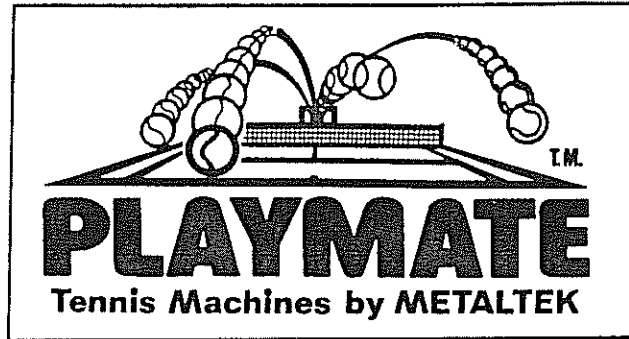


# BP-F MACHINES



This document is copyrighted by Metaltek. It is supplied to the user with the understanding that it will not be reproduced, duplicated, or disclosed in whole or in part without the express written permission of Metaltek.

Metaltek has attempted to insure that the information contained in this manual was correct and accurate at the time of printing. Metaltek cannot be responsible for any typographical errors or mistakes contained in this manual. The information in this manual is subject to change without notice.

## PLAYMATE CONSUMER CONNECTION

If you experience difficulty with your machine, please contact us at one of the below numbers for directions or troubleshooting suggestions.

Phone: (919) 544-0344  
Toll Free(USA): (800) 776-6770  
FAX: (919) 544-1430

455 Kitty Hawk Drive  
Morrisville, NC 27560

Serial number: \_\_\_\_\_

Model number: \_\_\_\_\_

Date of purchase: \_\_\_\_\_

## TABLE OF CONTENTS

1. GENERAL INSTRUCTIONS . . . . .	1
2. ASSEMBLING THE CARRIAGE . . . . .	2
3. OPERATING INSTRUCTIONS . . . . .	3
3.1 SIMPLE CONTROL ADJUSTMENTS . . . . .	3
3.2 PLAYMATE'S OSCILLATION SYSTEM . . . . .	4
4. TROUBLESHOOTING. . . . .	4
4.1 CAUSES OF INCONSISTENT BALL SPEED AND/OR BALL FEEDING JAM. . . . .	4
4.2 PITCHING WHEELS' WEAR. . . . .	6
4.3 IF FEEDING DISC DOES NOT TURN. . . . .	6
4.4 RADIO REMOTE CONTROL . . . . .	7
4.5 FEEDING GEAR MOTOR . . . . .	10
4.6 PITCHING MOTOR. . . . .	11
5. REPAIR . . . . .	13
5.1 REPLACING CONTROL MODULE (SPEED INTERVAL) . . . . .	13
5.2 REPLACING CRANK HANDLES FOR ELEVATION AND OSCILLATION. . . . .	14
5.3 FEEDING MECHANISM TIMING. . . . .	15
5.4 POSITIONING FEEDING DISK AND SPRING WIRE (DIAGRAM) . . . . .	16
6. PLAYMATE BALL MACHINE DRILLS . . . . .	17

## 1. GENERAL INSTRUCTIONS

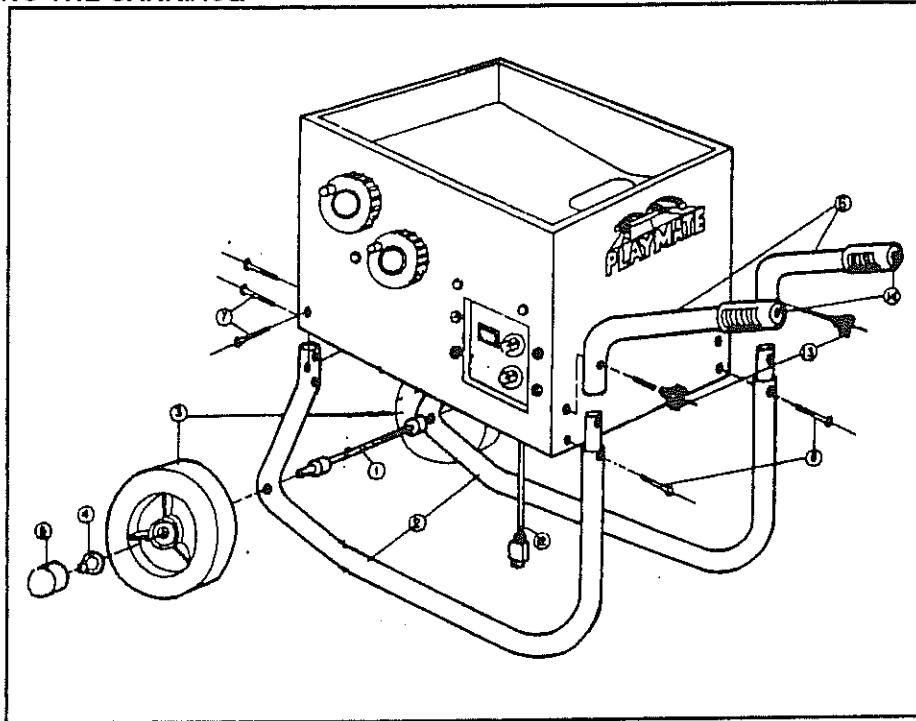
### A. SAFETY FIRST!

1. **Do not walk in front of your Playmate while operating. Balls leave the machine at high speeds and could cause injury - never walk or stand in front of the machine when it is on!**
2. Wear protective eyewear when attempting any repairs on your Playmate.
3. If you need to free a jammed ball, turn the machine [OFF] and unplug it before trying to remove the ball.
4. Before making any repairs on your Playmate, turn the machine off and disconnect the power cord.
5. Always use a three-prong grounded extension cord to operate your Playmate.
6. This machine is intended only for pitching tennis balls - please do not put any other object into your machine.

### B. ELECTRICAL REQUIREMENTS

A heavy-duty power cord (not included) is suggested for use with your Playmate tennis machine. All machines should be plugged into 120 V 50/60 Hz outlets (220 V 50/60 Hz outlets for overseas machines equipped with transformers). If you are using an extension cord of 100 feet long or less, you may use a 16 gauge or heavier grounded extension cord. For longer distances, a 14 gauge grounded extension cord is recommended.

## 2. ASSEMBLING THE CARRIAGE



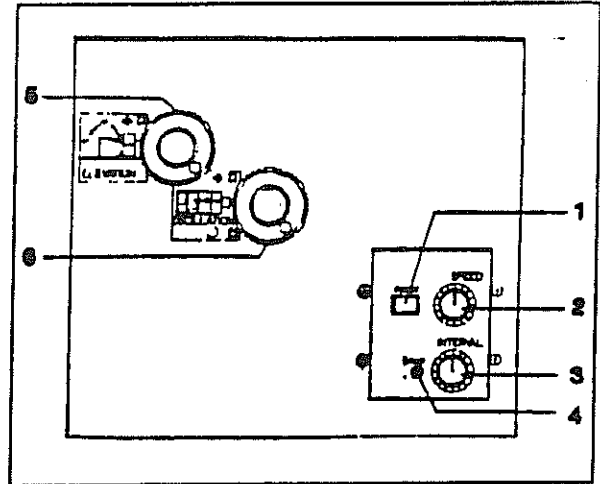
1. Spring legs (2) apart and insert axle (1) through holes in legs (2).
2. Place wheels (3) on axle (1).
3. Place cap (4) on end of axle and tap on securely with hammer. Snap on plastic cap (5). Repeat same procedure on other end of axle.
4. Turn machine upside down on a soft surface.
5. Place front end of legs (2) in slot under front of cabinet.
6. Fasten front end of legs to cabinet with carriage bolts (7), turning nut with 7/16" wrench.
7. Place handles (6) onto legs and align with holes.
8. Insert triangular plastic head screw (13) through handle, leg, and top hole in cabinet and tighten securely. Insert carriage bolt (8) through leg and bottom hole in cabinet, using a washer and a nut. Tighten nut with 7/16" wrench. Do not over tighten or handles will not fold properly.
9. Stand machine upright on its legs.
10. Connect your extension cord with power cord (12) and plug into 120 volt 50/60 Hz outlet (240 volt 50/60 Hz outlet for overseas machines with transformers).

Your Playmate is now ready for operation. Any control adjustments can be made while the machine is operating.

**NOTE:** The handles can be folded in by removing the triangular plastic head screws (13). The screws can then be stored by inserting them in the handle grip holes (14).

### 3. OPERATING INSTRUCTIONS

#### 3.1 SIMPLE CONTROL ADJUSTMENTS



**BALL SPEED AND INTERVAL:** The control box is located on the left side of the Playmate cabinet. It contains a lighted ON/OFF switch (1) which controls the electrical power to the machine. When lighted, this switch (1) indicates that power is ON.

The speed control knob (2) sets the speed of the ball. Turning the knob (2) clockwise increases the speed of the pitching wheels, that is, the speed of the balls to maximum. Likewise, turning the knob (2) counterclockwise decreases the speed.

The interval control knob (3) sets the interval at which balls are pitched. Turning the knob (3) clockwise increases the number of balls pitched to a maximum of approximately one ball per second. Turning the knob (3) counterclockwise decreases the number of balls per minute.

The toggle switch (4) located to the left of the interval control is the remote switch. This switch (4) is to activate the radio remote control.

**RADIO REMOTE CONTROL:** Hand held control device which controls the ON/OFF delivery of balls. The two left buttons (1 and 2) on the radio remote control stops the feeding system. The right button (3) starts the feeding system. Turn the antenna, so that it will point up, to increase the range of the remote control. If you have more than one machine, you can change the code on the transmitter and receiver. Please see Section 3.4 for instructions on changing the codes for additional machines.

**VERTICAL AND HORIZONTAL ANGLE CONTROLS:** On the left side of the Playmate cabinet are two crank handles.

Turned clockwise, the elevation handle (5) increases the vertical angle of the ball delivery, that is, shot elevation. To decrease shot elevation, rotate the handle (5) counterclockwise. This handle rotates approximately 23 full turns between minimum and maximum elevation.

The oscillation handle (6), when turned clockwise, increases the horizontal angle of ball delivery from a single direction up to full court coverage using a programmed sweeping action to one, two, or three hit positions. To decrease the horizontal angle, turn the oscillation handle (6) counterclockwise. There are approximately 29 full turns between minimum and maximum oscillation.

**NOTE:** Any control adjustments can be made while the machine is operating.

PLEASE SEE PLAYMATE'S OSCILLATION SYSTEM

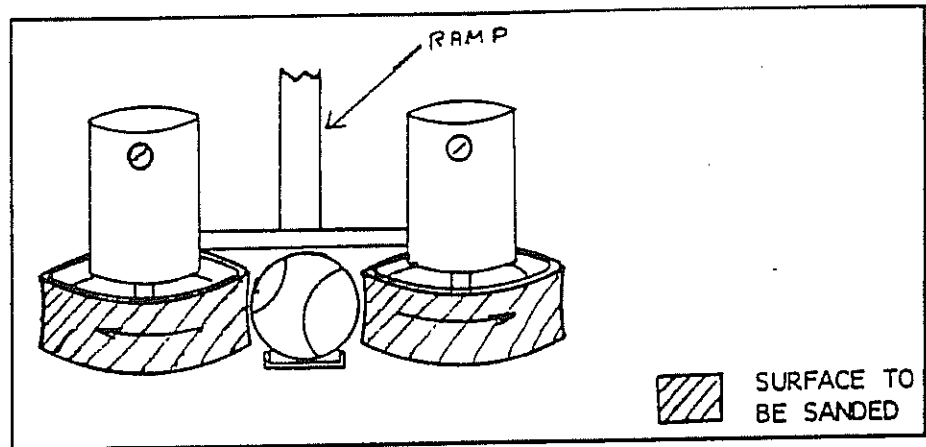
### 3.2 PLAYMATE'S OSCILLATION SYSTEM

The oscillation system allows the Playmate to deliver balls at any normal width in the right, center, left, center, right, etc. of the court.

The following can be accomplished by blocking holes on the feeding wheel of your Playmate:

1. By blocking the hole marked "C 1", the Playmate will oscillate alternately to three hit positions: Left, Center, Right, Left, Center, etc. By blocking the hole marked "C 2", the Playmate will oscillate alternately to these three hit positions: Right, Center, Left, Right, Center, Left, etc.
2. By blocking the two holes marked "C 1" and "C 2", the Playmate will oscillate alternately to two hit positions: one left and one right.
3. Block the hole marked "R", and the Playmate will oscillate alternately to two hit positions: Center (twice) and Left (once).
4. Block the holes marked "R" and "C" (either "C 1" or "C 2"), and the Playmate will oscillate alternately to two hit positions: Left and Center.
5. Block the hole marked "L", and the Playmate will oscillate alternately to two hit positions: Center (twice) and Right (once).
6. Block holes "L" and "C" (either "C 1" or "C 2"), and the Playmate will oscillate alternately to two hit positions: Right and Center.
7. Block holes "R" and "L" and the oscillation will remain at the center hit position.

### 4. TROUBLESHOOTING



#### 4.1 CAUSES OF INCONSISTENT BALL SPEED AND/OR BALL FEEDING JAM

1. Check the condition of the pitching wheels' surface and feeding system.
2. As the machine is used, the natural gripping, dull-looking surface of the rubber on the pitching wheels may become "polished" by the tennis balls. Balls pick up materials (treatment products, soil, dirt, liquids, etc.) from the court's surface, and deposit them on the Feeding and Pitching systems. The amount and kind of built-up "mixture" on the inner side of the feeding disc's four ball

holes, and on the pitching wheels' surface depends where and how much the machine is used. It could take years, or a few weeks, to make stick or reduce the diameter of the feeding disc ball holes and/or to "polish" the pitching wheels' surface, causing problems.

A tennis ball is not pitched when:

A WET ball was fed (most of the time, they are not pitched).

The Pitching wheels' surface has become slick (the first symptom is inconsistent ball speed).

When starting the machine, a ball is fed before the Pitching wheels begin spinning (The automatic one second feeding delay should keep this from happening).

If a ball is not pitched, the following balls will form a pile of balls in the Feeding ramp up to the aluminum plate Feeding hole. At this point, the next ball will get between the Feeding disc and the aluminum Plate, causing a JAM. To unjam a ball between the Feeding disc and the main aluminum Plate:

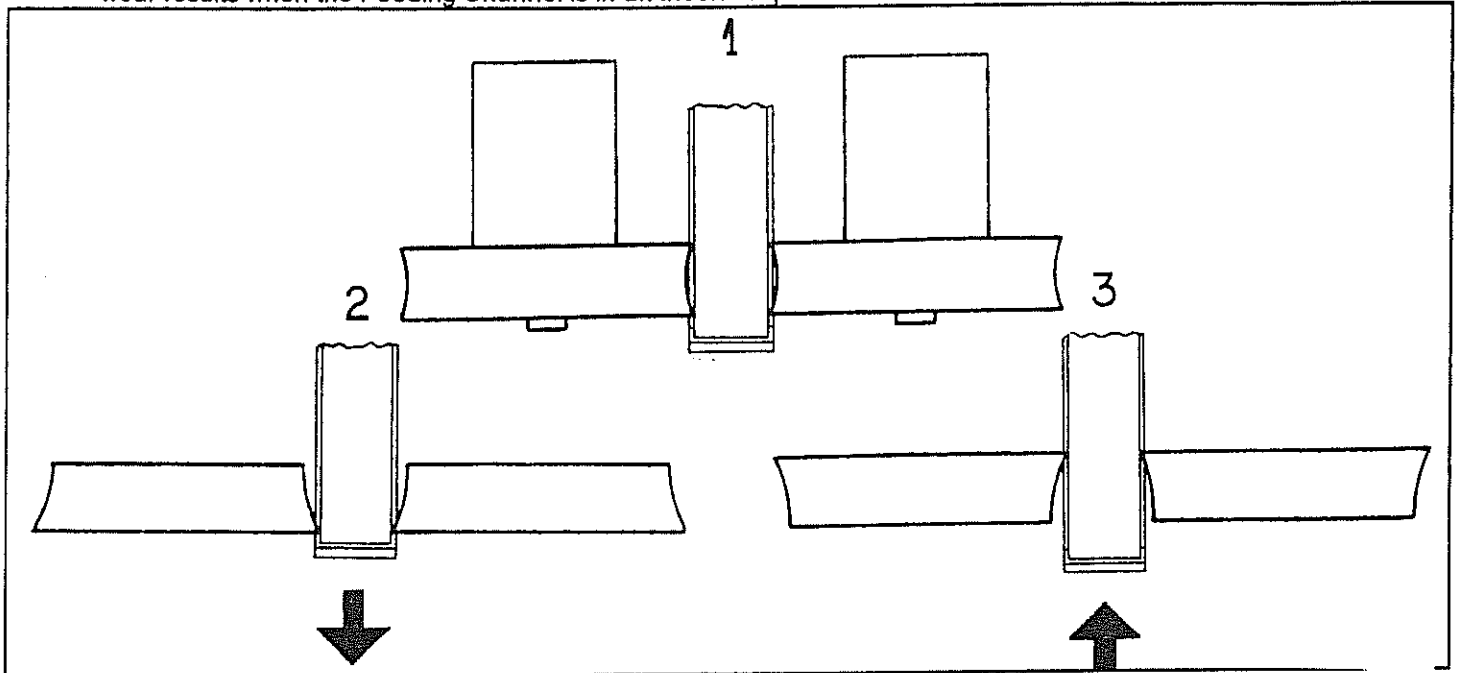
1. Reduce Speed knob to minimum and TAKE CARE that no one is in front of the machine.
2. Turn the Remote switch to OFF, and push ON the Reset button.
3. Dial the Interval knob to about 50.
4. Turning On and OFF the Remote, with EXTREME CARE, help rotate the Feeding disc clockwise to unjam the ball.
5. If the reset button jumps again, repeat steps 1 - 4 after a few minutes.

TO CORRECT:

1. UNPLUG the machine and WEAR eye protection glasses.
2. CAREFULLY remove balls in the Ramp. Discharge "dead" balls.
3. Sand the wheels' rubber pitching surface with medium-grit sandpaper to remove the thin, crystallized, lustrous surface. The natural dull rubber surface will show up.
4. Scrub, scrape, sand... to remove any built up mixture in the Feeding disc's four ball holes and in other parts of the machine.

#### 4.2 PITCHING WHEELS' WEAR

The wear of the Pitching Wheels should be checked periodically to prolong their life and the performance of your pitching machine. Even wear of the pitching wheels is illustrated in Figure 1. Uneven wear results when the Feeding Channel is in an incorrect position.



To adjust the Feeding Channel, first position the Pitching Wheels at minimum elevation angle. Then:

If the Pitching Wheels are wearing more on the UPPER part (Figure 2), LOWER the Feeding Channel by turning its screw adjuster counterclockwise until a tennis ball passes between the center of the wheels' tread.

If the Pitching wheels are wearing more on the LOWER part (Figure 3), RAISE the Feeding Channel by turning its screw adjuster clockwise.

(In older models, adjust the Feeding Channel by bending it UP or DOWN with care.)

#### 4.3 IF FEEDING DISC DOES NOT TURN

1. Check to see if all electrical connections are correctly plugged.
2. Reduce Oscillation to zero (0).
3. Set Interval Knob to 100 and turn the machine ON for about two minutes. If the reset Button jumps out, please go to instruction 4. Otherwise, and electrical should do the following checks to the Gearmotor:
  - A. Clean the brushes of the Feeding Gearmotor as per enclosed instructions.
  - B. Check to see if the Gearmotor is receiving power from the Control Box. If not, the Interval or Remote Circuit Boards in the Control Box need service.

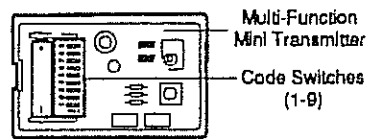
- C. After A and B have been checked, if the Feeding Disc does not turn, the electrician should check the Gearmotor's armature (120 ohms) and field (1200 ohms).
4. If under test 3 the Reset Button jumped out, there is a jam.
  - A. Check for jammed balls under the Feeding Disc. Remove jammed balls, if any.
  - B. After pushing the Reset Button dial the Interval Knob to 50 and see if the Feeding Disc now turns. If it turns, the Feeding Gearmotor is in working order.
  - C. Now, slowly increase the Oscillation by turning its knob CLOCKWISE. If the Feeding Disc runs slower or if it stops, it is most likely that your machine was dropped during transportation. The bushing that holds the shaft of the pitching mechanism is misaligned, and the shaft is frozen to the bushing. Sometimes, to solve this problem it helps to use a liquid to free the sticky mechanism (WD-40, sold in the USA, is one such liquid).
  - D. If the shock suffered by the machine was too great, it will be necessary to:
    1. Remove the top part of the cabinet. Take out the 1/4" thick Main Aluminum Plate on which all the mechanisms are mounted within the Cabinet (instructions enclosed).
    2. Unscrew the screw that connects the arm of the shaft with the 3/8" square steel level bar that goes to the green Oscillation Cam using a hexagonal key. Check to see if the Pitching Support Assembly oscillates easily through its shaft and is not frozen to the bronze bushings attached to the Main Plate.
    3. If not, remove the Pitching Support Assembly and its shaft from the bushing attached to the main plate. To do this, you will need to take out the arm on top of the shaft by pushing out the pin that holds them together.
    4. After the shaft is out, polish it with very light sandpaper and ream the bronze bushings with a size .750" Reamer. Grease the bushing and the shaft before replacing them.
    5. To reassemble the machine, reverse the above procedure.

#### 4.4 RADIO REMOTE CONTROL

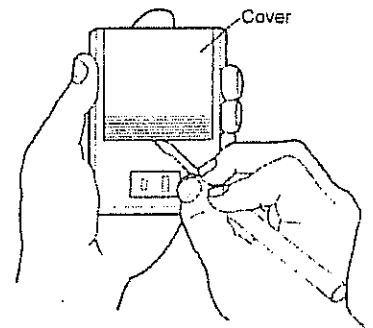
If you own more than one machine, you may wish to change the coding on your radio remote control to operate each machine independently of the other(s).

*NOTE:* All devices to be controlled must use the 390 radio frequency and all must use code switches but not punch-out keys.

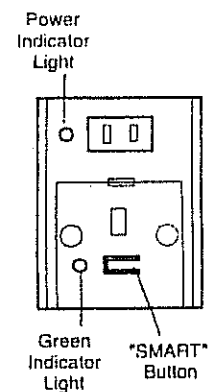
1. To change the coding on the Remote Control, begin by removing the screw on the bottom of the back of the remote and pulling the front cover off. This gives access to the coding switches and battery. Hold the remote so that the bottom of the unit and battery face you with the switches closest to your body. Do not change the settings of switches 10, 11, 12, A, B, or C for any reason. Set switches 1-9 to any combination of up or down and close the remote the same way it was opened (see top of next page).



- The Remote Receiver is mounted inside an aluminum box in the upper cabinet where the balls are stored before use. To access the Remote Receiver, remove the two screws at the corner of the upper cabinet from which the antenna extends, move the wiring to the outside of the box, pull the receiver out, and turn it around so that the cover faces you. With a small flat head screwdriver remove the cover off of the receiver as shown to the right.

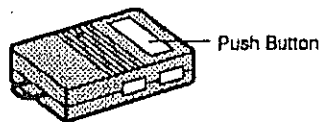


- Then, to program the remote receiver, hold the remote control facing the receiver and hold the push button down. Press down the "SMART" button and hold it down, shown to the right, until the green indicator light *flashes* once and then release the "SMART" button. Holding the "SMART" button down for more than six seconds will erase all of the stored codes from programming other remote controls. Replace the receiver back in the box as it was removed and attach it to the cabinet by putting the removed screws back in.



**NOTE:** The ball machine must be on while programming the remote receiver.

4. The Remote Receiver can turn the ball delivery on and off the same way the remote control does by pressing on the cover as shown in Figure 1 from the previous page.
5. The Remote Control works by simply pressing the push button shown below. For your safety, when the ball delivery is turned on or off, the machine will sound a sharp beep for on and a smoother beep for off.



## TROUBLESHOOTING

If you suspect trouble in your Remote Control system, switch the REMOTE switch to OFF. This will allow you to use your Playmate machine without the Remote Control for testing purposes.

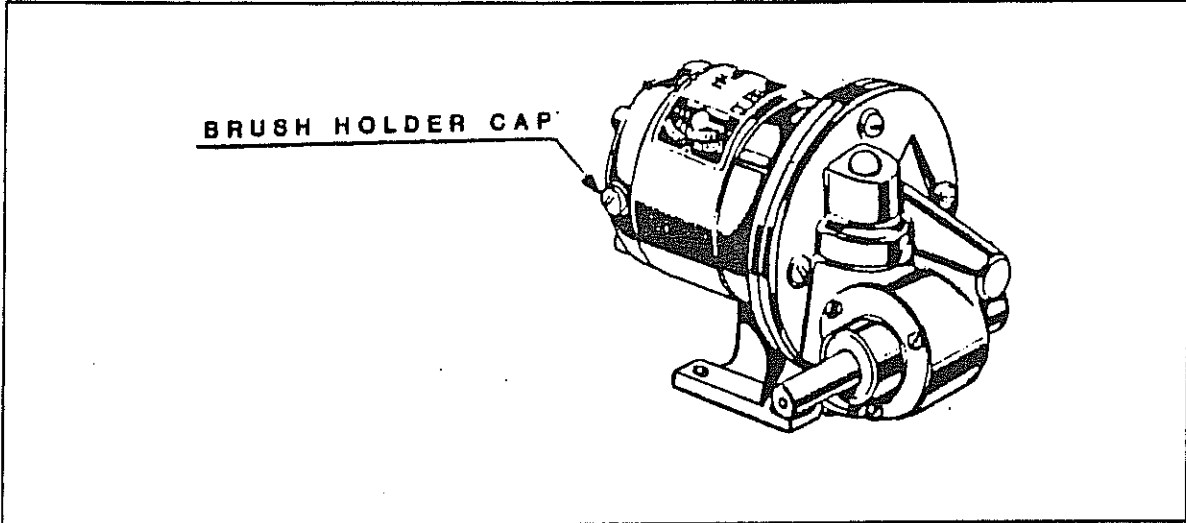
### TO REPLACE BATTERY IN REMOTE CONTROL

Remove the screw from the bottom side of the back of the remote. The front side of the remote comes right off and the battery and inside of remote are exposed. Install a new battery in the same position. Preferably, use an Eveready 9V Classic No. 216. Finally, replace both the front cover and screw to shut the remote control.

### REPLACING LOST OR STOLEN REMOTE CONTROLS

To replace lost or stolen Remote Controls, order Part No. A1C4TRA1 from Metaltek. Each unit is factory tuned to exacting standards. Field tuning is neither necessary nor recommended and will void your warranty.

#### 4.5 FEEDING GEAR MOTOR



1. Remove brush holder cap with screwdriver (both sides of motor).
2. Remove brush and spring.
3. Gently wipe clean and return to motor.

#### MAINTENANCE

**IMPORTANT** - Before servicing or working on equipment, disconnect power source (this applies especially to equipment using automatic restart devices instead of manual restart devices and when examining or replacing brushes on brush-type motors/gearmotors).

Clean regularly to prevent dirt and dust from interfering with ventilation or clogging moving parts.

**BRUSH TYPE MOTORS/GEARMOTORS** - The wear rate of brushes is dependent upon many parameters (armature speed, amperage conducted, duty cycle, humidity, etc.). For optimum performance, brush-type motors and gearmotors need periodic user maintenance. The maintenance interval is best determined by the user. Inspect brushes regularly for wear (replace in same axial position). Replace brushes when their length is less than 1/4" (7 mm). Periodically remove carbon dust from commutator and inside the motor – this can be accomplished by occasionally wiping them with a clean, dry, non-linting cloth. Do not use lubricants or solvents on the commutator. Do not use solvents on a nonmetallic endshield if the product is so equipped.

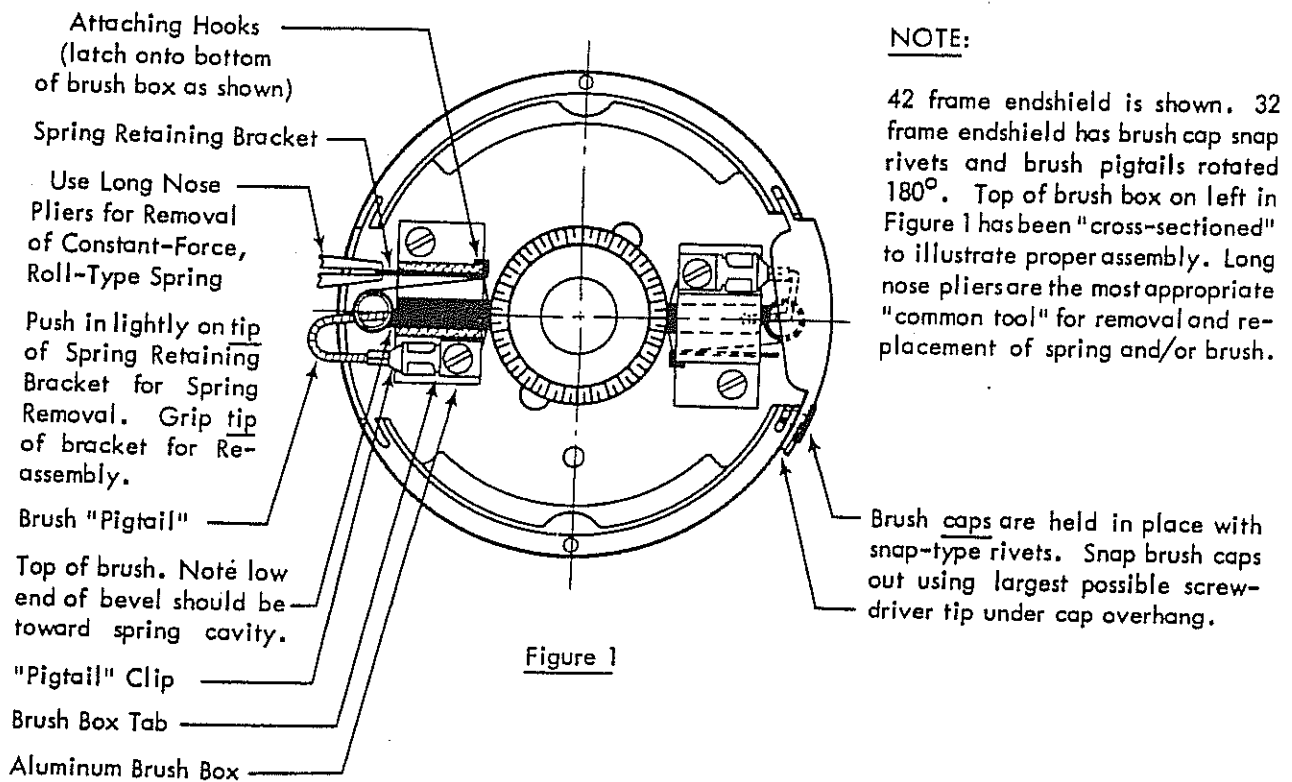
## 4.6 PITCHING MOTOR

### 32 and 42 FRAME PERMANENT MAGNET DRIVE BRUSH INSPECTION and REPLACEMENT PROCEDURE

#### WARNING

Armature brushes are not at ground potential. Disconnect the drive from the power source before any work is performed.

Brush wear rate varies depending on the individual application's duty cycle, and should be inspected at frequent intervals to determine an appropriate inspection schedule for each specific application.



#### BRUSH REMOVAL

Refer to Figure 1. Brush caps are held in place with snap-type rivets. Snap brush caps out using largest possible screwdriver tip under cap overhang. Brushes are retained by constant-force, roll-type springs. To remove springs, press inward on the end of the spring retaining bracket using the tip of a pair of long nose pliers or other appropriate tool. Springs should "pop" out. If they don't, they can be removed by pulling outward on the spring retaining bracket with a pair of long nose pliers. Brushes can now be removed by pulling them out of the brush boxes by their "pigtails". It is not necessary to remove the brush pigtail clip from its connection to the brush box tab for brush inspection.

#### BRUSH INSPECTION AND CLEANING

Brushes should be replaced before they are less than .250 inch (7mm) in length. Carbon dust accumulation should be removed periodically. If the endshield has been removed from the drive, a clean, dry, non-linting cloth can be used for cleaning. Do not use solvents as they may damage the non-metallic endshield.

REASSEMBLY OF BRUSHES

If brushes require replacement, complete removal of the existing brushes may be accomplished by disconnecting their brush pigtail clips from the brush box tabs. A pair of long nose pliers is recommended to perform this operation. Assemble the clips of the new brushes in the same manner. Complete reassembly of new or existing brushes as follows:

There is a slot in the base of each brush box. Refer to Figure 2. Brush pigtails come already attached to one side of each brush. Position and insert each brush so that the pigtail of the brush aligns with the slot in the brush box. The brush pigtail must be capable of moving freely in the slot.

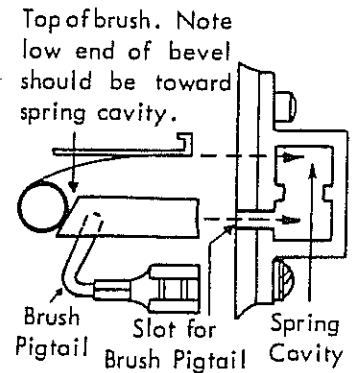
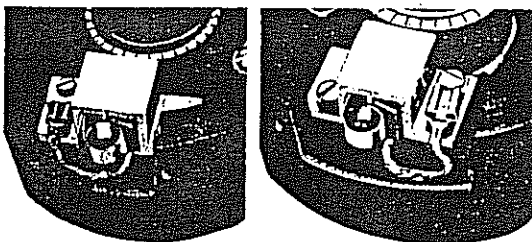


Figure 2



a) 32 Frame

b) 42 Frame

Figure 3

REASSEMBLY OF BRUSH SPRINGS

Correct replacement of brush springs is critical to assure optimum drive performance. Refer to Figure 1. Grasp the tip of the spring retaining bracket such that the roll-type spring will be on the "brush side" of the brush box and resting on the brush when the brush spring is brought up to the brush box. Push the retaining bracket slowly into its slot while letting its two attaching hooks slide on the wall of the brush box. Stop, but do not release the retaining bracket when its hooks slip around the edge of the brush box. While still grasping the retaining bracket with the pliers, slowly bring the bracket back out of the brush box until the hooks latch

around the edge of the brush box as shown in Figure 1. Release the pliers. If the retaining bracket is properly seated it will be lying flat against the brush box wall. If it is "cocked" to one side, it is improperly seated -- release the spring (See "Brush Removal") and reassemble it again. As a final check, apply slight pressure on the retaining bracket in the direction away from the brush with the tip of the pliers -- not "popping" out indicates proper latching of the hooks. Position the pigtail of each brush as shown in Figure 3 so that the pigtail will "feed" into the brush box slot as the brush wears down. The pigtail should be formed to rest against the non-metallic endshield as shown in Figure 3. It must not come in contact with any metallic surfaces other than the brush box.

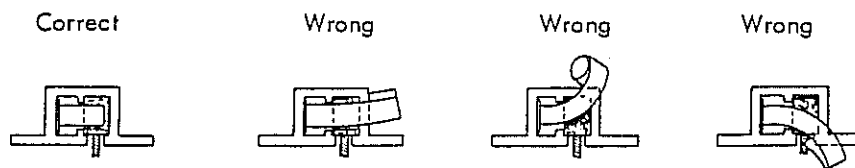


Figure 4

**IMPORTANT** -- Make certain that the roll-type springs are positioned directly on the brushes. Refer to Figures 1 and 4.

REASSEMBLY OF BRUSH CAPS

Insert the end of the brush cap opposite of the snap rivet into the endshield slot. Aline the snap rivet with its hole in the endshield and snap it into place by applying a moderate amount of pressure with one's thumb or a blunt object.

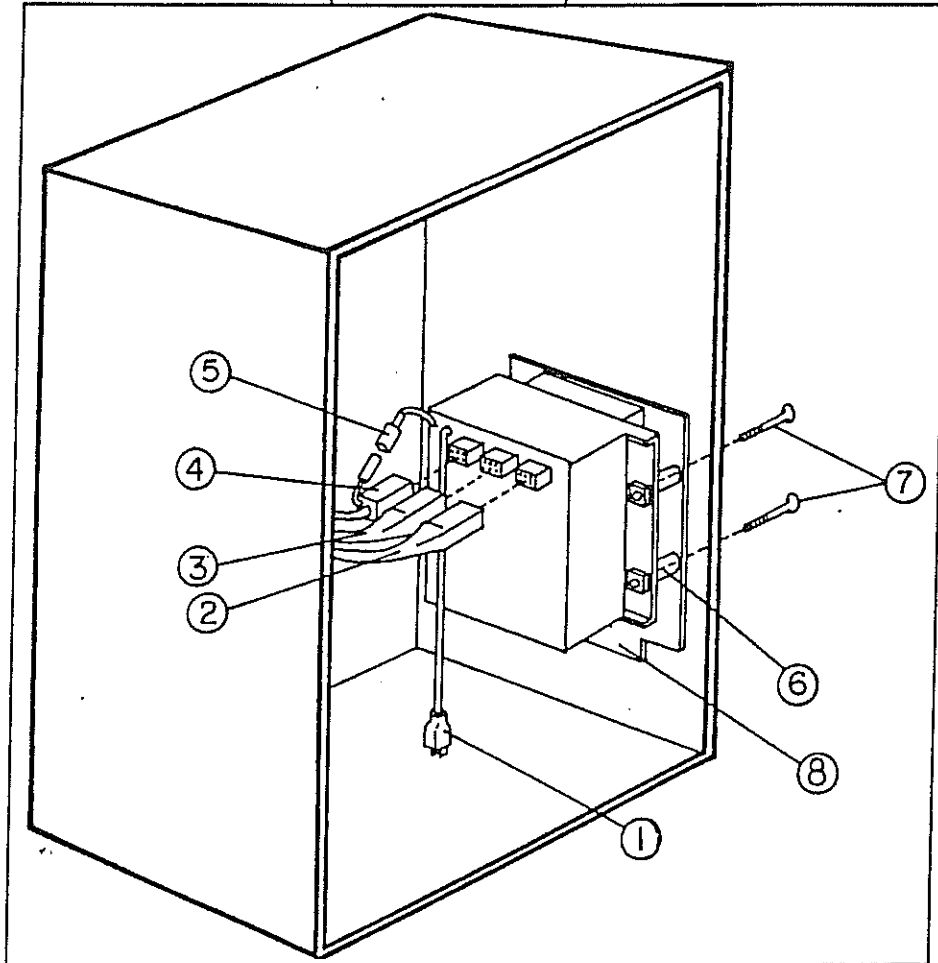
**CAUTION:** Make certain that the ground wire is securely reconnected to the ground terminal if removed.

Reconnect the drive to the power source, and test for proper operation. New brushes may be seated by running the motor or gearmotor in at no load. Proper seating is required for lowest brush noise level.

Bodine Electric Company  
Form P/N 074 00033  
Printed in U.S.A. (DA)

## 5. REPAIR

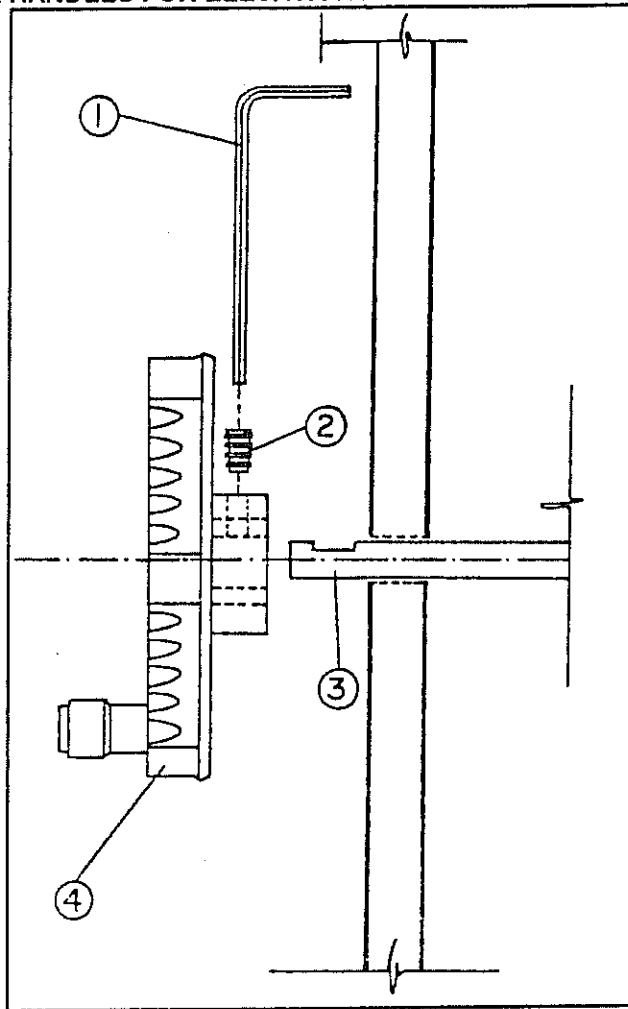
## 5.1 REPLACING CONTROL MODULE (SPEED INTERVAL)



1. Unplug power cord (1).
2. Using screw driver, remove the four screws (7) in front of the control module.
3. Remove four spacers (6) and frame (8).
4. Gently pull the four plugs (2), (3), (4), and (5) in the rear of the control module. (Plugs (2) and (3) are from the pitching units, and plugs (4) and (5) are from the feeding motor.)
5. Set new control module in place by reversing above procedure. **BE SURE TO ALWAYS REPLACE THE WHITE SPACERS WHEN REINSTALLING THE CONTROL MODULE.**
6. Plug power cord (1) into 120 volt 50/60 Hz outlet.

**NOTE:** When looking into the front of the machine, if pitching wheels turn TOWARD each other, unplug power cord (1) and switch plugs (2) and (3) of pitching units so wheels turn AWAY from each other.

## 5.2 REPLACING CRANK HANDLES FOR ELEVATION AND OSCILLATION



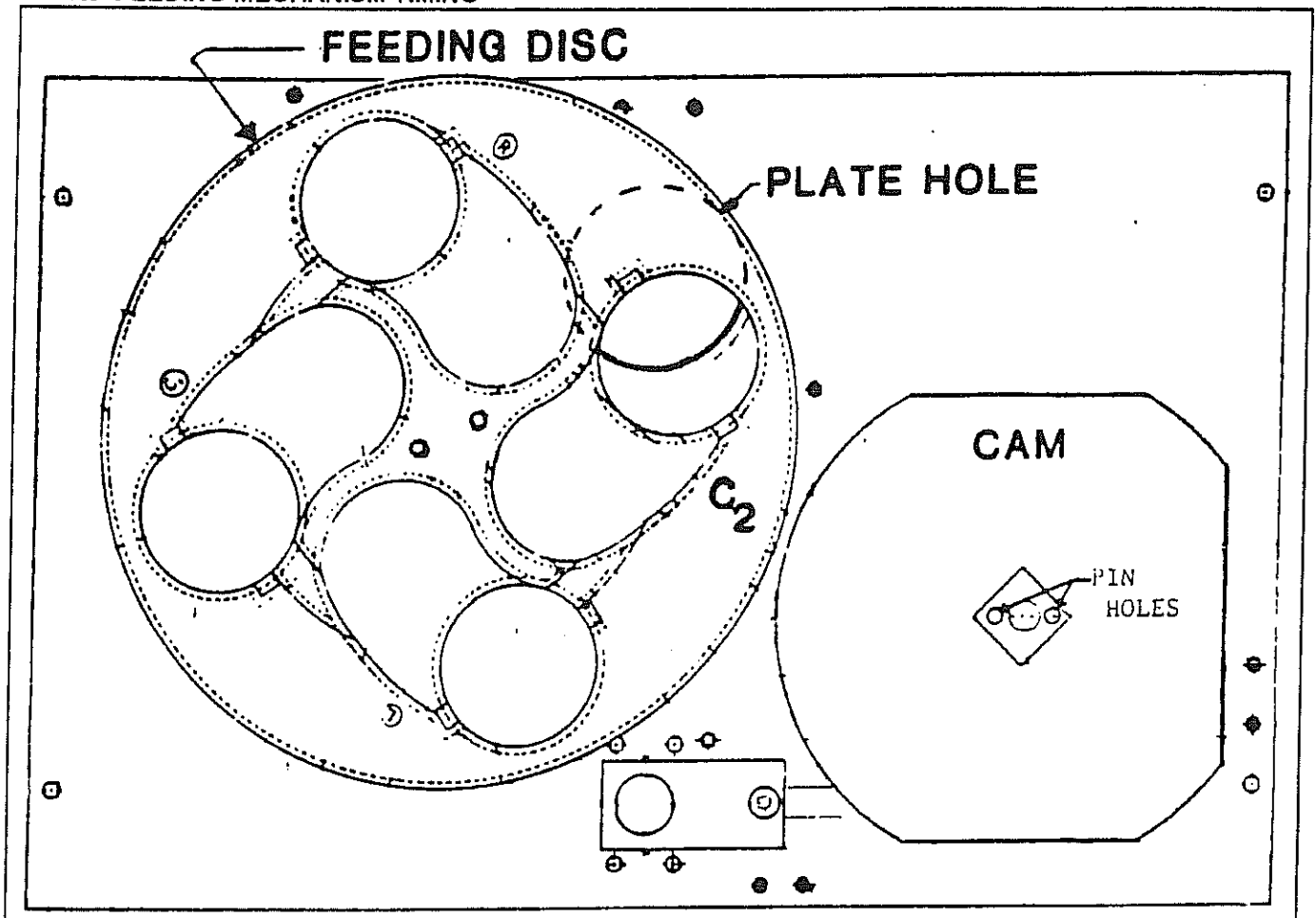
### ELEVATION:

1. Using 1/8" hexagonal wrench (1), loosen set screw (2) on elevation crank handle (4).
2. Remove elevation crank handle (4), pulling gently.
3. Face front of machine, lift front of pitching wheels so shaft (3) protrudes at its maximum and hold pitching wheels in this position until handle is tightened.
4. Place handle (4) so set screw (2) rests on FLAT surface of shaft (3) and tighten set screw (2) securely using 1/8 hexagonal wrench (1).

### OSCILLATION:

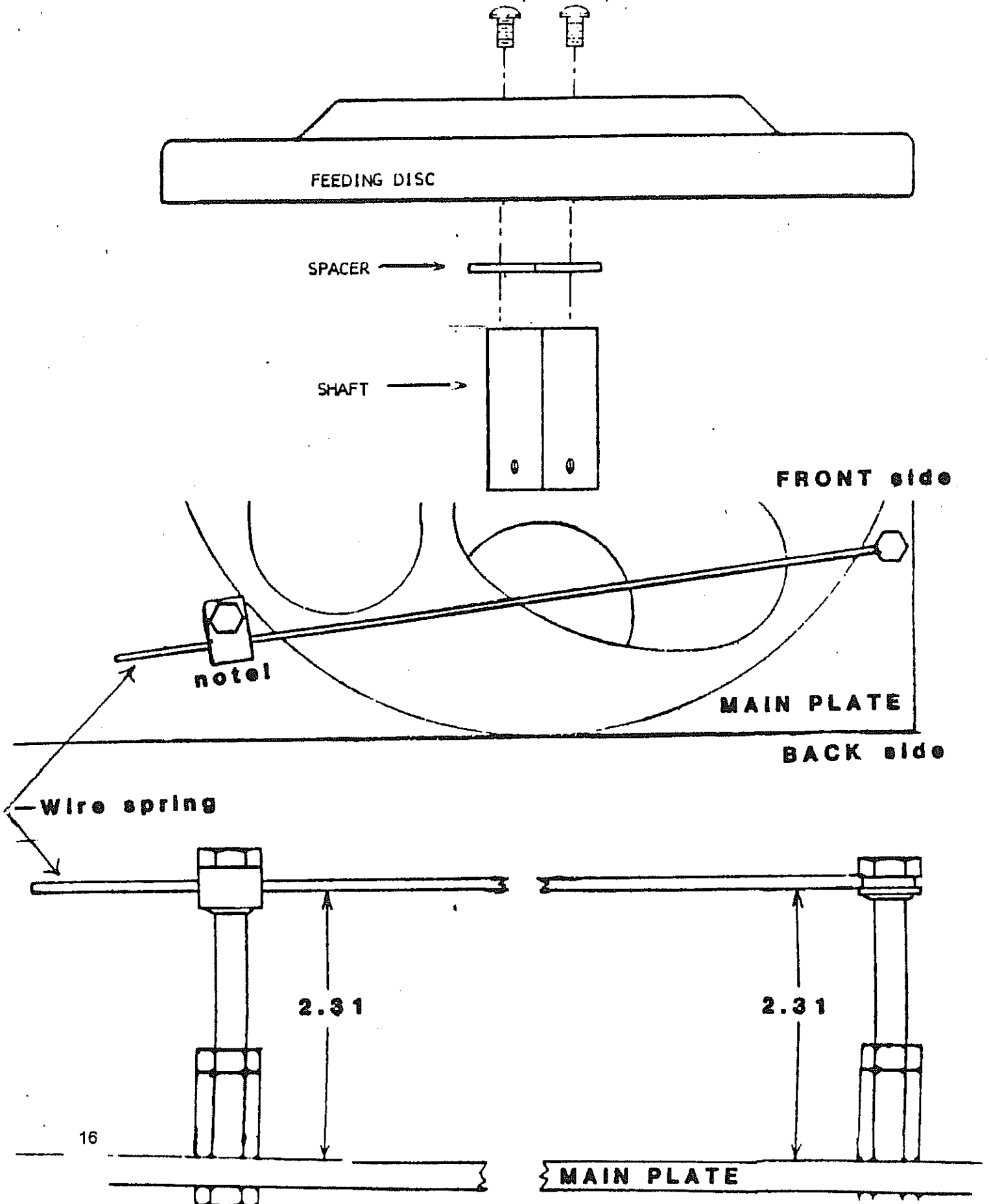
1. Crank oscillation handle (4) to minimum oscillation (counterclockwise).
2. Using 1/8" hexagonal wrench (1), loosen set screw (2) on oscillation crank handle (4).
3. Remove oscillation crank handle (4) by pulling gently.
4. Place new oscillation crank handle (4) on shaft (3) so set screw (2) rests on FLAT surface of shaft (3).
5. Using hexagonal wrench (1), tighten set screw (2) securely on oscillation crank handle (4).

## 5.3 FEEDING MECHANISM TIMING



1. Take out the 1/4" thick Main Aluminum Plate in which all the mechanisms are mounted from the Cabinet. With split cabinet units just take off Top part of Cabinet.
2. With Interval Control, turn Feeding Disc until C2 is covering Plate Hole halfway (See illustration below).
3. Using a 1/8" Allen wrench, loosen set screws on Cam Sprocket which is located on the Cam Shaft under the Main Plate.
4. Align Cam as shown in Illustration above. *NOTE:* Pin Holes on top of Cam Shaft must be in position shown.
5. Tighten set screws on the Cam Sprocket located under the Main Plate.
6. To reassemble the Cabinet, reverse procedure for removing the Cabinet.

5.4 POSITIONING FEEDING DISK AND SPRING WIRE (DIAGRAM)



## 6. PLAYMATE BALL MACHINE DRILLS