

## SECTION 4-ROUTINE MAINTENANCE & ADJUSTMENTS

### INTRODUCTION

This section contains preventive maintenance procedures, including cleaning and lubrication instructions.

### PREVENTIVE MAINTENANCE

#### CLEANING

Cleaning and lubrication procedures should be performed at regular intervals specified, while adjustments should be made only when necessary.

In addition to cleaning the cabinet exterior each time the location is visited, clean the interior every three to six months, as required. Keeping the cabinet interior clean reduces dust, resulting in increased record and component life. Always clean the phonograph cabinet prior to lubrication.

1. Use a vacuum cleaner, if available to remove heavy dust deposits.
2. Use a clean, lint free cloth saturated in denatured alcohol to clean mechanical parts.
3. Clean electrical parts using a clean, dry cloth or camel's hair brush.

#### WARNING

USE SOLVENTS IN A WELL-VENTILATED AREA ONLY: DO NOT USE SOLVENTS ON ANY TYPE OF PLASTIC PARTS.

#### FIVE YEAR LUBRICATION

Your phonograph requires lubrication only after five years. To maintain smooth, trouble-free operation, lubricate the record changer mechanism as shown.

Do Not Over - Lubricate  
Do Not Use Oil or Grease on Solenoid Plungers.

One drop 3:1  
Electric motor oil

Lift turntable  
apply one drop  
of oil near end  
of shaft and  
replace turn  
table.

Apply one drop  
of oil to bronze  
bearing at shaft  
of turntable  
motor.

Do Not Get any  
Oil or Grease on  
Turntable Belt.

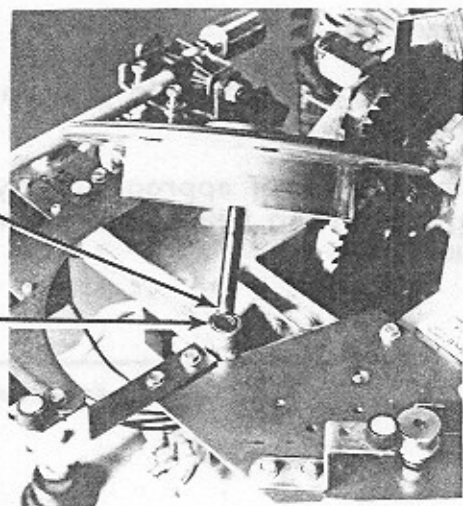


FIGURE 8.

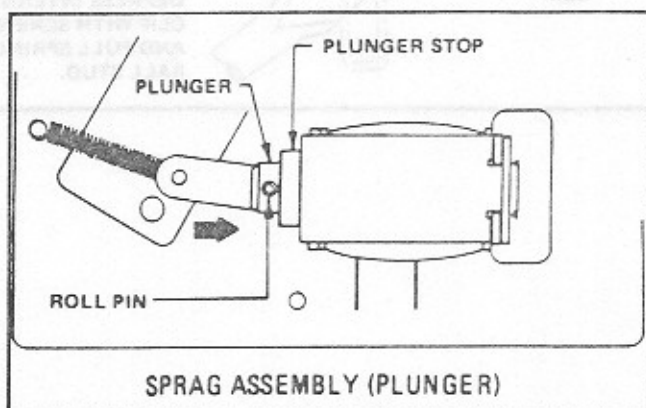
### RECORD CHANGER ADJUSTMENTS

#### 1. SPRAG ASSEMBLY ADJUSTMENTS

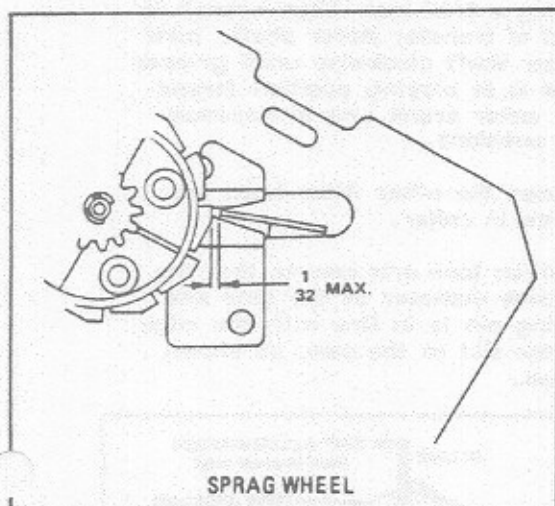
The following steps must be used to make sprag assembly adjustments.

WARNING-TURN POWER OFF

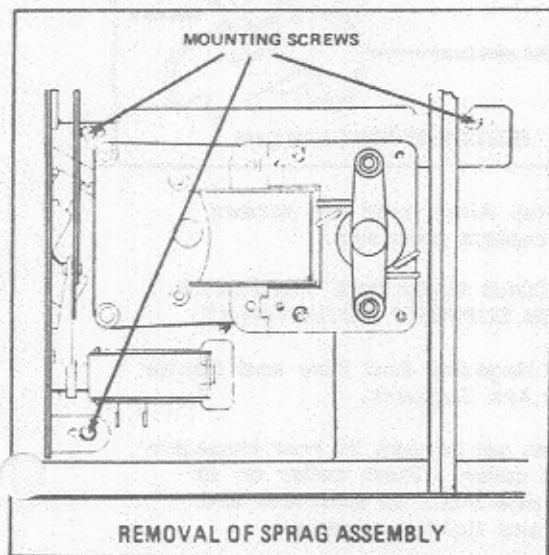
1. Depress solenoid plunger until the roll pin bottoms on plunger stop. (Actuate by pressing on plunger.)



2. Rotate the record magazine and note the clearance between the sprag lever and the sprag wheel located on the backside of the sprag plate assembly. The sprag lever must not touch the sprag wheel and the clearance must not be greater than  $\frac{1}{32}$  inch. It will be necessary to remove the sprag assembly if corrections are required.

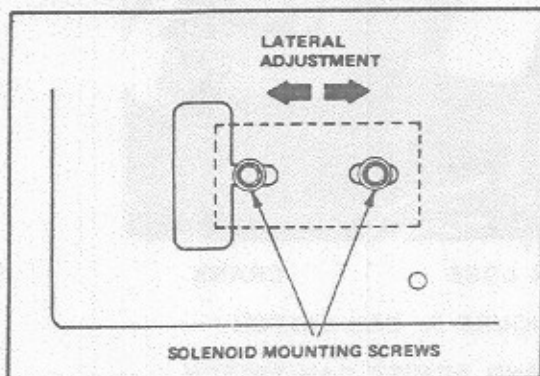


3. To remove sprag assembly, disconnect wires to the solenoid and motor, remove the three mounting screws and slide the assembly out of the right side of the mechanism.



## REMOVAL OF SPRAG ASSEMBLY

4. Loosen the solenoid mounting screws and with the roll pin against the plunger stop, position the solenoid so that there is a .015 to .025 inch gap between the sprag lever and the highest point on the sprag wheel.



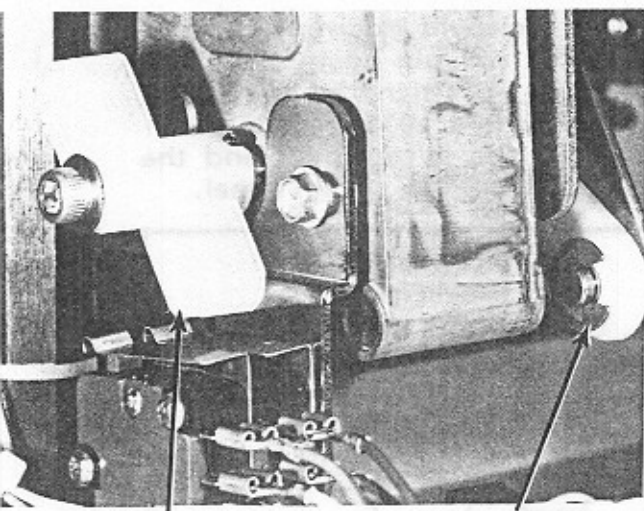
5. Tighten solenoid mounting screws.
6. Replace sprag assembly in mechanism with (3) mounting screws and replace black and white-blue wires to the solenoid and the yellow and yellow-black wires to the magazine motor.

Instructions for aligning the record magazine are on page 31. To readjust the optical switch refer to page 32.

## II. CAM SWITCH ADJUSTMENTS

If it is necessary to remove the switch cam from the transfer motor, the following procedure must be followed to ensure that the cam is properly located and not 180° out of position.

Locate the inner lobe so that it is pointing in the same direction as the crank. Turn cam so that neither cam lobe is on a switch before removing or installing cam. (See Figure 8).



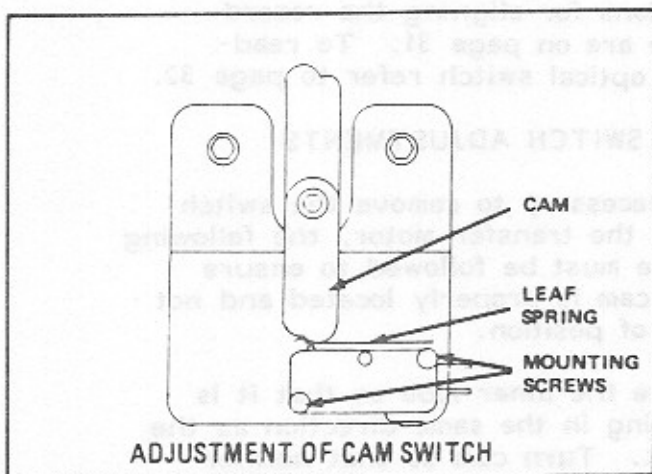
INNER LOBE

CRANK

FIGURE 9. CAM SWITCH

#### CHECK AND ADJUST CAM SWITCH OPERATION

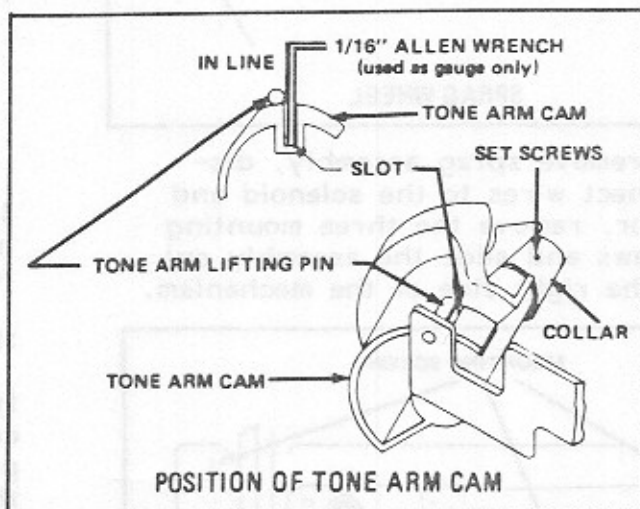
1. Check that the plastic cam leaf spring and switch plunger just touch as shown below.
2. To adjust switches, loosen mounting screw under plunger end and move switch housing as required.



3. Tighten mounting screw and re-check operation.

### III. TONE ARM CAM ADJUSTMENTS

1. Lift tone arm and turn it clockwise so the pins are disengaged from the cam.
2. With gripper bow in scan position over magazine (transfer motor crank in maximum down position) loosen one Allen head set screw in collar.
3. Using a 5/32 inch Allen wrench in end of transfer motor shaft, turn motor shaft clockwise until gripper bow is in playing position (transfer motor crank arm in maximum up position).
4. Loosen the other Allen head set screw in collar.
5. Position tone arm cam so that the outside diameter of the tone arm lifting pin is in line with the edge of the slot in the cam, as shown below.



6. Tighten Allen head set screws and replace tone arm.

### IV. RECORD MAGAZINE TRANSFER ARM SUPPORT ADJUSTMENT

Eliminate Magazine End Play and Center Transfer Arm Support.

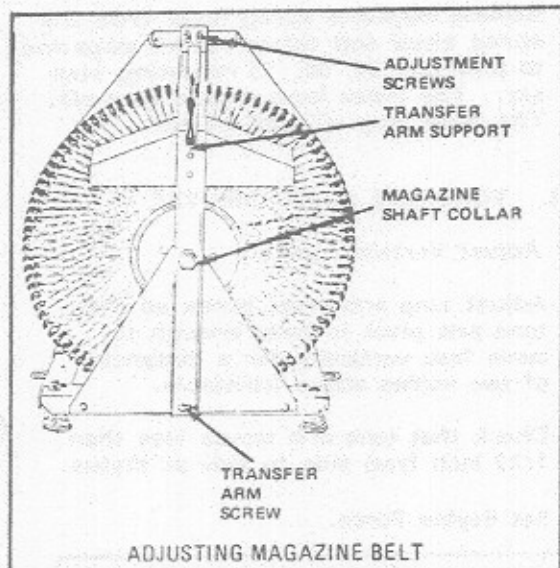
1. Loosen set screws in rear Magazine Shaft collar. Push collar on to Magazine Shaft to eliminate end play and tighten screws.



2. Loosen screw that holds transfer arm support to mechanism frame.
3. Adjust transfer arm support so transfer arm is centered in opening.
4. Tighten mechanism frame to transfer arm support screw.

#### V. MAGAZINE BELT ADJUSTMENT

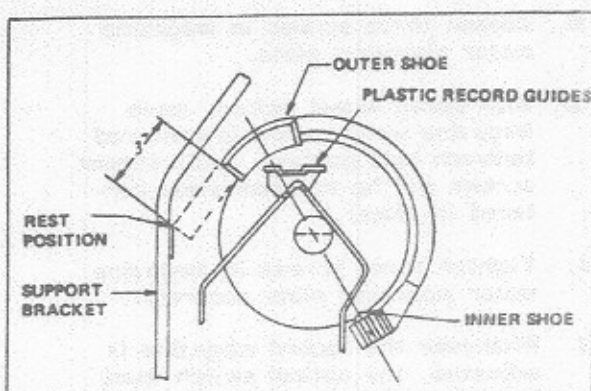
1. Loosen two adjustment screws shown.



2. Raise bracket to tighten belt around magazine.
3. Check that belt rides evenly in center of belt guides, all the way around the magazine.
4. Tighten 2 adjustment screws.

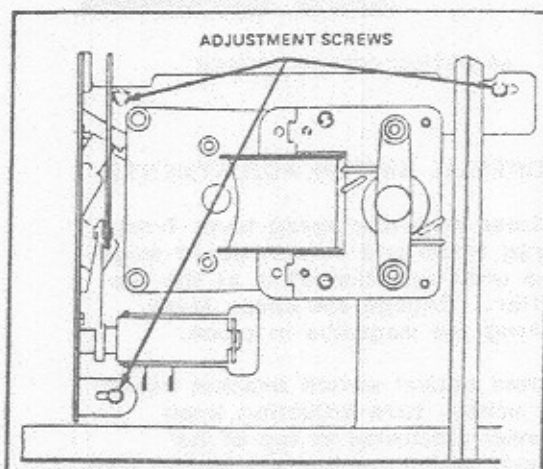
#### VI. ALIGNING MAGAZINE STOPPING POSITION WITH TRANSFER ARM

1. For this adjustment use a record in good condition without warp or dish. Place this record in any position in the record magazine and rotate the magazine until this record is in the top position. Allow magazine sprag lever to engage and lock magazine in this position.



2. Using a 5/32 inch Allen wrench in end of transfer motor shaft, turn motor shaft clockwise until gripper bow lifts record out of magazine, and outer shoe is approximately 3 inches from its rest position on the back support.

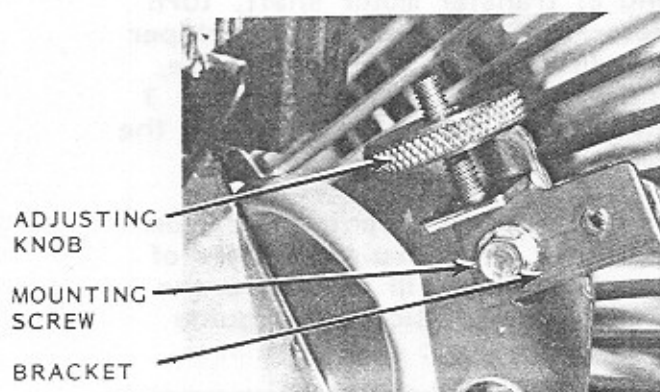
In this position a center line from the inner shoe thru the center of the outer shoe will pass thru the back of the plastic record guide on the magazine.



3. With the record and gripper bow in this lifted position rock the magazine to the left and right and make sure the plastic magazine record guides do not come in contact with the record on either side.

If the guide makes contact with the record on one side or magazine space does not center with the record, the following adjustment to the magazine will be necessary.

4. Loosen three screws in magazine motor mounting plate.
5. With sprag wheel locked, move magazine until record is centered between belt guides. (Adjustment screws will be approximately centered in slots).
6. Tighten three screws in magazine motor mounting plate securely.
7. Whenever the record magazine is adjusted, the optical switch must be adjusted as shown in the following adjustment procedure.



ADJUSTING OPTICAL SWITCH

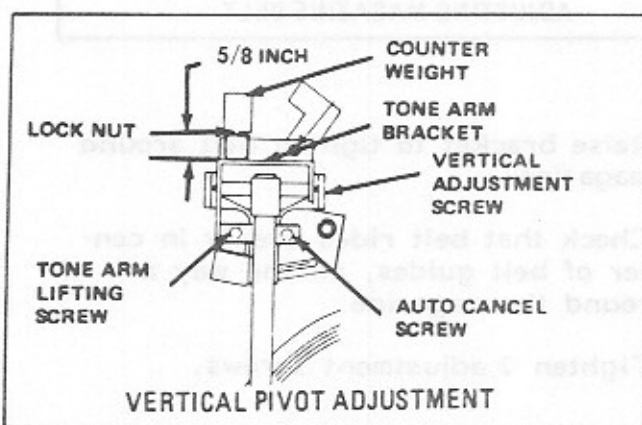
## VII. OPTICAL SWITCH ADJUSTMENTS

1. Release magazine sprag lever from sprag wheel and rotate record magazine until selection 99 is at the top center. Engage the sprag lever locking the magazine in place.
2. Loosen optical switch bracket mounting screw, turn adjusting knob counter clockwise to top of its' travel, and move bracket to the most downward position. Snug optical switch bracket mounting screw (do not tighten).
3. Rotate record magazine counterclockwise to remove gear backlash, hold in this position.
4. Turn adjusting knob clockwise, moving the bracket upward and watch both the index and home lamps on the mechanism control unit.

5. When both lamps light, continue to move the bracket past this position until the index lamp JUST goes out. The home lamp will stay on. Tighten the mounting screw.
6. With the sprag lever engaged rotate the record magazine clockwise and counterclockwise by hand taking up gear backlash in both directions. The index lamp should stay off, and the home lamp should stay on.
7. Release magazine sprag lever from the sprag wheel and rotate record magazine to positions 25, 50, 75 repeating step six. The index lamp should stay off. The home lamp will not be on.

## VIII. TONE ARM ADJUSTMENTS

1. Adjust Vertical Pivot
  - a. Adjust tone arm pivot screw so that tone arm pivot is loose enough to move free vertically for a distance of two inches above turntable.
  - b. Check that tone arm moves less than 1/32 inch from side to side at stylus.
2. Set Stylus Force.

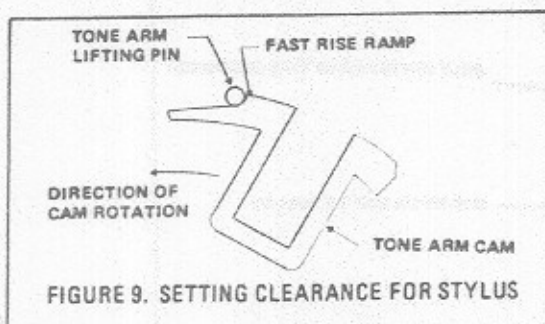


- a. The distance between the counter weight and the tone arm bracket should be 5/8 inch for 3-1/2 grams stylus force.
- b. If distance is not correct loosen lock nut, adjust counter weight and tighten lock nut.



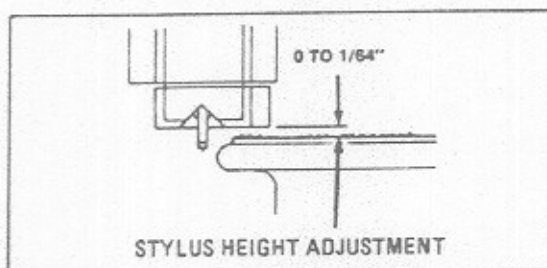
### 3. Set Stylus Clearance

Using a 5/32 inch Allen wrench in the end of the transfer motor shaft, turn motor shaft clockwise until gripper bow has placed a record on the turntable. Push down on the tone arm lifting pin (See Figure 9) and continue to turn motor shaft to swing tone arm into the set down position. You will be able to feel the fast rise ramp of the cam contact the tone arm pin. At this point, release the pressure on the lifting pin and adjust the tone arm lifting screw so that the stylus just touches the record.



### 4. Set Stylus Height.

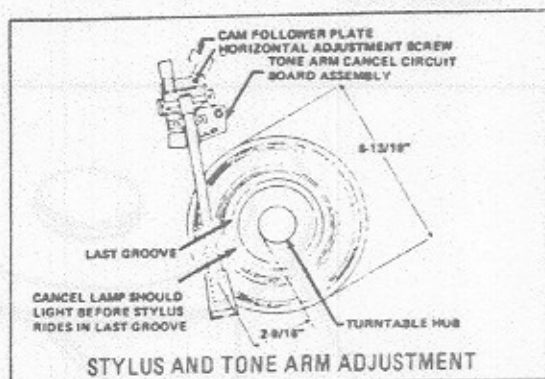
- a. Operate transfer assembly to position tone arm over turntable rim.



- b. Turn auto cancel screw until stylus holder is flush to 1/64 above turntable pad surface with tone arm in play position.

### 5. Set Stylus Setdown Position and Tone Arm Cutoff Switch.

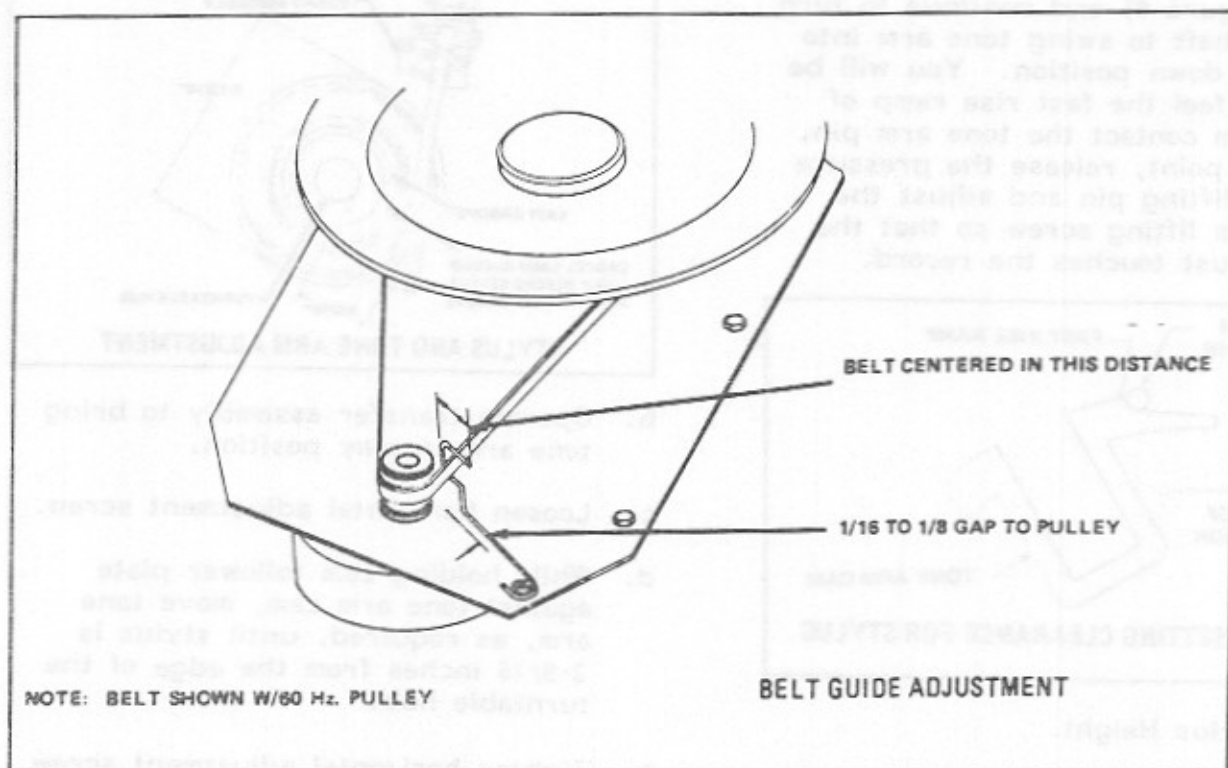
- a. Place undersize (6-25/32 inch diameter) record on turntable.



- b. Operate transfer assembly to bring tone arm to play position.
  - c. Loosen horizontal adjustment screw.
  - d. While holding cam follower plate against tone arm cam, move tone arm, as required, until stylus is 2-9/16 inches from the edge of the turntable hub.
  - e. Tighten horizontal adjustment screw and check adjustment.
- ### 6. Adjust Tone Arm Cutoff Switch.
- a. Disconnect microcomputer harness from mechanism control board (19 pin connector). (To prevent mechanism from cancelling.)
  - b. Loosen mounting screw on tone arm cancel circuit board assembly.
  - c. Position tone arm cancel board assembly, as required, until reed switch is closed, as indicated by cancel lamp in mechanism control unit. This should happen before stylus enters "closed" record groove.

## IX. BELT GUIDE ADJUSTMENT

1. Loosen nut that fastens belt guide.
2. Adjust as shown below.
3. Tighten nut.



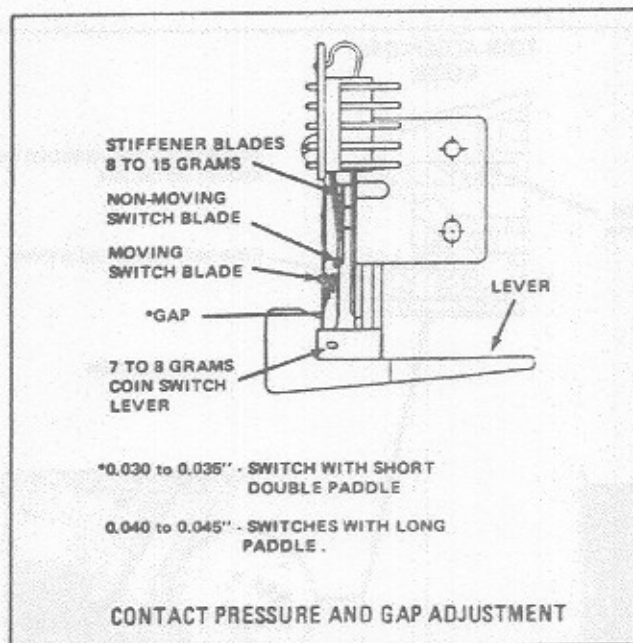
## COIN SWITCH ADJUSTMENTS

### OPERATION CHECK

1. Hold plastic coin switch lever in normal position and drop a coin through slug rejector.
2. When the coin comes to rest on the lever, release the lever slowly.
3. Check that the weight of the coin operates the lever enough to close the coin switch and allow the coin to fall free.
4. Repeat steps 1, 2 and 3 for other three levers.

## CONTACT PRESSURE AND GAP

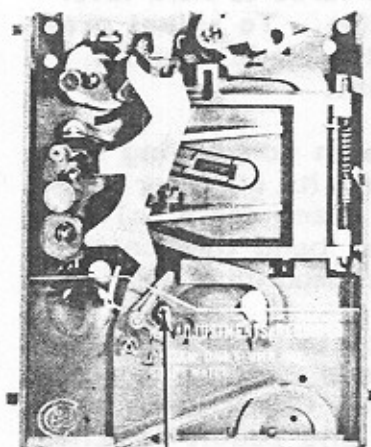
1. Check that each moving switch blade pushes against its lever with 7 to 8 grams force to hold lever against cushion. To adjust pressure, bend the blade near its mounting point.
2. Check that each non-moving blade pushes against its stiffener blade with 8 to 15 grams force. To adjust pressure, bend the contact blade near its mounting point.
3. Check that contact gap at switch with short double paddle is 0.030 to 0.035 inch. Check that contact gap for long paddle switches is 0.040 to 0.045 inch.





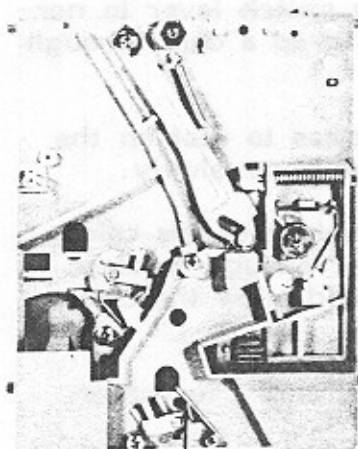
# COIN ACCEPTORS 3 COIN

FRONT VIEW



REMOVE COVER AND DRIVE  
No. 6-32 SCREW INTO BOSS AS  
SHOWN TO REJECT NICKELS

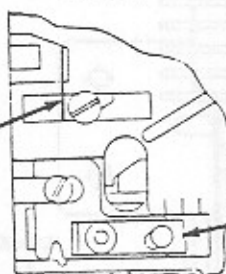
BACK VIEW



TO REJECT DIMES ADD COINCO  
No. 903-915 BLOCK OUT WIRE

## COIN ACCEPTORS 4 COIN

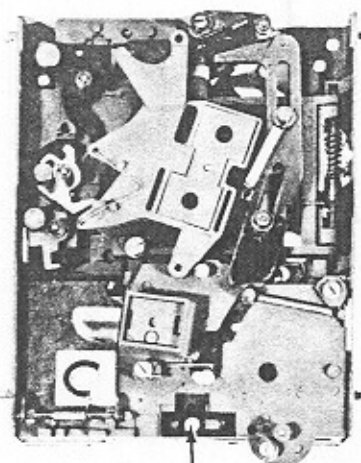
LINE UP EDGE OF  
DEFLECTOR WITH  
THIS LINE



TO IMPROVE S SLUG REJECTION  
ADJUST AS SHOWN

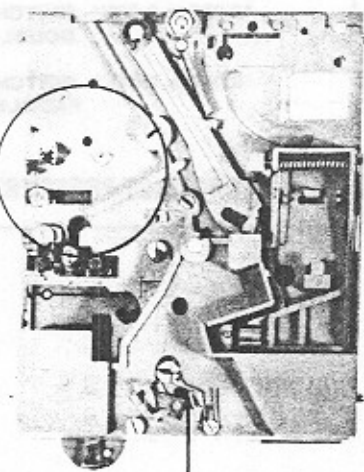
LINE SEPARATOR AS SHOWN

FRONT VIEW



MOVE THIS BRACKET TO RIGHT  
TO REJECT NICKELS (OR JUST  
FAR ENOUGH TO LEFT TO  
ACCEPT NICKELS)

BACK VIEW

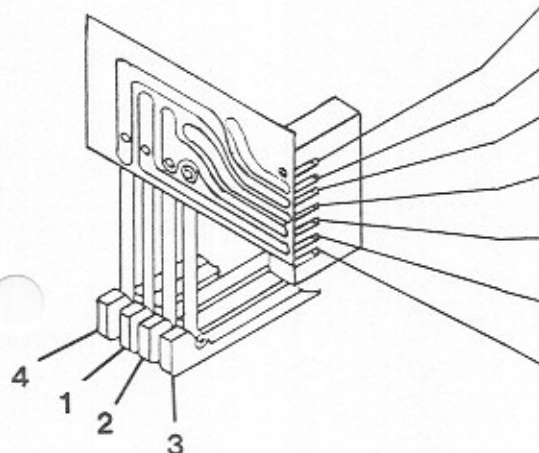


TO REJECT DIMES ADD COINCO  
No. 903915 BLOCK OUT WIRE

# COIN SWITCH WIRING

COINCO

R-89



3 & 4 COIN WIRING	COIN SW. NUMBER	3 COIN VALUE	4 COIN VALUE
KEY		STANDARD	*
V-COMMON			
W/V	4		5¢
B/Y	3	25¢	50¢
B/O	2	10¢	10¢
S/Y	1	5¢	25¢
KEY			

## COIN SWITCH WIRING NOTE

The coin acceptance of the Phonograph may be adjusted to fit the coins other than U.S. The Phonograph must be programmed through the Central Control Computer to accept the new coinage. To do this, determine what the basic coin will be. The credit levels that are set will be multiples of the coin that you choose. Program the new value at memory location 25 in the Central Control Computer. The factory default is set at 5 for use in the U.S.

## MONEY COUNTER - NON U.S. CURRENCY

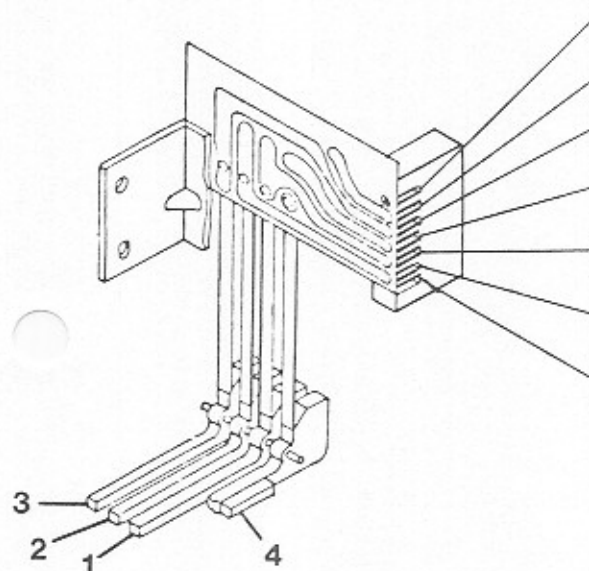
When using the Phonograph with currency other than that of the U.S., the Mechanical Money Counter on the left of the turntable will not be correct. The counter is a mechanical device that is designed to count nickels. If the Money Counter feature is desired, the mechanical counter must be changed to a counter that matches the multiplier chosen for your application. (Refer to the preceding paragraph.)

\*See page 14 for Programming  
4 Coin Values locations  
# 20, 21, 22, 23.

# COIN SWITCH WIRING

COINCO

R-89



3 & 4 COIN WIRING	COIN SW. NUMBER	3 COIN VALUE	4 COIN VALUE
KEY			
V-COMMON			
B/Y	3	25¢	50¢
W/V	4	50¢	5¢
S/Y	1	5¢	25¢
B/O	2	10¢	10¢
KEY			

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