

# Meadows

MEADOWS 4 IN 1  
Model M-4

M E A D O W S 4 . I N 1

Model M-4

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## INTRODUCTION AND WARRANTY INFORMATION

Meadows "4-in One" is a coin operated video device that simulates TENNIS, HOCKEY, and another game called "KNOCK OUT." "KNOCK OUT" is a game against time, where the player tries to clear the field of square targets for a high score.

The electronics of this game incorporates the latest advances in semi-conductor technology resulting in long life and low maintenance.

However - as with all devices mechanical or electrical - there will inevitably be minor problems. This manual describes all adjustments, repairs, and troubleshooting procedures which you will need to know to operate the game.

### WARRANTY

Printed Circuit Boards: Contact the distributor from whom the game was purchased for warranty repair and/or replacement information.

NOTE: Any PCB repair attempted by anyone other than factory authorized service people, or any damage due to improper handling or use shall void any existing warranty. Proper procedures for removal and replacement, as outlined in manual, must be adhered to.

Display Monitor: Contact the distributor from whom the game was purchased for warranty repair and/or replacement information.

NOTE: Any monitor repair attempted by anyone other than factory authorized people, or any damage due to improper handling or use, shall void any existing warranty.

ALL EQUIPMENT RETURNED TO THE FACTORY MUST HAVE RETURN AUTHORIZATION NUMBER AND TRAVEL FREIGHT PREPAID. PLEASE LIST SYMPTOMS OF PROBLEMS TO EXPEDITE REPAIRS.

#### NEW MACHINE SET-UP AND CHECK-OUT PROCEDURES

After uncrating, save all packing materials in the event the machine needs to be returned.

As each new "4-in One" leaves the factory, every component and sub-assembly is carefully checked for proper operation. However, since parts may have been damaged or factory adjustments changed due to shaking and jarring during shipping the following check-out procedure must be performed prior to placing the machine on location.

- a) With the machine unplugged, open coin acceptor door and raise the top by removing wing nut hold down. Carefully inspect both the exterior and interior for any obvious damage to the cabinet or internal components which may have occurred during shipping. If any such damage is discovered, immediately contact the freight carrier.
  
- b) Inspect the interior of the machine more carefully, looking for broken or disconnected wires, sub-assemblies not securely mounted, and

any foreign objects shorting or interfering with electrical connections. Pay particular attention to the connections to the TV monitor, the players' controls, and the coin switch. Check the security of the computer PCB edge connectors.

c) Plug the machine in and check the CRT (Cathode Ray Tube) image which should be steady, centered, sharp, and exhibit the proper levels of brightness and contrast. With the machine plugged in, but not started, the CRT will display the Attract Mode (see next section for Attract Mode explanation).

d) Insert several old and new coins into the coin acceptor. No genuine coin should be rejected. Operate the coin return button while checking for signs of stickiness or binding. Lightly spray the coin acceptor, return button and the inside of both lock cylinders with WD-40, a silicone lubricant.

e) Check the computer for proper operation by playing several games and compare the results with the game sequence analysis in the next section.

#### INSPECTION AND SERVICE ACCESS

Access to "4-in-One" is gained by first unlocking the coin door and tilting it out. It will stop by means of its retaining cord. Then unfasten the wing nut that holds the top down, which is located just inside the coin door and up high. Now lift top of machine up to open. This

allows removal of the Logic PCB, monitor and joystick assemblies as well as cleaning of the screen and joystick pots.

## GAME SEQUENCE

### 1. Attract Mode

When the game is first plugged in and the picture tube is allowed to warm up, it will display an attract mode that automatically changes from one game to another. The ball will also be bouncing off of the borders and "Hockey" face off area. When a coin or coins are inserted, the games will stop changing and will allow the player to manually change the games.

### 2. Coin

#### Games per Coin

One coin (25¢) yields:

Two Player Tennis, or

Two Player Hockey, or

One Player Knock Out

Two coins (50¢) yields:

Four Player Tennis, or

Four Player Hockey, or

Four Player Knock Out

### 3. Game Select

Game Select button is now pressed until the desired game is visible on the screen.

#### 4. Paddle Select/Game Start

Paddle Size Button, either "Expert" or "Pro" is now pressed and the game begins.

#### 5. Game Select/Start, after Free Game (or Extended Time)

The One Player mode of the game "Knock Out" is equipped with a free game feature. When the free game score is reached and the time runs out, the game will hold the players score for about 2 seconds and then clear the score out allowing the player to select any one coin credit type game. As before, the game select switch is pressed and then the Paddle Size/Start Game switch. A free game can only be obtained once for every coin inserted. Free game scores are operator selectable to 100, 200, 300 or 400 points. Setting of the free game score will be covered under adjustments.

#### 6. Duration of Games

Tennis: The length of the Tennis game, either 2 or 4 players, is determined by which player reaches a score of 11 first.

Hockey and Knock Out: The length of play on these games is determined by a visual time line on the monitor screen. This time is selectable to either 1.1, 2.2, or 4.4 minutes as described on the illustration, "Logic PCB."



## OTHER ADJUSTMENTS

For the following adjustments, see illustrations.

### Time

In the Knock Out and Hockey games, the time may either be adjusted to 1.1, 2.2, 4.4 minutes. See Figure 3.

### Free Game Threshold

On the Knock Out game, the free game score may be adjusted to 100, 200, 300, or 400 points. See Figure 3.

## PADDLE ADJUSTMENT

For reference the lower side of court is nearest coin operator. The upper sides of court are as you face the coin operator.

Paddle should be checked every service call. Paddle will need adjusting when a pot or logic board has been replaced. If a pot has been replaced refer to section on preliminary adjustment. Each paddle has two adjustments: See Figure 1.

## PRELIMINARY ADJUSTMENT

The joystick pots need preliminary adjustment if the pots have been replaced. Preliminary adjustments should be done before the joystick is remounted.

a. ADJUSTING 2 PLAYER JOYSTICKS: Rotate pots of joystick Counter-Clockwise until the stick is forced to move and the pot will not rotate any further. Now apply slight pressure to the stick and move it in a circular motion. The joystick is ready for mounting in the unit. Wires must be connected to terminals #1 and #2 on the pots.

b. ADJUSTING 4 PLAYER JOYSTICKS: Rotate pots of the joystick Clockwise until the stick is forced to move and the pot will not rotate any further. Now apply slight pressure to the stick and move it in a circular motion. The joystick is ready for mounting in the unit. Wire must be connected to terminals #2 and #3 on the pots. To complete adjustment see Figure 1.

#### TV MONITOR ADJUSTMENT

The TV monitor adjustments function like those of a home T.V. Set. Refer to monitor manual for the locations of the following adjustments.

a. VOLUME: Adjust the volume to the preference of the location. Keep in mind that the machine will sound louder with the control panel raised.

b. BRIGHTNESS: Brightness is adjusted before contrast. Adjust so the CRT background is as dark as possible without diminishing the brightness of the playfield walls.

c. CONTRAST: Adjust so that the CRT images are as bright as possible against the pre-adjusted dark background without blurring.

d. VERTICAL HOLD: Adjust only if the picture appears to be rolling up or down the screen. Adjust for a stable, centered picture.

e. HORIZONTAL HOLD: Adjust if the picture appears to be shifted off center horizontally, the images are warped, or if the whole picture is broken into diagonal lines.

#### COIN ACCEPTOR OPERATION, ADJUSTMENT AND MAINTENANCE

The detection and rejection of undesired or counterfeit coins are determined by size (both thickness and diameter), weight, and metallic composition.

The transfer cradle (#9 in Figure 4) is used to test both the size and weight of the coin. The quarter must first pivot an "undersize" lever (10) to unlock the transfer cradle and can be returned by actuating the wiper operating lever (17). Oversize diameter coins will fail to pass between the transfer cradle and the wiper and can be returned by operating the wiper lever. Coins that are oversize in thickness will fail to pass between the magnet gate (11) and the main channel (5) and will have to be dislodged by actuating the wiper operating lever. Underweight coins will fail to overcome the transfer cradle counterweight and can be returned by operating the wiper lever.

A magnet is used to test the metallic composition of the coin. Highly magnetic coins, such as steel or iron, will be retained by the magnet and can be returned by actuating the wiper operating lever. Coins having comparatively high magnetic properties will be slowed down by the magnet and will drop off the rail short of the Accept entrance and will be returned. Coins having little or no magnetic properties, such as brass or zinc, will pass through the magnetic field so fast they will overshoot the accept entrance and will be returned.

#### ADJUSTMENT

All coin acceptors leave the factory adjusted for maximum performance. If, however, more critical adjustment is desired, or if the unit has been disassembled for cleaning, the following adjustment procedure is suggested.

#### KICKER AND SEPARATOR

- a. Set the acceptor on a level surface with the back of the unit facing you (the kicker and separator are on the back).
- b. Loosen the screws holding the kicker (1) and the separator (3) and move both the kicker (2) and the separator (4) as far to the right as they will go. Tighten the screws lightly.
- c. Insert several test coins (both old and new) and note that some are returned by striking the separator.

d. Loosen the separator screw and move the separator a slight amount to the left. Retighten the screw.

e. Insert the test coins again, and if some are still returned, repeat Step D until all coins are accepted.

f. Loosen the kicker screw and move the kicker a slight amount to the right. Retighten the screw.

g. Insert the test coins again and if some of them are returned, repeat Step F until all coins are accepted.

h. Be sure that both screws are tight after the adjustments have been made.

#### THE MAGNETIC GATE

a. Set the acceptor with the front of the unit facing you in the test position.

b. Turn the magnet gate adjustor (12) out (counter-clockwise) until none of the coins will fit through.

c. With a coin resting in the transfer cradle, turn the adjustor in (clockwise) until the coin barely passes through the magnet gate.

d. Test this adjustment using several coins, and if any fail to pass through the magnet gate, repeat Step C until all coins are accepted.

e. Fix the magnet gate adjustor in this position with a drop of glue or Loctite, if necessary.

#### ACCEPTOR MAINTENANCE

Depending on the environment in which the acceptor is used, periodic preventative maintenance should be performed.

The mainplate (5) may be cleaned with any household cleaner. Thorough rinsing and drying are necessary to remove deposits and/or film. Remove all metal particles from the magnet by guiding a screwdriver along the edges of the magnet. Remove the transfer cradle and undersize lever and clean the bushings and pivot pins and bushings and re-assemble. Spray the entire unit lightly with WD-40, a silicone lubricant.

#### TROUBLE SHOOTING HINTS

#### TESTING COMPONENTS OF GAME

Buttons & Coin Switch are normally open. When pushed they are closed. The buttons can be by-passed by touching the wires together.

Harness can be tested by an ohm-meter or continuity checker.

Fuses are checked by a visual inspection or continuity checker.

Logic Board & T.V. Monitor can be checked by substitution of a good replacement. Repair of Logic Board & Monitor should only be serviced by experienced technicians.

NO PICTURE: Check if back of picture tube is lit. If not, inspect fuses, power cord, and power outlet. If these are good and tube is not lit repair of monitor is necessary.

If the tube is lit, check adjustments of brightness and contrast. Test continuity of logic board pins #1 and #3 (5 volt dc power supply), and pin #5 (Video output). If all check out, problem is either the logic board or monitor.

NO SOUND: Check adjustment of volume control on T.V. monitor. Test continuity of logic board pin #17 (audio signal), and monitor pins #5 and #8. Check speaker; logic board, and T.V. monitor.

NO PADDLES: Check paddle adjustment. Test continuity of wires, from pots to logic board. The game may not be resetting properly. Check coin switch and wires. Check pots and logic board.

PADDLE DEFECTS: If paddles appear and are jumpy, oscillating, flickering, or will not stay within its boundaries, pots may need adjustment or replacement.

GAME DEFECTS: If game is not operating properly, for example: incorrect scoring, segments missing, erratic ball movement, the likely cause is the logic board.

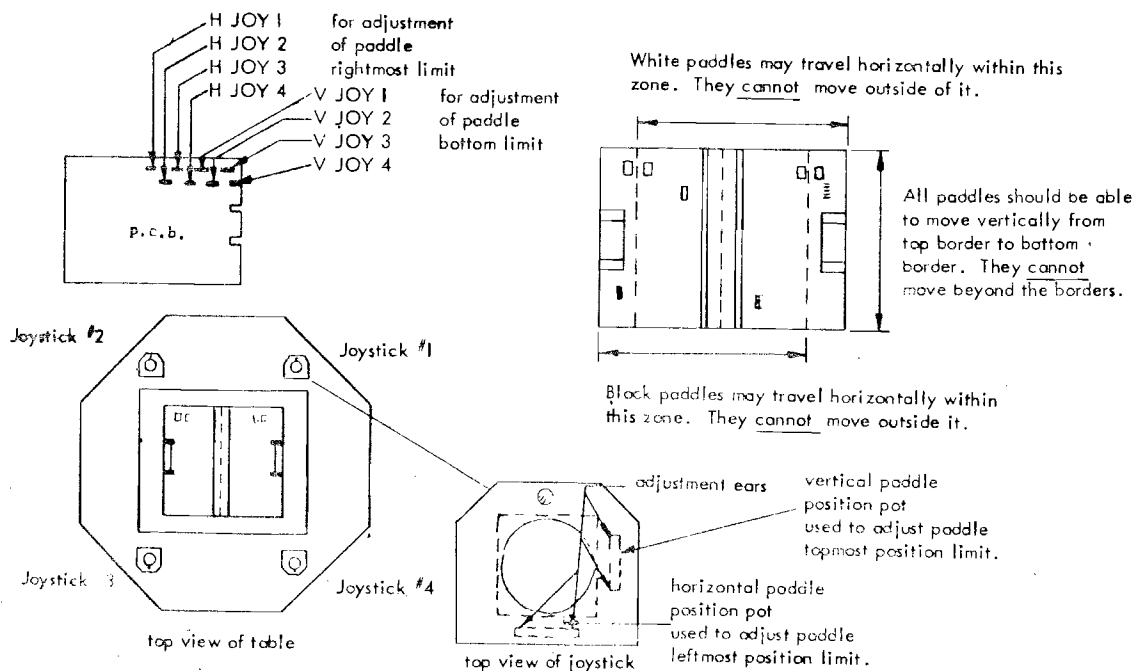
SPEED BALL: Check speed buttons and wires. Check logic board.

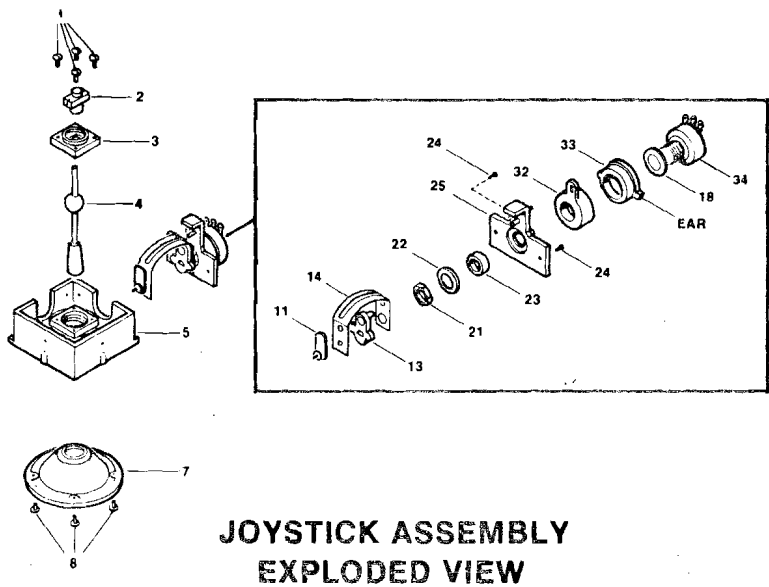


## MEADOWS 4-IN-1 PADDLE ADJUSTMENT PROCEDURE

- A. Start game of 4 PLAYER HOCKEY with "Pro" size paddles.
- B. To adjust HORIZONTAL paddle travel begin by positioning the joystick in its leftmost position. Next turn the adjustment ears on the joystick for the paddle's "horizontal" paddle position pot counter clockwise until the paddle is unaffected by further turning. Now back off on the adjustment you just made until the paddle begins to move to the right. At this point a correctly adjusted black paddle will be adjacent to the left border and the white paddles at an imaginary line that passes between the left score digits.
- C. Now move the joystick to the full right position. Turn the appropriate "H JOY" adjustment on the PCB until the paddle has gone as far to the right as the adjustment will take it. Next, back off until the paddle just begins to move to the left. At this point a correctly adjusted black paddle will be at an imaginary line that passes between the right score digits, and a white paddle will be adjacent to the right border. Check the paddle travel and repeat if necessary.
- D. Start game in the 4 PLAYER TENNIS Mode.
- E. To adjust VERTICAL paddle travel begin by positioning the joystick in the full up position. Turn the appropriate "vertical" paddle position pot on the joystick counter clockwise until the paddle no longer moves up. Back off on the adjustment you just made until the paddle starts to move.

Place the joystick in the full down position. Turn the appropriate "V JOY" adjustment on the PCB until the paddle no longer moves downward. Back off on this last adjustment until the paddle just starts to move upward. Recheck the paddle travel and repeat if necessary.





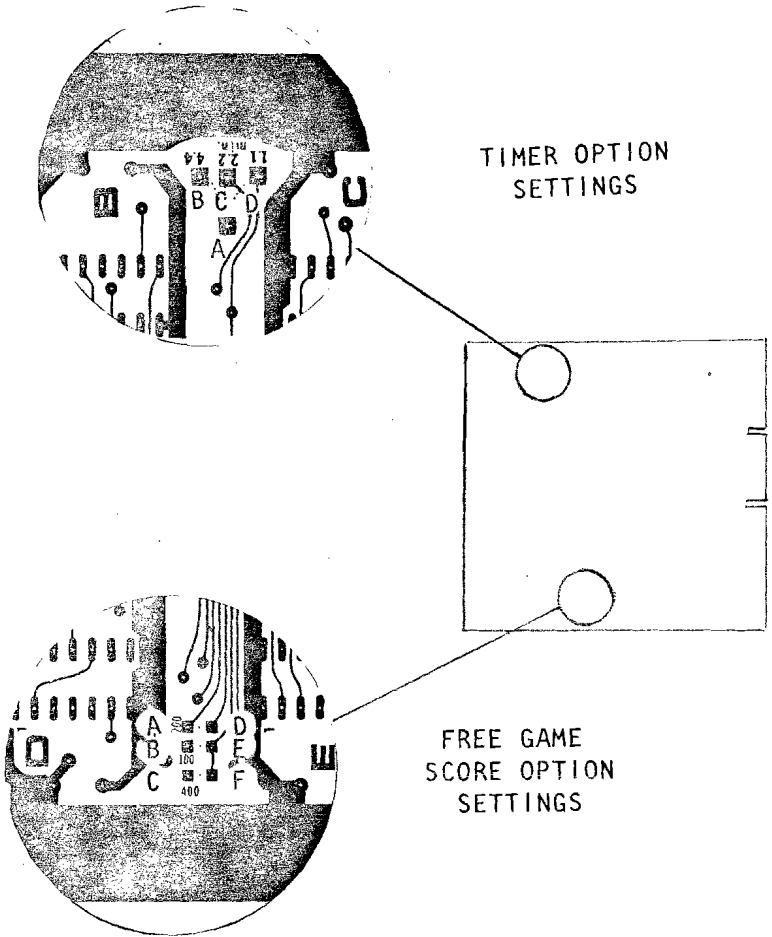
**JOYSTICK ASSEMBLY  
EXPLODED VIEW**

FIGURE 2

Timer is factory set at 2.2 minutes  
To change timer

Time setting

For 1.1 minutes connect jumper wire between A to D  
For 2.2 minutes connect jumper wire between A to C  
For 4.4 minutes connect jumper wire between A to B



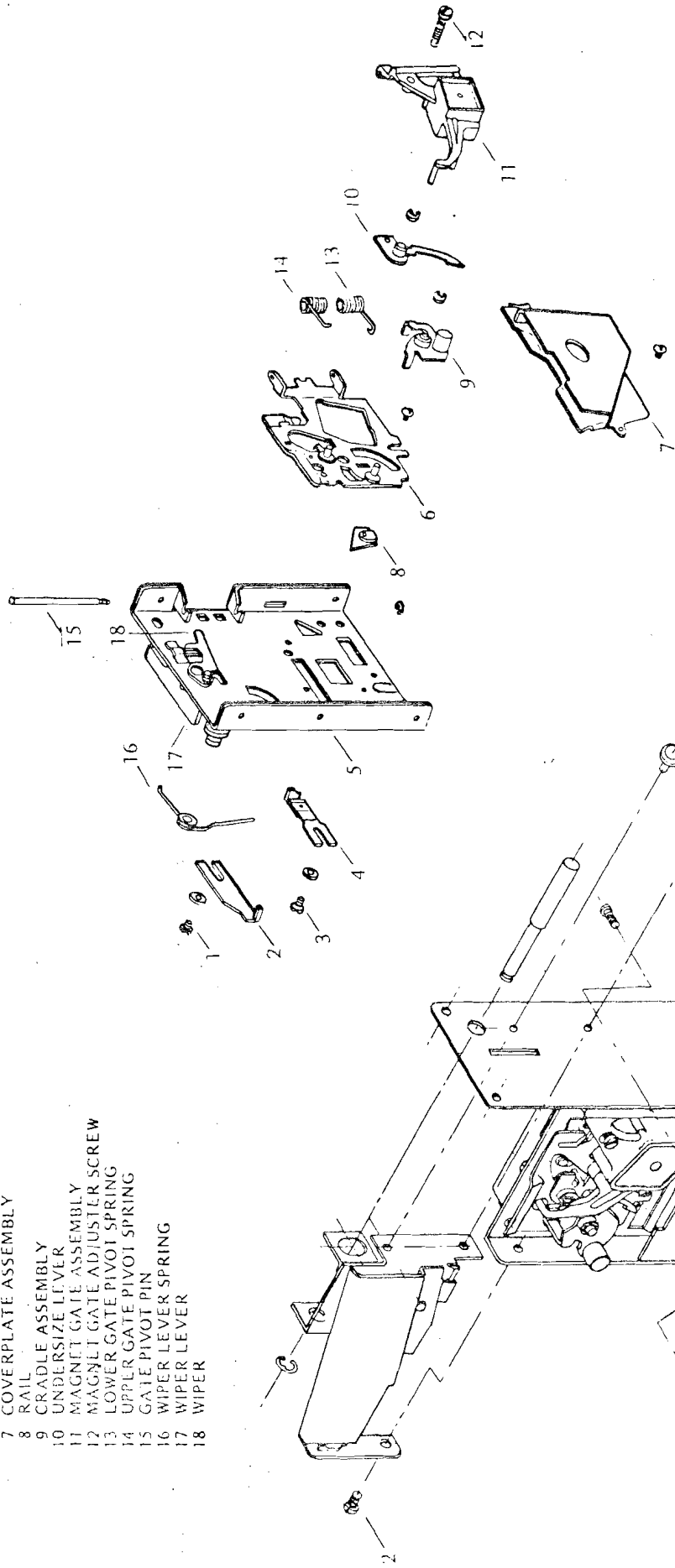
Free game credit factory set at 200 points. To change to below options connect jumper wire at following points:

Free game score

- 100 - Connect jumper wire between B to E
- 200 - Connect jumper wire between A to D
- 300 - Connect jumper wire between A to D and B to E
- 400 - Connect jumper wire between C to F

FIGURE 3

- 1 KICKER SCREW
- 2 KICKER
- 3 SEPARATOR SCREW
- 4 SEPARATOR
- 5 MAINPLATE ASSEMBLY
- 6 GATE ASSEMBLY
- 7 COVERPLATE ASSEMBLY
- 8 RAIL
- 9 CRADLE ASSEMBLY
- 10 UNDERSIZE LEVER
- 11 MAGNET GATE ASSEMBLY
- 12 MAGNET GATE ADJUSTER SCREW
- 13 LOWER GATE PIVOT SPRING
- 14 UPPER GATE PIVOT SPRING
- 15 GATE PIVOT PIN
- 16 WIPER LEVER SPRING
- 17 WIPER LEVER
- 18 WIPER



COIN ACCEPTOR - EXPLODED

COIN FACE PLATE

FIGURE 4

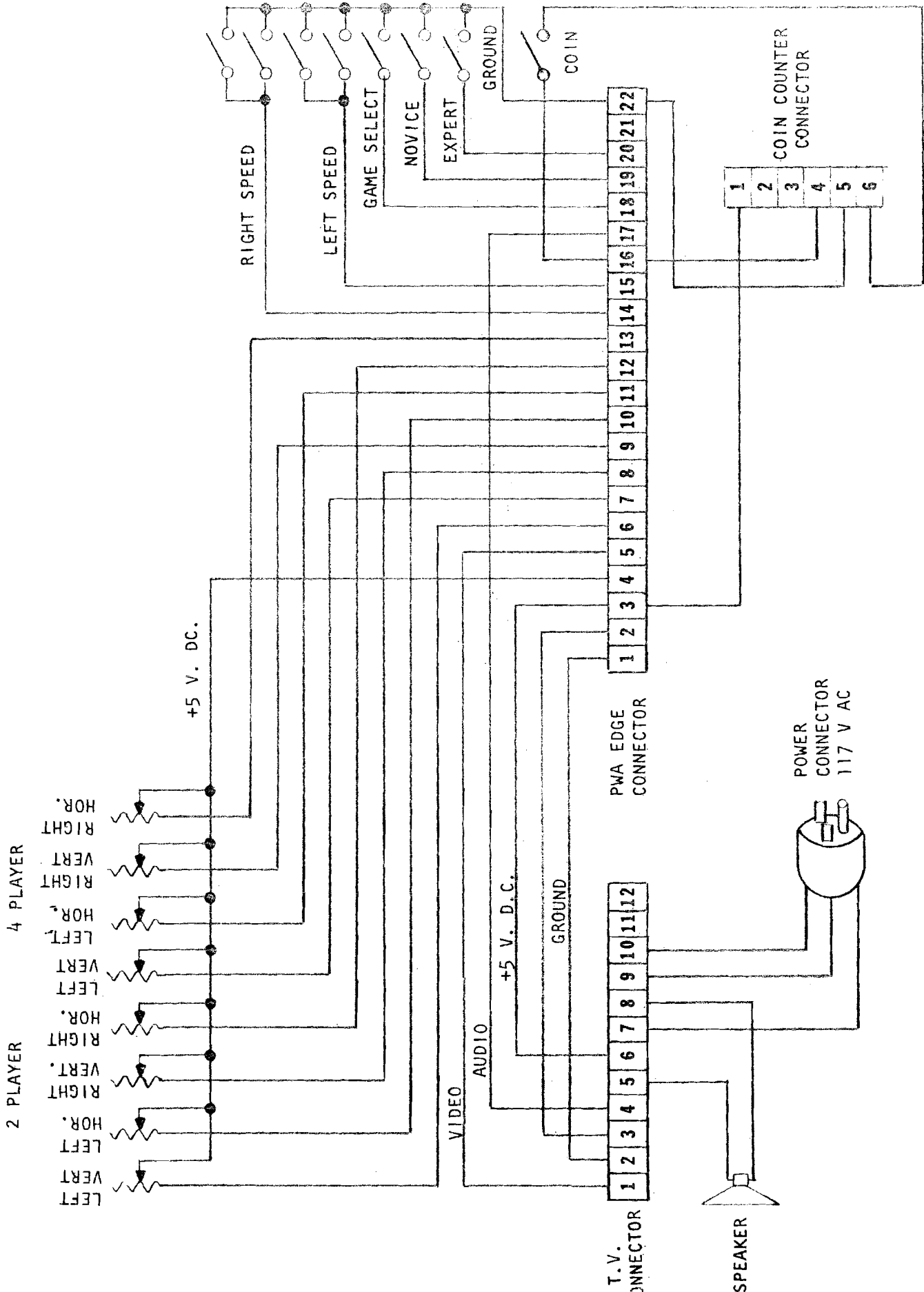


FIGURE 5