc was fastened to the motor shaft with a set screw. It can be detected with the motor running, since it will cause the vertical drive assembly to oscillate. The correction for these conditions is to replace the faulty part.

SERVICE HINTS

The brass sleeve used on the shaft of the motor is to prevent the armature from slipping out of line. Some steel sleeves were also used, but these sleeves are apt to be noisy with the motor running. To overcome this, the steel sleeve can be cemented to the end of the armature with Philco Speaker Cement.

Due to the difficulty in getting materials, three different tone arms have been used:

- 1 — An aluminum arm.
- 2 — A zinc arm.
- 3 — A moulded bakelite arm.

Since the weight of each kind of arm is different, three counterbalance weights are required. The aluminum arm requires a $1\frac{1}{2}$ ounce weight, the zinc arm a 5 ounce weight and the bakelite a 3 ounce weight. The zinc arm has a yellow paint mark under the tone arm.

Regardless of which tone arm is used, the weight of the tone arm on the record should be $1\frac{1}{4}$ ounces. The correct counterbalance weight must be used and the final adjustment made with the screw on the side of the tone arm swivel assembly. Do not use the incorrect counter balance weight and then adjust for the balance with the spring in the tone arm swivel, since this puts a side thrust on the tone arm spindle and will very likely cause tone arm drag.

Use only a 20 SAE grade oil mixed with $\frac{1}{8}$ special Shaler Rislone oil for lubricating the spindle. Other lubricants will cause the spindle assembly to stick, resulting tone arm drag. Tone arm drag may also be caused by the dress of the leads at the back of the tone arm. They should be dressed towards the turntable spindle at the end of the tone arm.

The tone arm spindle must be absolutely free. Any binding in either direction will cause the light beam to pull off the cell and produce WOW's and distortion. The drag should not exceed $\frac{1}{8}$ ounce.

Do not, under any circumstances, try to adjust the angle of the jewel. The jewel normally extends $\frac{1}{32}$ " below the guard. It should be vertical with respect to the surface of the record when viewed from in front of the pick-up head. When viewed from the side, the jewel is at quite an angle to the surface of the record. On $\frac{1}{3}$ stack of records, the jewel should be at an angle of approximately 20° . When playing the bottom record, the jewel will be at an angle of approximately 13° . Do not attempt to change this angle. It permits the jewel to track in the groove with a minimum surface noise. Any change from the original setting will affect the frequency response, and if the angle of the jewel is less than given above, it will cause record wear.

Flutter, mistracking and distortion can all be caused by a stiff mirror and jewel assembly. Check the flexibility of this assembly. With the record changer stopped, put a record on the turntable and place the tone arm on the record. Open the peep hole in the pick-up cover — the light beam should be $\frac{5}{32}$ " wide and should be half "on" and half "off" the photo-electric cell. Hook the Philco Scale, Part No. 45-2851, under the cover at the nose and pull laterally, first toward the spindle and then away from the spindle. The jewel assembly should be sufficiently flexible to allow the light beam to be pulled completely off the cell and completely on the cell with less than 1 ounce of lateral pull — from $\frac{1}{2}$ ounce to $\frac{3}{4}$ ounce is the most desirable. Replace the mirror and jewel assembly if more than 1 ounce pull is required.

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PARTS AND SERVICE DIVISION

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