

# PHILCO MODEL M4

(FITTED TO PHILCO MODEL 1860)

The Philco Automatic Record Changer Model M4 is a record changer of the highest quality. Its design gives fast, smooth changing of records and the dynamic pickup unit used gives unexcelled reproduction.

The changer mechanism incorporates many new features, such as a retractable idler wheel and a tone-arm safety device. When the changer is not in use, the idler wheel is retracted from the turntable rim and motor shaft, thus greatly aiding in the prevention of flat spots on the idler-wheel tyre. Should the tone arm be held by the user during a change cycle, a safety feature prevents any damage to the mechanism.

The dynamic pickup unit of the M4 changer is equipped with a semi-permanent jewel point needle, affording long life to the needle and record. The needle is easily replaceable if necessary.

**CLEANING AND LUBRICATION:** (See Figs. 1-3).

After long periods of use or when a major part or assembly is replaced, the record changer should be cleaned and lubricated. Carbontetrachloride or other similar cleaning fluid may be used to remove dirt, old oil, or grease. Some parts and assemblies may have to be removed for proper lubrication.

**PARTS NOT TO BE LUBRICATED:**

The following parts should not be lubricated at any time:- Segment, latch, or gear teeth, of segment gear, turntable-hub gear teeth, Trip pawl. Solenoid plunger. Guide arm and tracking pawl (part of main-cam assembly).

**PARTS TO BE GREASED:**

Using a light grease of the vaseline type, lubricate the following parts:-

- All studs with moving parts attached.
- Index disc and lever.
- Turntable shaft (apply grease around sleeve and then put turntable on).
- Main-cam and slider-cam slide rods (4).
- Positioning-cam slots.
- All shafts (except tone-arm shaft).
- Main-cam gear teeth and cam surfaces.
- Push-off-slider eccentric cam and shaft.
- Tone arm pivots.
- Lift-arm bushing.

**PARTS TO BE OILED:**

Using very light oil, lubricate the following parts:-

- Motor bearings.
- Idler-wheel bearing and idler-wheel lever assembly.
- Turntable-shaft ball bearings.
- Tone-arm-shaft bearings.

**CAUTION:**

Do not get oil on rubber tyre, motor pinion, or inside rim of turntable; if so, remove immediately with carbontetrachloride.

**TONE-ARM LIFT ADJUSTMENT:** (Fig. 4).

This adjustment may be necessary if the pickup fails to lift high enough to clear a stack of ten 10 inch records.

Set the record shelf for 10 inch operation. With the master control switch OFF, manually trip the changer by lightly pushing the solenoid plunger into the coil. Swing the tone arm in near the spindle. Revolve the turntable one turn by hand. Place a 10 inch record onto the record shelf and spindle. Position the tone arm so that the needle point is approximately  $1\frac{1}{2}$  inches from the centre of the spindle. In this position, the tone arm is at maximum height and should clear the bottom of the record by  $1/16"$  to  $1/8"$ , and the needle point should clear the turntable by approximately  $1\frac{1}{2}$  inches. Adjust for correct clearance by turning the adjustment screw through a hole at the top and rear of the tone arm, as shown in fig. 4. Turning the screw clockwise raises the arm: counter-

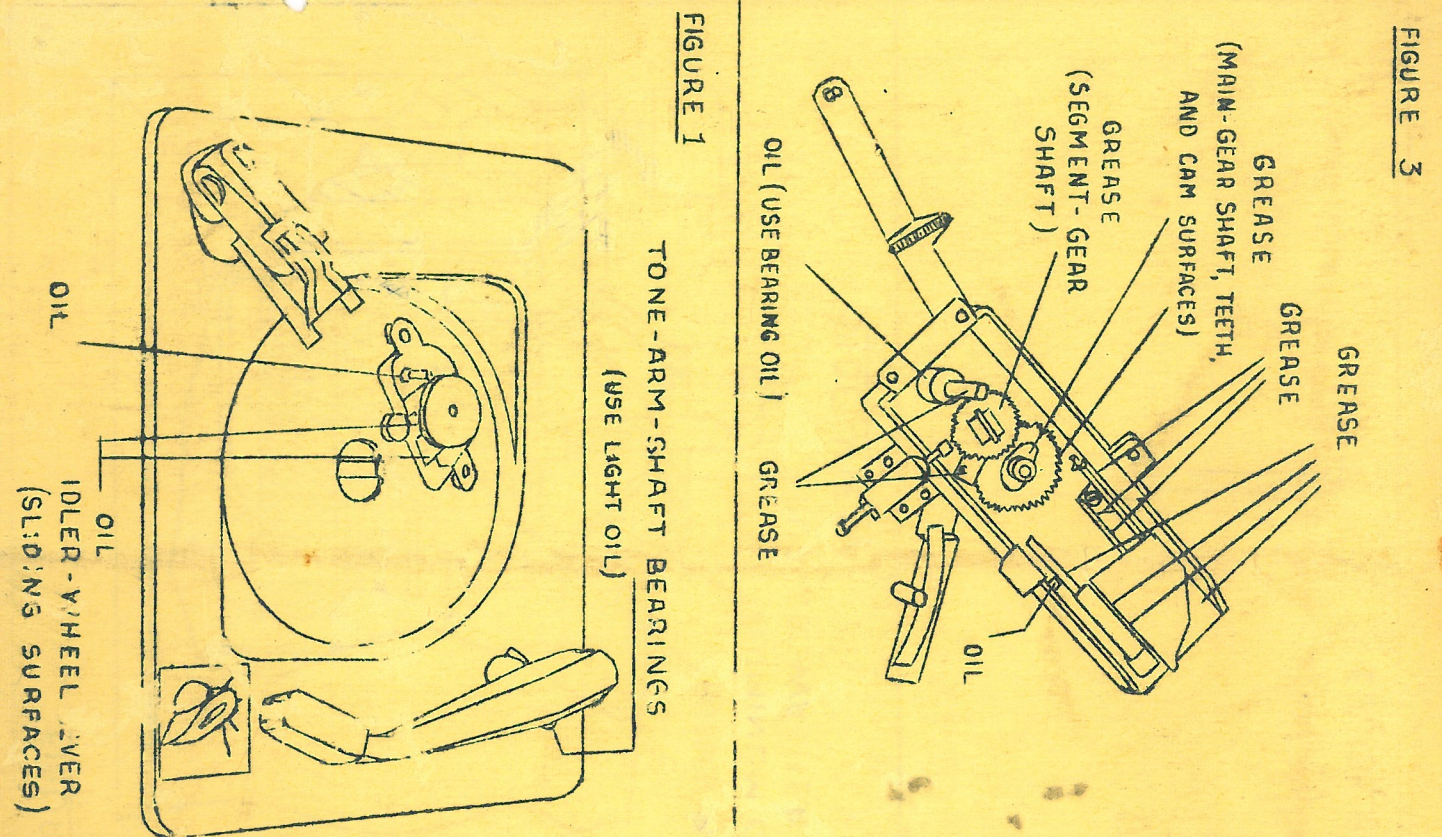


FIGURE 3

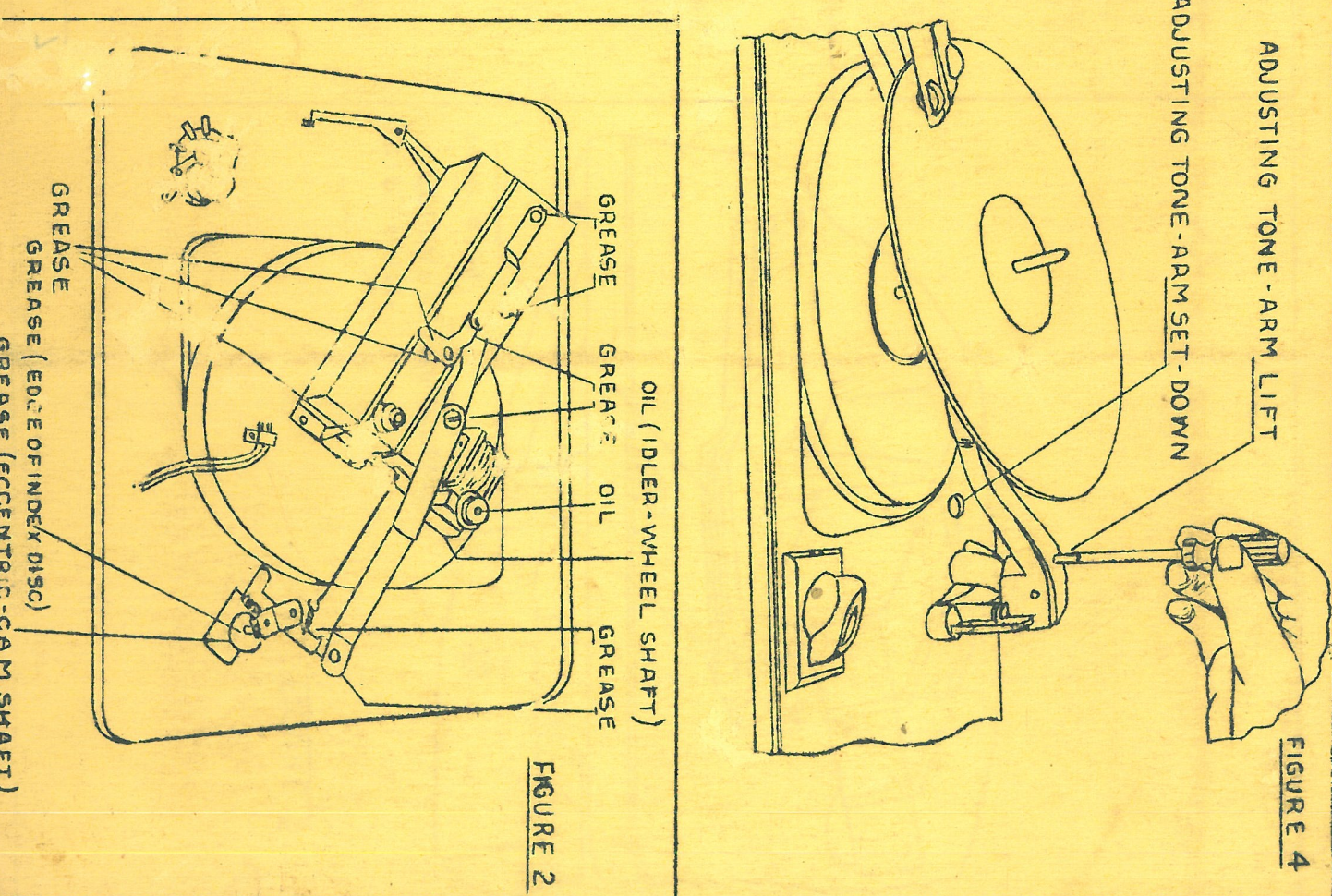


FIGURE 4

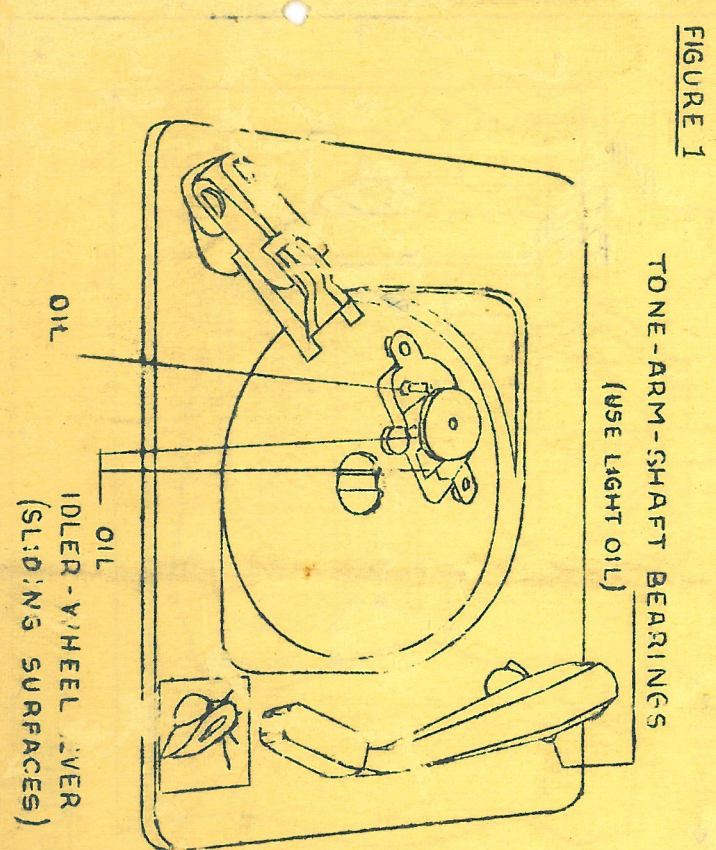


FIGURE 1

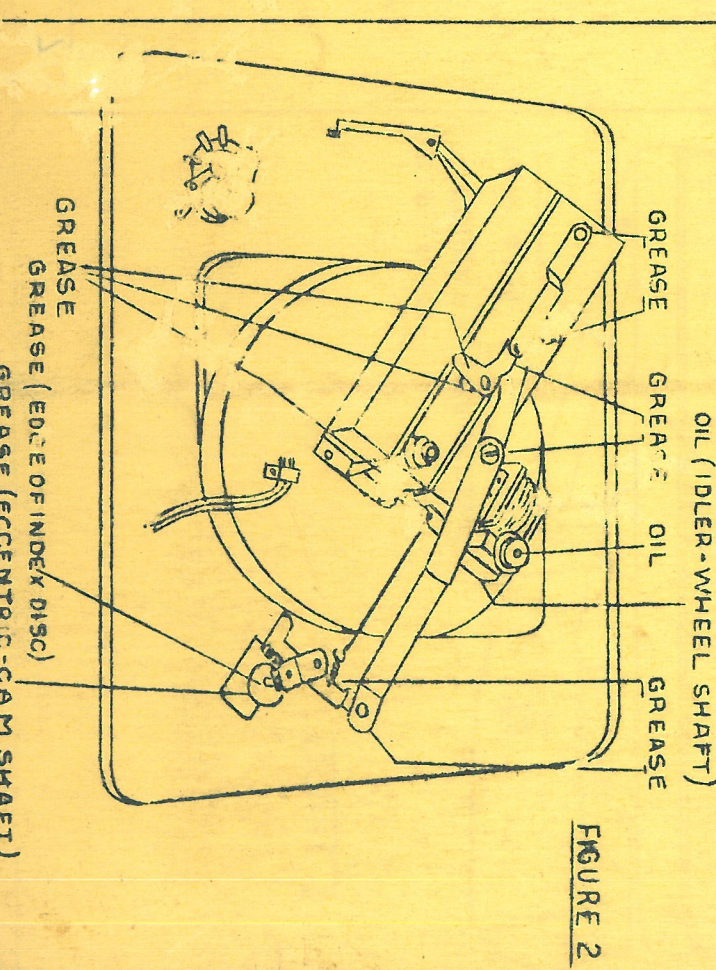


FIGURE 2



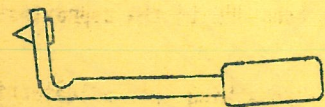


FIGURE 6

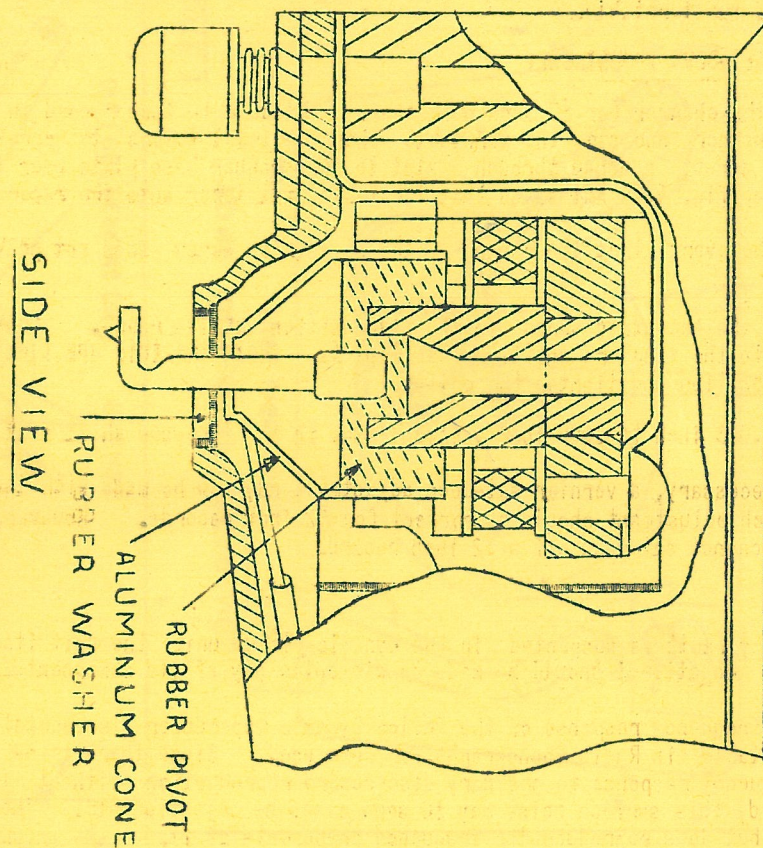


FIGURE 7

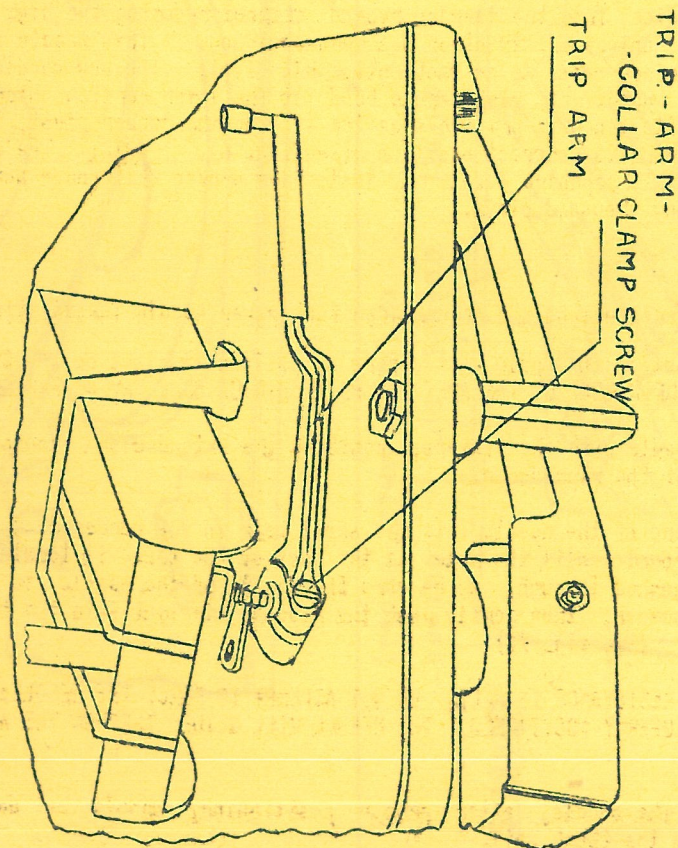


FIGURE 5

clockwise lowers it. Then determine whether the tone arm lowers sufficiently to play the first record by revolving the turntable through the complete cycle. The tone arm should lower until the needle point is below the top surface of the turntable.

#### TOPE ARM SET-DOWN ADJUSTMENT:

Set the changer for 10 inch operation. Place a 10 inch record in position and start a change cycle. Shut off the changer and stop the turntable when the jewel lowers to approximately 1/4 inch above the record. An eccentric screw, reached through a slot in the changer base plate near the tone-arm mounting, provides the adjustment. See fig. 4. Adjust so that the jewel will lower onto the record 1/8 inch from the edge.

In the event that the range of the eccentric screw does not provide the correct adjustment, proceed as follows:

Turn the eccentric screw to the mid-position of its range. Loosen the clamp screw on the trip-arm collar attached to the tone arm shaft. See fig. 5. Hold the trip arm firmly and move the tone arm to the approximate desired position and tighten the collar.

NOTE: A .003 inch to .005 inch vertical play in the tone-arm shaft must be maintained when making this adjustment.

If necessary, a vernier set-down adjustment may now be made with the eccentric screw, as previously described. The 10 inch adjustment should be correct for 12 inch records. However, the tone-arm rest is adjusted so that the tone arm cannot set down off a 12 inch record.

#### PICKUP:

If any fault is suspected in the dynamic pickup unit the unit itself should be removed and returned to the factory. No attempt should be made to dismantle any of its components.

The frequency response of the Philco Dynamic Reproducer is generally higher than that of reproducers heretofore available in Radio Phonographs for home use. Since there is as yet no known method of obtaining extended high-frequency response in ordinary disc-record reproduction without also reproducing the surface noise present on the record, this surface noise may in some cases be objectionable. The Dynamic Reproducer does not create surface noise, but does reproduce the frequency components of it. The amount of surface noise whether of objectionable intensity or not, depends entirely on the individual record and is further increased when the record becomes worn, scratched, or dirty.

In order to reduce surface noise from the average record without reducing the high frequency response to any great extent, a new type needle of unique construction has been designed. This needle is installed in the Philco Dynamic Reproducer and reduces surface noise to an unobjectionable level. The new needle differs from other types in that its shank is made with an approximate right angle bend at the lower portion which carries the jewel: the blunt end of the needle has been flattened to provide a better seat in the rubber pivot, thereby reducing the possibility of the needle shifting from its correct position (See fig. 6). NOTE: The needle used in the Philco Dynamic reproducer is equipped with a sapphire jewel and tests have proved that under normal operation the average life of the needle is good for many thousand plays.

#### INSTALLATION:

The following procedure and precautions are recommended for proper needle installation -

- (1) Remove present needle with a pair of tweezers by pulling straight out. CAUTION: DO NOT PULL SIDEWAYS ON THE NEEDLE OR THE APEX OF THE ALUMINIUM CONE MAY BE DAMAGED.
- (2) Holding the new needle with the fingers, position the extended end containing the jewel toward the front of the reproducer.
- (3) Insert the blunt end of the needle into the small hole in the rubber dust cover. Gently move the needle around until the hole at the apex of the cone is located. Watch the needle as it is pushed through, to be sure the shaft of the needle is parallel to the front of the reproducer, then gently push the needle straight into the hole provided in the rubber pivot. (See fig. 7.)

CAUTION: IF ANY RESISTANCE IS FELT, DO NOT ATTEMPT TO FORCE THE NEEDLE; WHEN THE FLAT END OF THE NEEDLE IS PROPERLY POSITIONED, THE NEEDLE WILL SLIDE THROUGH THE APEX OF THE CONE EASILY.

- (4) Final seating of the needle, after proper positioning, should be done by a gentle, straight push with the thumb nail.