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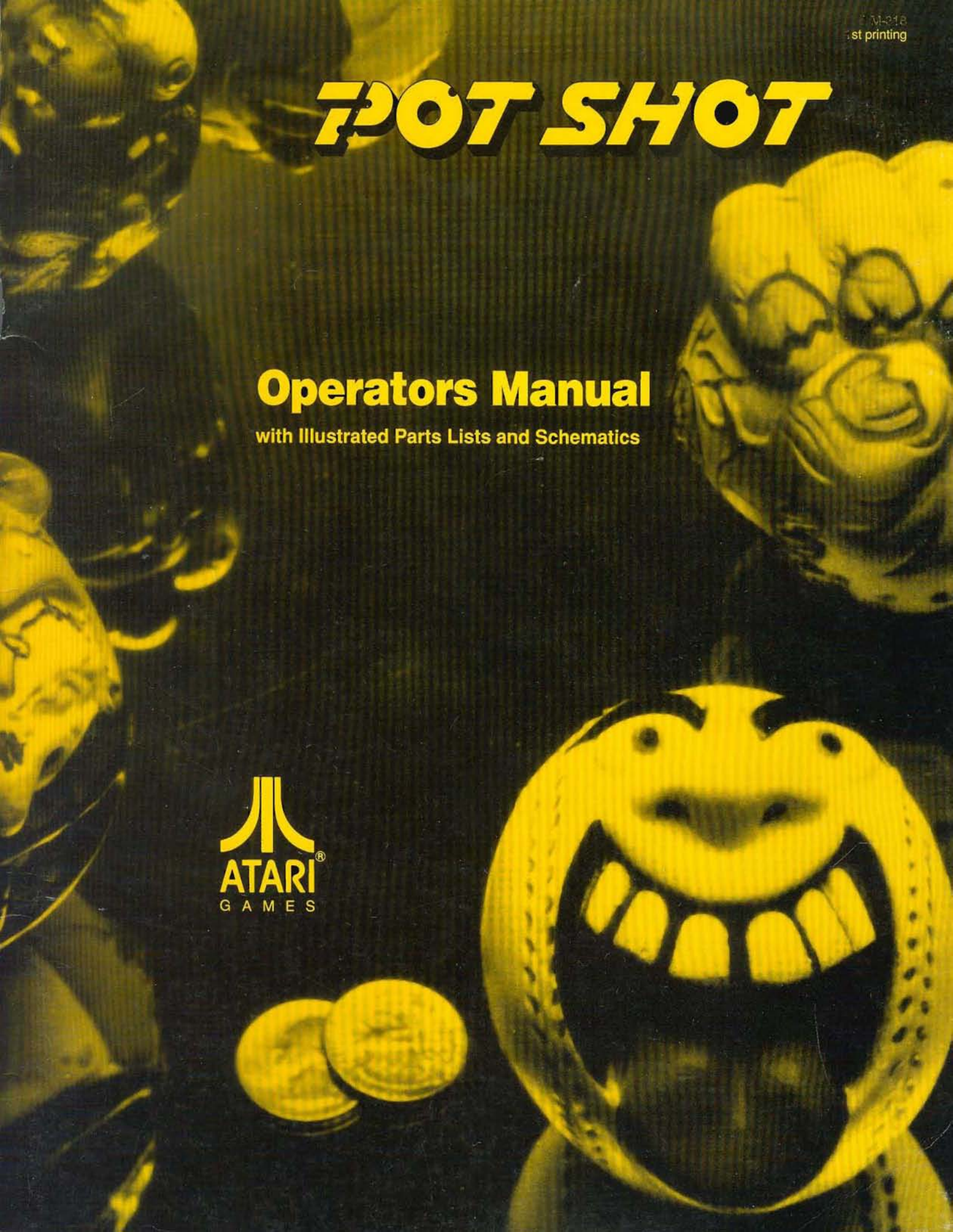
POT SHOT

Operators Manual

with Illustrated Parts Lists and Schematics



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Pot Shot™ Operators Manual

with Illustrated Parts Lists and Schematics

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DISCLAIMER

Atari Games Corporation does not express nor imply an opinion or a warranty that the Pot Shot game is legal to operate in every jurisdiction, or that this game conforms to every local ordinance or regulation. The operator is solely responsible for ascertaining that the operation of this game in the intended jurisdiction will be in full compliance with all applicable laws, ordinances, and regulations.

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Notice Regarding Non-Atari® Parts

WARNING

Use of non-Atari parts or modifications of any Atari game circuitry may adversely affect the safety of your game, and may cause injury to you and your players.

You may void the game warranty (printed on the inside back cover of this manual) if you do any of the following:

- Substitute non-Atari parts in the game.
- Modify or alter any circuits in the game by using kits or parts *not* supplied by Atari Games Corporation.

NOTE

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of Federal Communications Commission (FCC) Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area or modification to this equipment is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference. If you suspect interference from an Atari game at your location, check the following:

- All ground wires in the game are properly connected as shown in the game wiring diagram.
- The power cord is properly plugged into a grounded three wire outlet.
- On games provided with an Electromagnetic Interference (EMI) ground plane, be sure the game printed-circuit boards (PCBs) are properly installed on the EMI Ground Plane. If you are still unable to solve the interference problem, please contact Customer Service at Atari Games Corporation. See the inside front cover of this manual for service in your area.

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Safety Summary

The following safety precautions apply to all game operators and service personnel. Specific warnings and cautions will be found in this manual whenever they apply.

WARNING

Properly Ground the Game. Players may receive an electrical shock if this game is not properly grounded! To avoid electrical shock, do not plug in the game until it has been inspected and properly grounded. This game should be only be plugged into a grounded three-wire outlet. If you have only a two-wire outlet, we recommend you hire a licensed electrician to install a three-wire grounded outlet. If the control panel is not properly grounded, players may receive an electrical shock! After servicing any part on the control panel, check that the grounding wire is firmly secured to the inside of the control panel. After you have checked this, lock up the game.

AC Power Connection. Before you plug in the game, be sure that the game's power supply can accept the AC line voltage in your location. The line voltage requirements are listed in the first chapter of this manual.

Disconnect Power During Repairs. To avoid electrical shock, disconnect the game from the AC power before removing or repairing any part of the game. If you remove or repair the video display, be very careful to avoid electrical shock. High voltages continue to exist even after power is disconnected in the display circuitry and the cathode-ray tube (CRT). Do not touch the internal parts of the display with your hands or with metal objects! Always discharge the high voltage from the CRT before servicing it. Do this after you disconnect it from the power source. First, attach one end of a large, well-insulated, 18-gauge jumper wire to ground. Then momentarily touch the free end of the grounded jumper wire to the CRT anode by sliding the wire under the anode cap. Wait two minutes and do this again.

Use Only Atari Parts. To maintain the safety of your Atari game, use only Atari parts when you repair it. Using non-Atari parts or modifying the game circuitry may be dangerous, and could injure you and your players.

Handle the CRT With Care. If you drop the CRT and it breaks, it may implode! Shattered glass from the implosion can fly six feet or more.

Use the Proper Fuses. To avoid electrical shock, use replacement fuses which are specified in the parts list for this game. Replacement fuses must match those replaced in fuse type, voltage rating, and current rating. In addition, the fuse cover must be in place during game operation.

CAUTION

Properly Attach All Connectors. Make sure that the connectors on each printed circuit board (PCB) are properly plugged in. The connectors are keyed to fit only one way. If they do not slip on easily, do not force them. If you reverse a connector, it may damage your game and void your warranty.

Ensure the Proper AC Line Frequency. Video games manufactured for operation on 60 Hz line power (used in the United States) must not be operated in countries with 50 Hz line power (used in Europe). If a 60 Hz machine operates on 50 Hz line power, the fluorescent line ballast transformer will overheat and cause a potential fire hazard. Check the product identification label on your machine for the line frequency required.

ABOUT NOTES, CAUTIONS, AND WARNINGS

In Atari publications, notes, cautions and warnings have the following meaning:

NOTE—A highlighted piece of information.

CAUTION—Equipment and/or parts can be damaged or destroyed if instructions are not followed. You will void the warranty on Atari printed-circuit boards, parts thereon, and video displays if equipment or parts are damaged or destroyed due to failure of following instructions.

WARNING—Players and/or technicians can be killed or injured if instructions are not followed.

Chapter 1

Set-Up

How to Use This Manual

This manual is written for game operators and service personnel, and provides information for setting up, playing, testing, and maintaining your Pot Shot™ game. The manual is divided into the following chapters:

- Chapter 1 contains set-up information.
- Chapter 2 contains game play and operation information.
- Chapter 3 contains self-test procedures.
- Chapter 4 contains preventive maintenance and repair procedures.
- Chapter 5 contains troubleshooting information.
- Chapter 6 contains illustrated parts lists and schematic diagrams for the Pot Shot game.

This chapter includes information required to set up your Pot Shot game. The Pot Shot game is not completely assembled when shipped. You must install the marquee, front step, add the firing balls, and put in the prize balls.

If you are using redemption prizes with your Pot Shot game, you will want to add the redemption sign on top of the marquee. This marquee is available separately from your distributor or Atari Games Corporation Customer Service. The Customer Service telephone number is on the inside front cover of this manual.

Read this chapter before turning on your game.

WARNING

To avoid electrical shock, do not plug in the cabinet until it has been inspected and set up for the line voltage in your area. This cabinet should only be connected to a grounded three-wire outlet.

If you have only a two-wire outlet, we recommend that you hire a licensed electrician to install a grounded outlet. Players can receive an electrical shock if the cabinet is not properly grounded.

Do not touch the printed circuit board with your hands or with metal objects.

Inspecting the Game

WARNING

Do not plug in the game until you have completed the following inspection steps.

Please inspect your Pot Shot game carefully to ensure that the game is complete and delivered to you in good condition. Figure 6-1 shows the location of the primary parts of the game. Table 1-1 lists space, power, and environmental requirements.

Inspect the factory-assembled game as follows:

1. Examine the exterior of the cabinet for dents, chips, or broken parts.
2. Unlock and open the rear access door to the power supply and game PCB area and the ball reservoir area. Check the following:
   - Ensure that all plug-in connectors (on the cabinet harnesses) are firmly plugged in. Do not force connectors together. The connectors are keyed so they only fit in the proper orientation. *A reversed connector can damage the printed-circuit board (PCB) and will void your warranty.*
   - Ensure that all plug-in integrated circuits on the PCB are firmly plugged into their sockets.
   - Inspect the power supply. Make sure that the correct fuses are installed. Check that the harness is plugged in correctly and that the fuse block cover is mounted in place. Check that the green ground wires are connected.

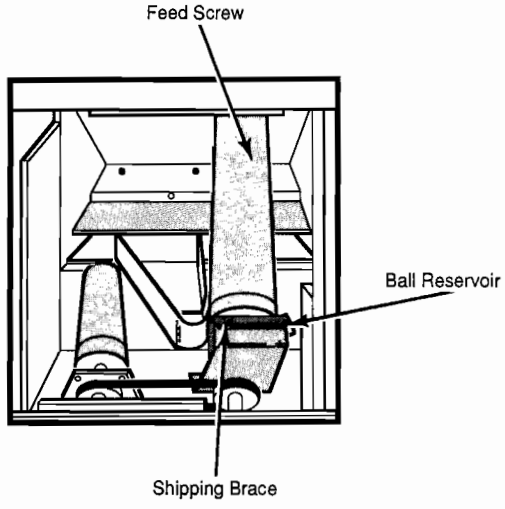


Figure 1-1 Feed Screw Shipping Brace

3. In the ball reservoir area, remove the wooden shipping brace that holds the feed screw bracket. See Figure 1-1. Check that the belt is tight between the motor pulley and the feed screw pulley.

   Also check the following screws and nuts to be sure they are tight:
   - The two screws holding the motor mount on the cabinet floor.
   - The four screws holding the motor on the motor mount.
   - The socket-head screws on the motor and feed screw pulleys.
   - The three screws holding the feed screw shaft to the reservoir.
   - The six screws that hold the triangular ball distributor channel on the cabinet.
4. Unlock and open the carousel access doors on the sides of the game. Check that the cotter pins on the top of the carousel shaft are firmly in place.

NOTE

Be sure you close and lock the carousel access doors before trying to operate the game. The gun will not fire if these doors are unlocked.

5. Unlock and open the gear assembly door on top of the game. Check that the cotter pins are firmly in place. Make sure the socket-head screw holding the motor on the driver gear is tight. Check to be sure the motor bracket screws are tight. Check that the electrical connectors from the motor are firmly plugged in.

6. Unlock and open the coin doors. Check that the electrical connectors are firmly plugged together on the component bracket inside the door.
7. Inspect the power cord for any cuts or dents in the insulation.
8. Inspect the gun and feed screw for any damage. The gun has been adjusted at the factory and is ready to use. The feed screw never needs adjustment.

> **WARNING**
>
> Turn off the power to the game before doing any work on it.
>
> If you take the bubble dome off, turn off the power, or disconnect the plastic feed tube from the gun.

Levelling the Game

The game must be level or it will not operate properly —the firing balls will not roll back to the feed screw and the prize balls will not roll to the front to be claimed by the players.

1. The four game levellers are in the spare parts package in the storage compartment. The levellers screw in underneath the game, 1 1/2 inches in from the sides. The location of the levellers is shown in Figure 6-1.
2. Put the four furniture coasters, also in the parts package, under the levellers.
3. Put a bubble level on the bottom of either side window frame to check the level.
4. Screw the levellers in or out to level the game.
5. If you move the game, be sure to check the level of the game before you operate it.

Setting the Anti-Tilt Mechanism

Set the anti-tilt mechanism to prevent players from tilting the game. The game does not turn off if the game is tilted, but a siren sounds to alert the attendant.

1. Adjust the anti-tilt mechanism after you have installed the levellers. This is described above in *Levelling the Game.*
2. Turn the thumb screw to loosen and tighten the plumb bob setting on the anti-tilt mechanism. For a very sensitive mechanism, adjust the plumb bob high. For a less-sensitive adjustment, adjust the plumb bob low.

If you adjust the plumb bob high, the anti-tilt siren will sound very frequently.

Installing the Marquee

Install the marquee on the top of the Pot Shot game, in front of the gear assembly access door. See Figure 6-1.

To install the redemption sign in the marquee, perform steps 1 and 2 and then put in the sign.

1. First, remove the four screws holding the black plastic retainer on the marquee. Take off the retainer.
2. Remove the glass on the front of the marquee.
3. Unlock and remove the gear assembly door on top of the game, so you can plug in the marquee light electrical connector.
4. Put the marquee on the top of the game.
5. Push the electrical connector into the gear assembly area through the large middle hole.
6. Using four washers and the four 2 3/4-inch-long hex head screws from the parts bag, screw the marquee onto the game through the holes in the bottom of the marquee.
7. Connect the electrical connector for the marquee light. Make sure the electrical harness does not interfere with the gears.
8. Close and lock the gear assembly door.
9. Install the attraction shield and graphics. Install the retainer.

Installing the Steps

Attach the steps so both children and adults can play the game.

1. Put the two brackets of the bottom step against the front of the game cabinet. The end of the left bracket should be 1 3/8 inches from the right edge of the chrome strip on the side of the game.
2. Mark where the screws in the right and left brackets will screw into the cabinet.

> **NOTE**
>
> Be sure you locate the left bracket correctly. If you install the steps too far to the right, you may not be able open the lower coin door.

3. Drill six 3/32-inch holes for the screws.
4. Use the six 3/4-inch wood screws in the parts bag to attach the step to the cabinet.

Loading the Firing Balls

Two packages of firing balls are shipped with your game in the storage compartment under the play field. Load the large package of 850 balls now. Do **not** load the smaller package with 100 replacement balls. See *Adding More Firing Balls* in Chapter 4 for information about adding these replacement balls.

1. Open the rear access door to the ball reservoir area. See Figure 4-1.
2. Turn on the game power.
3. Go to the front of the game, open the coin door, and press down twice on either auxiliary coin switch. (See Figure 1-2 for the location of the switch.) Press the Start button to start the feed screw.
4. As the screw turns, slowly add the firing balls in the large package to the reservoir.

NOTE

If the game has too many firing balls, the balls will jam.

5. Watch the firing balls returning to the reservoir for several games. Remove some of the firing balls if they are jamming in the flat triangular distributor above the reservoir. If the balls are not returning to the distributor, check that your game is level. If necessary, level it, then check the ball distribution again.
6. Close and lock the access door to the ball reservoir area.

CAUTION

After operating the gun for a while, a few firing balls may fall out of the gun onto the front step. This is normal. Put the firing balls back into the firing ball reservoir.

Loading the Prize Balls

The prize balls are shipped separately. If you need more prize balls, you can obtain them from your distributor or Atari Games Corporation Customer Service. An illustrated list of approved prize balls, with an order form, is included with this manual. Follow the directions on the order form for ordering. If you do not have this list, call or write Atari Customer Service at the numbers on the inside front cover of this manual.

The carousel disc heights are set at the factory. Try these settings first if you are using the large size prize balls between 2 7/8 and 3 1/8 inches in diameter. After you have operated with these settings, you may want to make the game more difficult by changing the disc heights.

1. Open the carousel access doors on both sides of the game. (These doors have interlock switches on them that prevent the gun from firing while either door is open.)
2. Load the prize balls.
   (If you want to take out any carousel, follow the instructions under *Carousel Settings,* in Chapter 2.)
3. After you load the prize balls, close and lock the carousel access doors.

NOTE

The gun will not fire if the carousel access doors are not locked.

Control and Switch Locations

Power On/Off Switch

The power on/off switch is located at the rear of the cabinet. (See Figure 6-1.)

Self-Test Switch

The self-test switch is located on the shelf behind the upper coin door. (See Figure 1-2.) Use the self-test switch to select the self-test mode to check game operation. Refer to Chapter 3 for a complete description of self-test operation.

Volume Control

The volume control is located on the shelf behind the upper coin door. (See Figure 1-2.) The volume control adjusts the volume of the sound effects.

Coin Counter

The coin counter is located on the shelf behind the upper coin door. (See Figure 1-2.) The coin counter records the number of coins deposited.

Auxiliary Coin Switches

The auxiliary coin switches are located on the lower part of the coin mechanism. (See Figure 1-2.) Press once on either switch to give one coin credit to a player.

Table 1-1 Game Specifications

Characteristic	Specification
Power Consumption	285 VA at 120 VAC
Temperature	+5° to +38° C (+37° to +100° F)
Humidity	Not to exceed 95% relative
Line Voltage	102 to 132 VAC (U.S. games at 60 Hz)
Width	33.25 in. (85 cm)
Depth	120 in. (305 cm)
Height	88 in. (224 cm)
Weight	750 lbs. (341 kg)

Coin and Game Option Settings

The Pot Shot game has two dual inline package (DIP) option switches on the game PC board. (See Figure 3-1.)

The switches at 4E on this board control the number of firing balls given in each game and music in the attract mode.

The switches at 7D/E select the coin options and game price.

Refer to *Coin and Game Option Settings* in Chapter 3 for information on the coin and credit settings and the game option settings. This section also describes how to set the switches and what the recommended settings are.

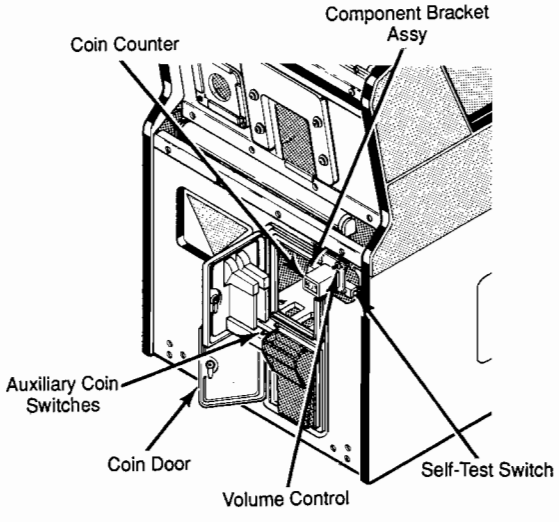
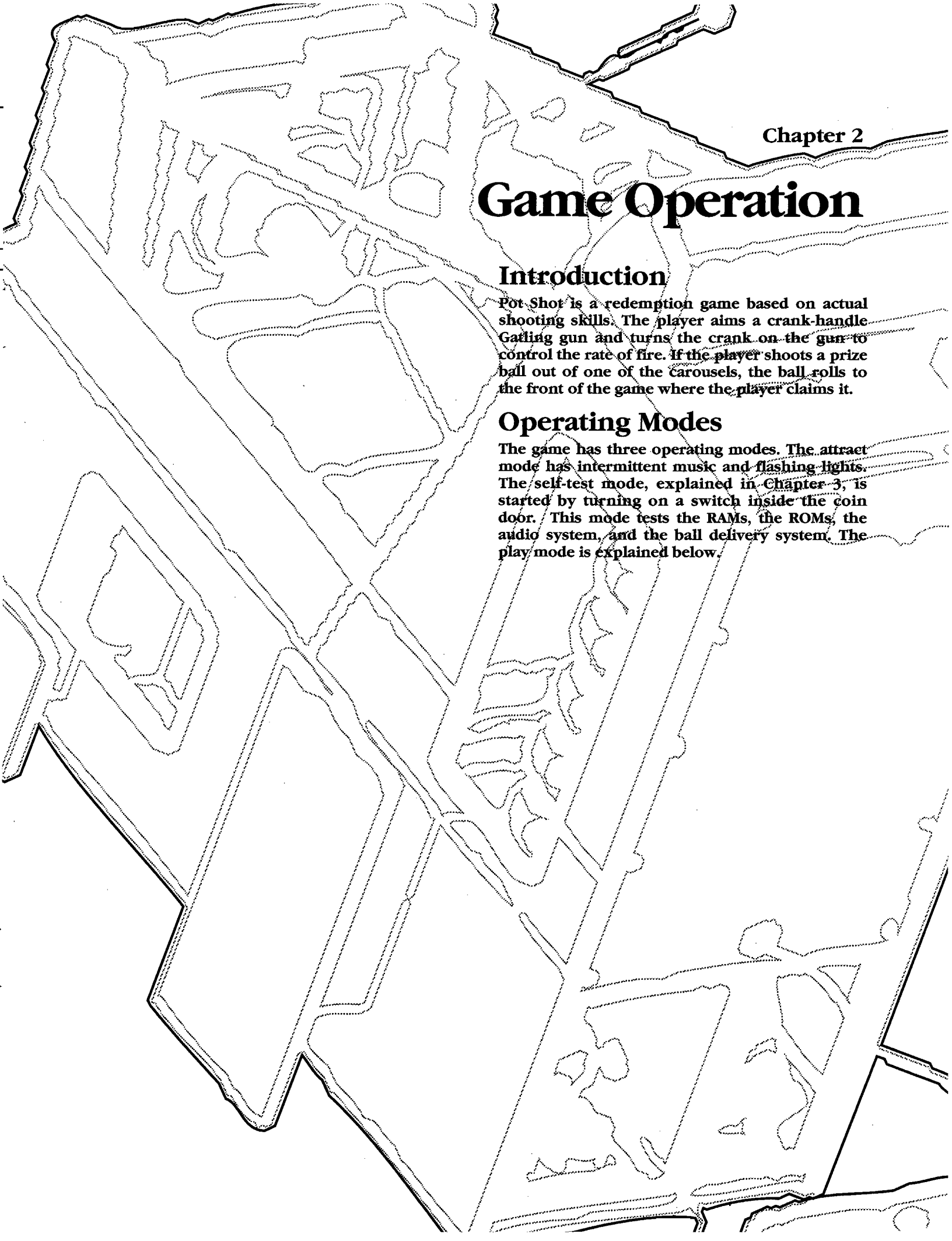


Figure 1-2 Control and Switch Locations

N O T E S



Chapter 2

Game Operation

Introduction

Pot Shot is a redemption game based on actual shooting skills. The player aims a crank-handle Gatling gun and turns the crank on the gun to control the rate of fire. If the player shoots a prize ball out of one of the carousels, the ball rolls to the front of the game where the player claims it.

Operating Modes

The game has three operating modes. The attract mode has intermittent music and flashing lights. The self-test mode, explained in Chapter 3, is started by turning on a switch inside the coin door. This mode tests the RAMs, the ROMs, the audio system, and the ball delivery system. The play mode is explained below.

Game Play

To begin the game, the player deposits the number of coins required for the game (coinage amount is an operator game option), then presses the Start button. The "Hold Your Fire" light begins flashing and the feed screw turns to deliver the firing balls. The plastic feed tube to the gun fills with firing balls. Some firing balls always fall on the game field, but only the balls that enter the plastic feed tube are actually counted. A player always receives the correct number of balls, no matter how many fall on the playfield.

While the firing balls are counted, the "Hold Your Fire" light flashes until all of the firing balls for that game enter the plastic feed tube. The player can begin shooting as soon as balls reach the gun, even though the "Hold Your Fire" light is still flashing. Or the player can wait until all the firing balls are delivered and the "Hold Your Fire" light turns off.

The player aims the gun at the ball he wants and turns the gun crank handle to control the rate of fire. If the player turns the crank quickly, the balls are fired quickly. The player has unlimited time to shoot the firing balls. When a ball is knocked out of the carousel, it rolls to the front of the game where the player retrieves it.

If a player deposits more coins than are required for one game, he can either press the Start button once to receive the balls for only one game or he can press the Start button several times quickly, to receive the balls for all the games at once.

If he presses the Start button several times, the plastic tube fills and then the firing balls spill onto the game field, since the plastic feed tube only holds about 100 balls. In this case, the player **must** begin shooting before the "Hold Your Fire" light goes out since the feed screw will not stop delivering balls until the correct number of balls have entered the plastic feed tube.

Hints for Game Play

To begin, shoot a few firing balls slowly to find out where they will go. Aim at a prize ball and start shooting as the ball rotates towards you. The best place to aim on the prize ball is above the ball-holding disc. Shoot very rapidly at the ball. The ball bounces in the holder under the rapid fire and will bounce and roll out of the holder.

Depending on the carousel settings, the easiest prize balls to shoot out are usually in the center of the middle carousel. The more difficult prize balls to shoot out are at the top and bottom corners.

Operator Adjustments for Maximum Earnings

This game has several operator adjustments. To adjust the game intelligently, you must keep track of the payout and win ratio each week and change the carousel settings according to this information. Put in new prizes regularly, to keep up player interest. You can also change the game coinage, depending on the value of the prizes. If your location relies heavily on regular customers, you can change this option as you change prizes.

This list summarizes what the operator must do to keep earnings high.

- Be sure the prize balls are properly lit. Replace burned-out lights immediately. If the prizes are not lit, players cannot see the prizes nor the results of their shooting and earnings will fall.
- Keep a weekly payout sheet. Adjust carousels as needed. Your weekly payout should be between 25% and 35%.
  If the payout is lower than 25%, players will feel they are cheated. If your payout is higher than 35%, you are not only giving away too many prizes, but good players, who are the repeat players, will not be challenged by the game. *Repeat play is very important for game longevity.*
- Calculate the win ratio on the game. The ratio should be between 8 and 12, if the cost of each prize is about $1.00.
- Use only the following types of prize balls:

  Balls recommended by Atari Games. (See the *Prize Ball* section below.)

  Do not use any fuzzy or plush balls, like tennis balls.

  Do not use plastic capsules. The firing balls will shatter them.

Calculating Payout and Win Ratios

Your payout should be between 25% and 35%. Your location may have maximum earnings with the payout at the higher or lower end of this range. After operating the game for a while and tracking the payout, you will know how to adjust the game for maximum earnings.

Fill the carousels at regular intervals, and keep track of how many balls you replace. Calculate your payout weekly, particularly when you first set up the game and players are learning how to shoot. After the first week, you will probably want to change to more difficult carousel settings (shown in Figure 3-2) to continue to challenge your players.

For your information, each carousel holds a maximum of 35 balls, with a total of 105 for the entire game.

Your win ratio (or "hit frequency") should be between

8 and 12, if the prize cost is about $1.00.

To calculate these numbers, use these formulas:

Payout = Cost of Prizes Given Out / Income
Win Ratio = Number of Plays / Number of Prizes
(where Number of Plays = Income / Coinage).

Prize Balls

Use the prize balls recommended by Atari Games. These are shown on the order forms that come with this manual. If you do not have an order form, contact your distributor, or Atari Games Corporation Customer Service. The Customer Service number is printed on the inside front cover of this manual.

If you plan to use balls that have not been recommended by Atari Games, follow these guidelines for choosing the balls.

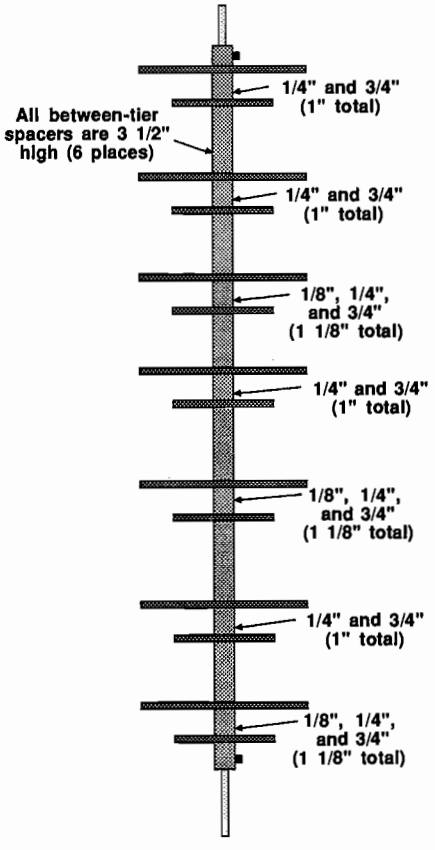
- Do not use balls with a plush or fuzzy surface, like tennis balls. These balls are difficult to shoot out and will contaminate the game field, ball reservoir, feed screw, and gun. You will have to repair and probably replace game parts.
- Do not use the clear plastic capsules that are readily available and can be filled with prizes. These plastic balls will be shattered by the firing balls.

  The prizes themselves inside the capsules create two other problems. The prizes have different weights, so the light ones are easy to shoot out and the heavy ones difficult. Also, since the prizes can shift around inside the capsules, it may be impossible to shoot some of the capsules out since the weight is always in the bottom of the capsules.
- Prize balls sizes should be between 2 7/8 and 3 1/8 inches in diameter for the ball-holding discs with 3 3/8-inch diameter holes. Prize balls should be between 2 3/8 and 2 5/8 inches in diameter for the ball-holding discs with 2 7/8-inch diameter holes.
- Do not use balls heavier than 2.8 ounces. Balls heavier than 2.8 ounces are extremely difficult, and even impossible, to shoot out.

Carousel Settings

Use different ball sizes in the carousels with different ball-holding discs. You must adjust the carousels differently for the two sizes of prize balls.

The carousels set at the factory use the discs with 3 3/8-inch diameter holes—see Figure 3-1. (Madballs™ use this size disc.) The discs in the carousel spare parts kit have 2 7/8-inch diameter holes.



1" = Easy
1 1/8" = Medium
1 1/4" = Hard

All three carousels should be set as shown (if you are using Madballs™ throughout).

Figure 2-1 Factory Carousel Settings for Large Balls

Recommended Settings

The factory settings for the ball-holding discs with the 3 3/8-inch diameter holes combine easy and difficult settings on each carousel to give both skilled and unskilled players opportunities to shoot out prize balls.

Figure 3-2 shows suggested settings to make the game more difficult. As a rule, you should change to these settings after the payout exceeds 35%.

Changing Carousel Settings

To change carousel settings, add and remove spacers between the ball platform disc and the ball-holding disc. Adding spacers makes the game harder and removing spacers make the game easier. (However, do not make the carousel settings too difficult.)

Always use at least the 3/4-inch standard spacer between the discs for *any* size balls.

Removing a Carousel

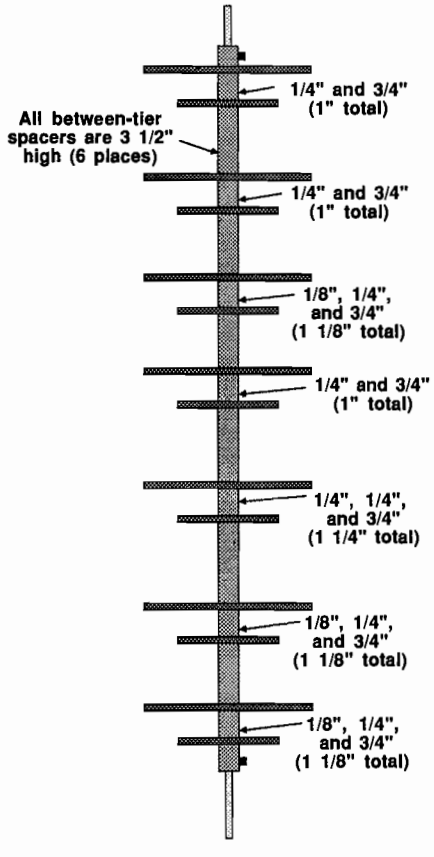
1. Turn off the game. It is easier to take out the carousels when they are not turning.
2. Open a carousel service door on the side of the cabinet. These doors have interlock switches so that the gun cannot fire while a door is unlocked.
3. Remove a carousel by taking out the cotter pin in the top of the carousel.
4. If you want to operate the game while you have a carousel out, put a piece of tape over the bottom hole.

CAUTION

You **must** put a piece of tape over the open hole in the bottom into which the carousel fits. If you don't cover the hole, the firing balls may drop onto the power supply and cause a short circuit.

Taking Apart the Carousel

1. Loosen the screw on the top retainer and slide the retainer off. Keep this retainer separate from the other pieces. It must go back on top. Do not take off the retainer on the very bottom.
2. Take the carousel parts off the shaft by sliding the game parts off the top. Leave the bottom retainer at the same place so the bottom platform disc is 6 inches from the play field floor.
3. Each carousel has 3/4-inch standard spacers, 3 1/2-inch spacers, platform discs and ball-holding



1" = Easy
1 1/8" = Medium
1 1/4" = Hard

All three carousels should be set as shown (if you are using Madballs™ throughout).

Figure 2-2 Increased-Difficulty Carousel Settings for Large Balls

discs on it. The factory-set carousels also have 1/4-inch spacers between the discs, and some have 1/8-inch spacers. The carousel kit in the storage compartment has 1/8-inch spacers, 1/16-inch spacers, ball-holding discs for smaller balls and extra cotter pins.

Changing Disc Height and Discs

Add 1/4-inch, 1/8-inch and 1/16-inch spacers between the ball-holding discs and the platform discs to make the game harder. Remove these spacers to make the game easier.

> **NOTE**
> Do not use the same spacing adjustments for the large balls as for the smaller balls.

1. We recommend that you set up the carousels with both easy and hard settings to provide a combination of challenges for experienced and beginning players.
2. Assemble the carousel with the correct discs for the size of ball you are using, with standard spacers, and with as many extra spacers as you like. Put the top retainer (which has a screw in it) back on top. Press down hard on this retainer to get a tight fit between all the pieces. If you don't do this, the top platforms may not rotate with the shaft.
3. Tighten the screw with a 5/16-inch nut driver.

Reinstalling the Carousel

1. Turn off the power to the game. Open the carousel service door. If the game has been in operation, remove the tape over the bottom hole.
2. Put the carousel back in the game by putting the lower end of the shaft into the bottom hole. Push the carousel into the top sleeve. With a new cotter pin, connect the carousel shaft to the sleeve. Push open the halves of the cotter pin to hold the carousel in place.

Loading Prize Balls

1. Open a carousel access door. The gun will not fire while this door is open.
2. Load the prize balls.

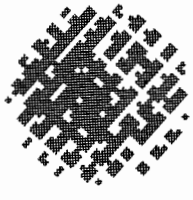
Game Price

You can change the number of coins required for each game with settings on the DIP switches at 7D/E on the game PCB. You can choose one to four coins required for each game on both coin mechanisms. See *Game Options* in Chapter 3 for more information.

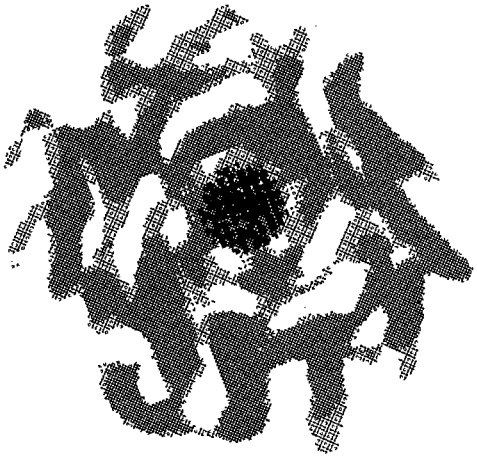
The factory game setting is 2 coins per game. The front instruction panel also reads "1 Play 2 Coins."

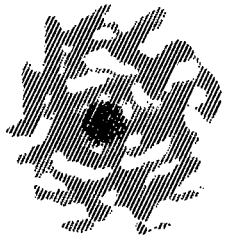
If you change the settings on the DIP switches, also changed the coinage label. Coinage labels are included with your game.

To replace the coinage label, remove the instruction panel. Information about removing the instruction panel is in *Replacing the Start Switch or Button* in Chapter 4.



N O T E S





Chapter 3

Self-Test

Begin the self-test by turning on the self-test switch on the component bracket inside the coin door. For the exact location of the self-test switch, see Figure 1-3.

RAM Test

When you turn on the self-test switch you hear a beep. This means the random-access memory (RAM) passed the test. If you do not hear the sound, see if the *right* "HOLD YOUR FIRE" light is on. If this light is on, then the RAMs failed the test. If the light is off, and you didn't hear a beep, then you may have a problem with your speakers or the audio integrated circuits (ICs).

ROM Test

Press the start switch on the front of the game to go to the read-only memory (ROM) test. If you hear a "boing" sound, the ROMs passed the test. If you do not hear the sound, see if the left "HOLD YOUR FIRE" light is on. If this light is on, then the ROMs failed the test. If the light is off, and you didn't hear the sound, then you may have a problem with your speakers or the audio ICs.

Audio Test

Press the start switch on the front of the game to go to the audio test. The game passes the audio test if you hear four different sounds and then a steady sound. If you do not hear anything, then you have a problem with the audio ICs, the speaker, or the harness. To turn off the sound and go to the next test, press the start switch.

NOTE

If you want to turn the game off after the self-test is finished, first shoot the firing balls so they do not jam the gun motor when you turn the game on again later.

Light Test

When you press the start switch to end the steady tone, you enter the light test. The left and right "Hold Your Fire" lights turn on and off.

Firing Ball Delivery Test

Press the start switch on the front of the game to go to the firing ball delivery test. The feed screw turns and delivers balls to the ball delivery assembly. The ball delivery assembly counts 5 balls and the test ends.

If for some reason the feed screw does not deliver any balls to the assembly, the feed screw turns until you switch off the self-test switch.

After the balls are counted, the self-test ends. If you press the start switch, the RAMs are tested again. To leave the self-test, switch the self-test switch off.

Anti-Tilt Mechanism

The anti-tilt mechanism is in the back of the game in the power supply and game PCB area. See Figure 3-1 for the location of the mechanism.

When you move the plumb bob on the mechanism, you should hear a siren sound if the mechanism is working correctly.

Switch Options

Pot Shot has two option switches on the game PCB. One 8-position DIP switch is at 7D/E. The other 8-position DIP switch is at 4E. These are shown in Figure 3-1.

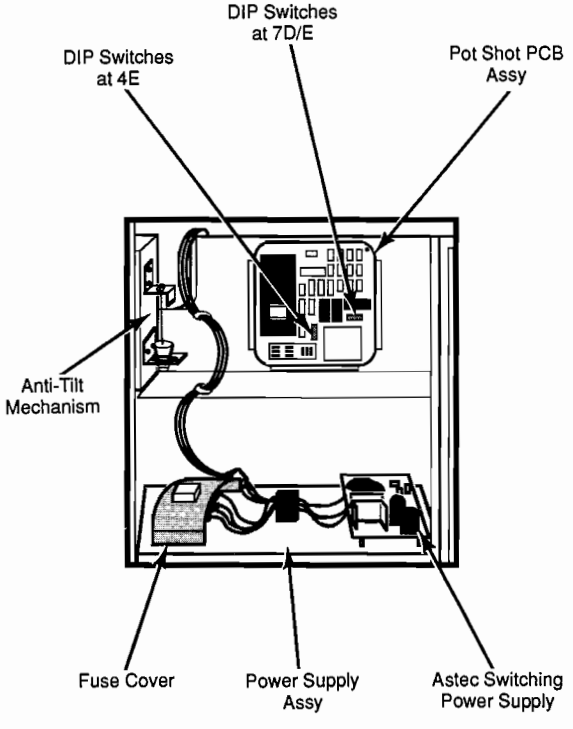


Figure 3-1 Power Supply and Game PCB Area

Table 3-1 Self-Test Results

Test	Pass	Fail	Other
RAM	Beep	Right HOLD YOUR FIRE light is on.	No sound or light is on. Check speakers and audio ICs.
ROM	"Boing" sound	Left HOLD YOUR FIRE light is on.	No sound or light is on. Check speakers and audio ICs.
Light	Left and right HOLD YOUR FIRE lights turn on.	No lights are on.	
Audio	4 different sounds, then 1 steady sound.	No sound	
Ball Delivery	Counts 5 balls.	Doesn't count	

The switch at 7D/E controls the coin and credit options.

The switch at 4E controls the number of firing balls allotted for each game and turns on and off the attract-mode music.

Table 2-2 and Table 2-3 show the options and the recommended settings. The options are set at the factory to the recommended settings.

To change the settings, remove the thin plastic covering over the switches. Use a pen or a sharp pointed instrument to slide the buttons to different settings. Up is the *on* position and down is the *off* position.

The DIP switches at 4E control the number of firing balls allotted for each game and the music in the attract mode. The firing balls are controlled by turning switches off.

For example, to give 70 firing balls in each game, set the DIP switches as follows:

Switch 1	On		
Switch 2		*Off*	*(10 balls)*
Switch 3		*Off*	*(20 balls)*
Switch 4		*Off*	*(40 balls)*
Switch 5	On		
Switch 6	On		
Total Balls			*10 + 20 + 40 = 70 balls*

NOTE

Do not set the DIP switches to give more than 90 balls, because the plastic feed tube to the gun holds only about 100 balls.

Table 3-2 Coin and Credit Option Settings

DIP Switch Settings at 7D/E on the Pot Shot Game PCB								Option
8*	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
								Bonus Adder
On	On	On						No Bonus Coins ✦
On	On	Off						2 Coins Give 1 Extra Coin
On	Off	On						4 Coins Give 1 Extra Coin
On	Off	Off						4 Coins Give 2 Extra Coins
Off	On	On						5 Coins Give 1 Extra Coin
Off	On	Off						3 Coins Give 1 Extra Coin
Off	Off	Off						Free Play (for demonstration)
								Left Coin Mechanism
			On					1 Coin Counts as 1 Coin ✦
			Off					1 Coin Counts as 2 Coins
								Right Coin Mechanism
				On	On			1 Coin Counts as 1 Coin ✦
				On	Off			1 Coin Counts as 4 Coins
				Off	On			1 Coin Counts as 5 Coins
				Off	Off			1 Coin Counts as 6 Coins
								Game Price**
						On	On	1 Coin
						On	Off	2 Coins ✦
						Off	On	3 Coins
						Off	On	4 Coins

**This is the order of the switches on the game PCB as it is installed in the game.*

***This game price is the number of coins required for each game. However, if your coin mechanism is set to anything other than "1 coin counts as 1 coin," then divide the number of coins each coin counts as by the game price, to find out how many games the player receives for his coins.*

For example, if your coin mechanism set to "1 coin counts as 6 coins" and the game price is set to 2 coins, then 6/2 = 3; the player receives 3 games.

✦ *Manufacturer's recommended settings*

Table 3-3 Firing Ball Allocation and Attract Audio Settings

DIP switch settings at 4E on the Pot Shot Game PCB

1	2	3	4	5	6	7	8	Option
								Number of Balls Allocated
Off	On	On	On	On	On			5 Balls
On	*Off*	On	On	On	On			10 Ball ✦
On	On	*Off*	On	On	On			20 Balls
On	On	On	*Off*	On	On			40 Balls
On	On	On	On	*Off*	On			80 Balls ✦
On	On	On	On	On	*Off*			160 Balls **(DO NOT USE)**
								Music in Attract Mode
							On	Music Plays ✦
							Off	No Music Plays

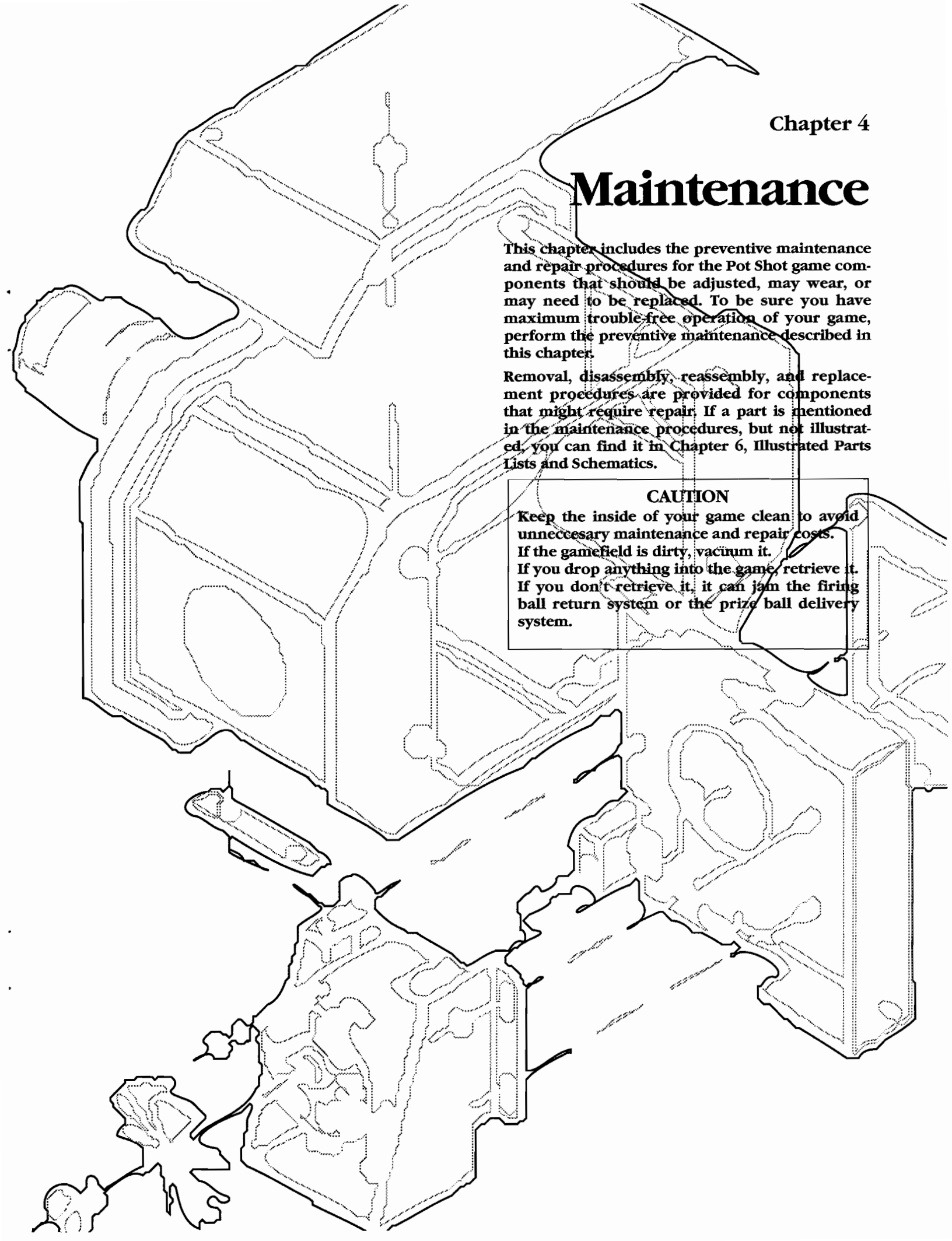
✦ *Manufacturer's recommended settings*

If you set the DIP switches to deliver more than 90 balls, the balls are counted and go into the feed tube until the feed tube fills up. Then no more balls can cross the ball delivery assembly. The feed screw continues to deliver balls, but the firing balls fall on the playfield. When the player fires some of the balls, then balls can cross the ball delivery assembly again and go into the feed tube.

The player always receives and is able to fire the number of balls he paid for, since only the balls that actually go into the feed tube are counted. Although the player does receive the proper number of balls, we do not recommend a setting of more than 90 balls per game, since this will confuse players.

Chapter 4

Maintenance



This chapter includes the preventive maintenance and repair procedures for the Pot Shot game components that should be adjusted, may wear, or may need to be replaced. To be sure you have maximum trouble-free operation of your game, perform the preventive maintenance described in this chapter.

Removal, disassembly, reassembly, and replacement procedures are provided for components that might require repair. If a part is mentioned in the maintenance procedures, but not illustrated, you can find it in Chapter 6, Illustrated Parts Lists and Schematics.

CAUTION

Keep the inside of your game clean to avoid unneccesary maintenance and repair costs.
If the gamefield is dirty, vacuum it.
If you drop anything into the game, retrieve it. If you don't retrieve it, it can jam the firing ball return system or the prize ball delivery system.

Preventive Maintenance

Preventive maintenance includes checking, cleaning, and adjusting hardware. How often you perform preventive maintenance depends upon the game environment and frequency of play. However, we recommend you check, adjust, and clean the components listed in Table 4-1 at the intervals specified.

WARNING
To avoid possible electrical shock, turn off the game before performing any maintenance procedures.

Table 4-1 Recommended Preventive-Maintenance Intervals

Component	Inspection and Maintenance Intervals
Coin Mechanism	Inspect whenever you collect coins. Clean at least every three months.
O-ring	Check every 2 months. Replace when worn.
Firing Tube Adjustment	Check every 2 months. Adjust when necessary.
Firing Wheel Adjustment	Check every 2 months. Readjust when necessary. (If you adjust the firing tube, you must also adjust the firing wheel.)
Feed Screw Belt & Screws	Check every 2 months.
Gear Assembly	Check every 2 months.
Crank Handle	Check every 2 months.
Ball Receiver Assembly	Clean when needed.
Bubble Dome and Side Window	Clean when needed.

Cleaning the Coin Mechanism

Use a soft-bristled brush to remove loose dust or foreign material from the coin mechanism. A toothbrush can be used to remove any stubborn build-up of residue in the coin path. After cleaning the coin mechanism, blow out all of the dust with compressed air.

Checking the Feed Screw Motor Belt

Unlock and open the rear door to the ball reservoir area. (See Figure 6-1.) Check to be sure the feed screw motor belt is tight, shown in Figure 4-1. It should have about 1/2-inch of slack when you pull or push on it. If it does not, tighten the belt.

Tighten the belt by moving the motor bracket back and forth.

1. Loosen the motor bracket screws on the bottom of the cabinet with a Phillips screwdriver just enough to move the bracket back and forth.
2. Move the bracket until the belt has about 1/2-inch of slack. Tighten the screws.

Checking the Feed Screw Pulley and Motor Screws

Check the socket-head screws on the feed screw pulley and feed screw motor pulley. (See Figure 4-1.)

If screws are not tight, tighten them with a 3/16-inch Allen wrench.

Checking the Gear Assembly

The gear assembly is located on the top of the game, behind the marquee. Open the top door, shown in Figure 6-1, and check the following items.

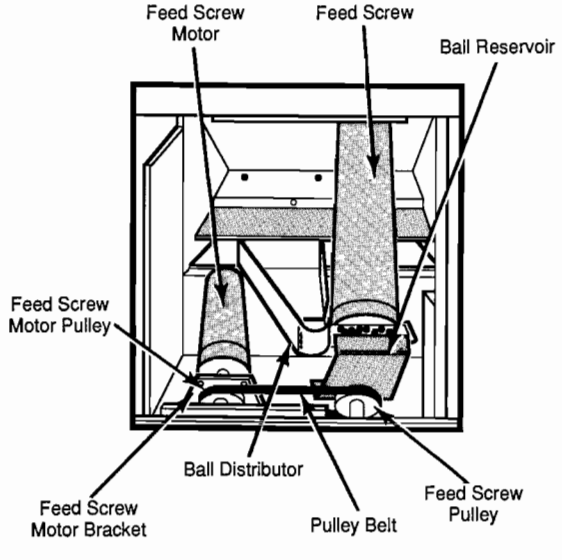


Figure 4-1 Ball Reservoir Area

- Check the socket-head screw on the driver gear below the gear motor. If necessary, tighten it with a 5/16-inch nut driver.
- Check the cotter pins on all gears. If any cotter pin is broken, replace it.
- Check the screws on the motor bracket that hold the motor on the bracket and that hold the bracket on the mounting plate. If they are not tight, tighten them with a 3/8-inch nut driver.

Checking the Crank Handle

The crank handle turns a ratchet that makes the gun noise. If the ratchet is loose, the gun will not make much noise when the handle is turned. Check the ratchet wheel adjustment by turning the crank handle backwards. If the handle turns backwards easily, then you should tighten the ratchet wheel screw.

1. Look up in the gun from below. Find the hole in the gun body across from the handle. You can see the ratchet wheel inside the gun.
2. Rotate the handle until you can see the socket-head screw in the middle of the ratchet wheel. If the crank handle is so loose you can not turn the ratchet wheel, try to turn the wheel with a screwdriver.
3. Use a 5/32-inch Allen wrench to tighten the screw.
4. Turn the crank handle backwards to test how much resistance it meets.

Cleaning the Ball Receiver Assembly

If the firing ball delivery assembly (shown in Figure 4-2) is extremely dirty, it should be cleaned so the balls feed smoothly and do not jam.

1. Turn off the game power.
2. Remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome by standing on the step, grasping the dome on the right and left sides, and lifting it.
3. Wipe the dirt off the ball receiver assembly with a small cloth dampened with isopropyl alcohol or a 1% solution of detergent in water.

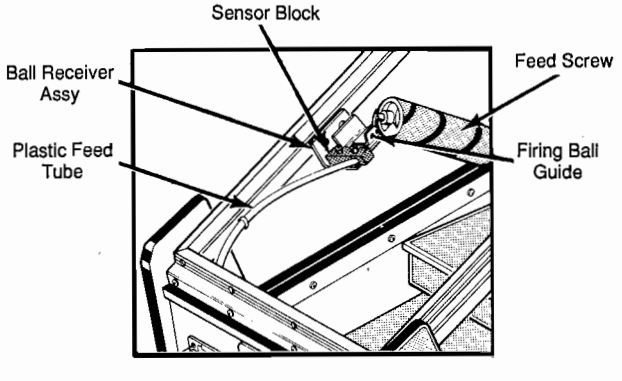


Figure 4-2 Firing Ball Delivery Assembly

Removing the Plastic Feed Tube

If the plastic feed tube is extremely dirty, it should be replaced so the balls feed smoothly and do not jam.

1. Turn off the game power.
2. Remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome by standing on the step, grasping the dome on the right and left sides, and lifting it.
3. Remove the plastic feed tube by taking off the hose clamps and disconnecting the tube from the gun and the ball receiver unit. Slip the tube through the feed tube bracket.
4. Replace the tube by slipping the plastic feed tube through the feed tube bracket, putting hose clamps on both ends, and connecting the ends to the gun and the ball receiver assembly.

Replacing the Gun O-Ring

Check the O-ring every 2 months or if the balls are not firing or not firing with enough force. Replace the O-ring if it is worn. Always check the O-ring before you make any other adjustments to correct firing problems.

If you are only checking or replacing the O-ring, then follow the next procedure. If you are also adjusting the firing tube and the firing wheel, take off the inside gun cover (explained in *Adjusting the Firing Tube*) instead of opening the top cover.

1. Turn off the power to the game.
2. Remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome by standing on the step, grasping the dome on the right and left sides, and lifting it.
3. Take off the top black cover on the gun by removing the four screws and washers with a 1/8-inch Allen wrench.
4. Find the O-ring (see Figure 4-3), and take it off..
5. Put the new O-ring on. Make sure it fits into the groove on the firing wheel.
6. Put the cover back on the gun and reinstall the bubble dome.

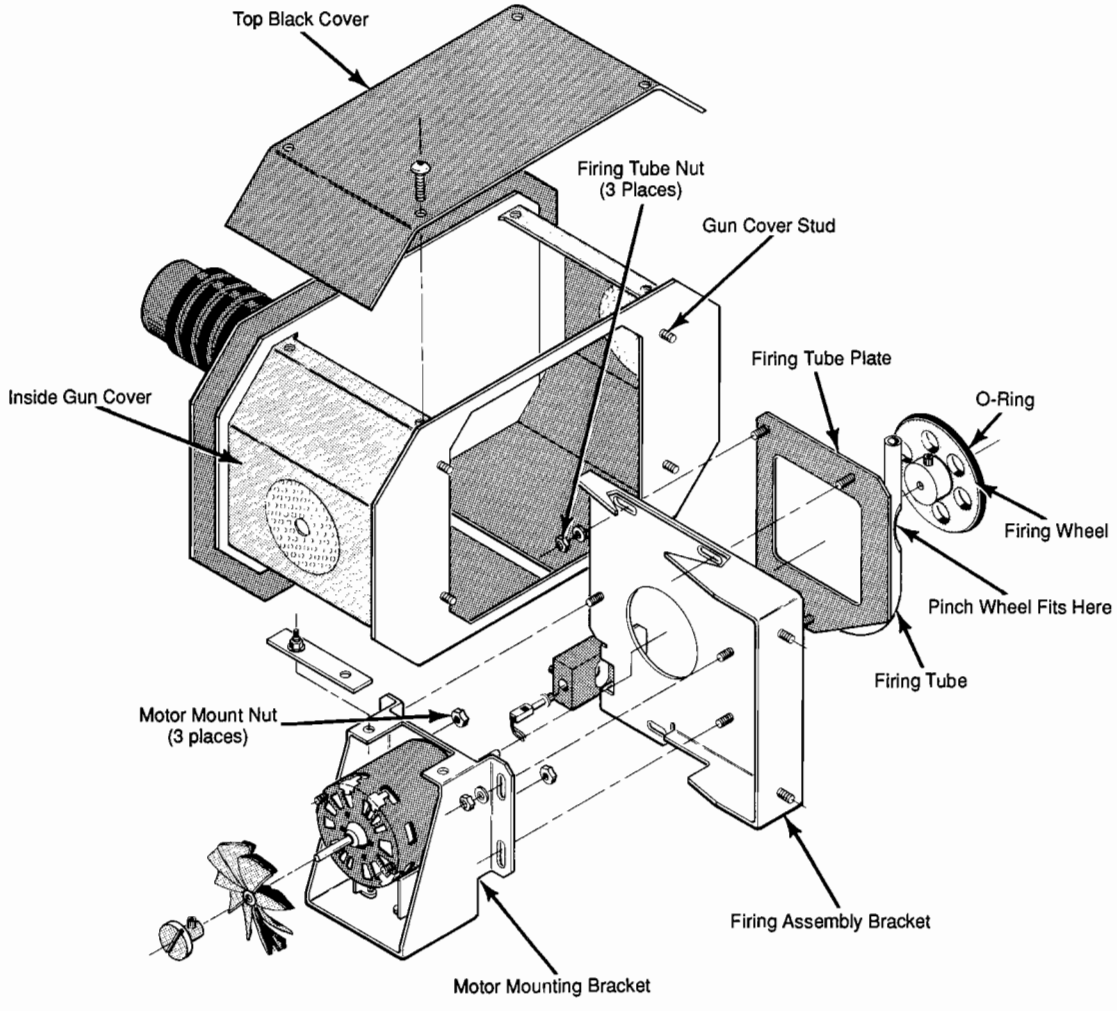


Figure 4-3 Firing Assembly

Adjusting the Firing Tube

The firing tube must be the right distance from the pinch wheel so the firing balls are fed at the correct rate to the firing wheel. If the tube is too far from the pinch wheel, too many balls fall through at once. If the tube is too close to the pinch wheel, the balls may not fall through at all.

1. Turn off the game power.
2. Remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome by standing on the step, grasping the dome on the right and left sides, and lifting it.
3. Remove the inside gun cover. Take off the four nuts facing the player side of the game with a 3/8-inch wrench. Pull the gun cover towards the back of the game enough to clear the studs. Then slide the gun cover to the left. Finally, pull off the cover towards the back of the game.
4. Disconnect the plastic feed tube from the gun.
5. If you see metal balls in the firing tube above the pinch wheel, turn the crank (with the power off) and then spin the firing wheel by hand.
6. Before you adjust the firing tube, check the cushion on the pinch wheel. Figure 4-3 shows the location of the pinch wheel cushion. You may need to use a flashlight to see the cushion. If the cushion is worn, replace it before doing this adjustment. The procedure is in *Replacing the Pinch Wheel Cushion*, in the Repairs section of this chapter.
7. Loosen the three nuts that hold the metal feed tube on the firing assembly bracket. (see Figure 4-3). Use a 3/8-inch socket to remove the two nuts on the top of the plate. Use a 3/8-inch flat wrench to loosen the nut on the bottom, behind the motor. Loosen the nuts just enough to allow the metal plate to slide back and forth.

8. Insert the long end of the adjustment tool, shown in Figure 4-4, into the firing tube from the top. Move the metal plate back and forth until the rod is held between the pinch wheel and the metal tube. (It should not be held very tightly.)
9. Tighten the nuts.
10. To make sure you have adjusted the firing tube correctly, turn the crank handle backwards. The adjustment tool should move up and down when you turn the handle.
11. Be sure you have the power turned off, then drop several balls into the gun and turn the crank handle. Check that the balls feed one at a time.
12. Now adjust the firing wheel. Do this because you have probably changed the firing tube height (the mounting holes of the firing tube have vertical play in them). The firing wheel adjustment is described next.

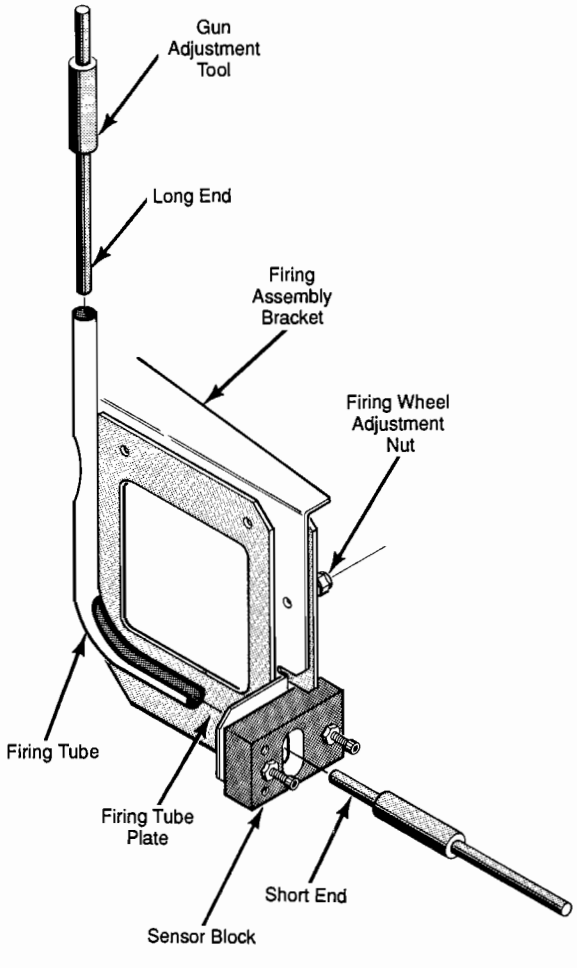


Figure 4-4 Adjusting the Firing Assembly

Adjusting the Firing Wheel

If you have replaced the O-ring or adjusted the firing tube, adjust the firing wheel.

1. Turn off the game power.
2. Remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome by standing on the step, grasping the dome on the right and left sides, and lifting it.
3. Remove the inside gun cover. Using 3/8-inch wrench take off the four nuts facing the player side of the game. Pull the gun cover towards the back of the game enough to clear the studs. Then slide the gun cover to the left. Finally, pull off the cover towards the back of the game.
4. Adjust the firing wheel by moving the motor mounting bracket up and down. See Figure 4-3. Loosen the three motor mount nuts with a 3/8-inch socket. These nuts are on the motor side of the firing assembly, on either side of the motor. Loosen the nuts just enough to slide the motor up and down.
5. Use the short end of the adjustment tool, as shown in Figure 4-4, and insert it into the metal feed tube beneath the firing wheel.
6. Move the motor until the firing wheel rests on the tool.
7. Tighten the nuts on the motor mount. Remove the adjustment tool.
8. Put the gun cover back on and tighten the nuts. Reinstall the bubble dome.

Cleaning the Game Field

1. Turn off the game power so you are not accidentally shot.
2. First remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome.
3. Use a vacuum cleaner with a brush attachment to remove the loose dirt and dust.
4. Reinstall the bubble dome.

Cleaning the Electronic Components

WARNING

Turn off the game power, but do not unplug the power cord before cleaning inside the cabinet. The power cord provides a ground path for stray static voltages that can be present on the cleaning tools.

1. Unlock and open the door to the power supply and game PCB.
2. Use a vacuum cleaner with a soft long-bristled brush attachment or use a soft-bristled paint brush to remove loose dirt and dust accumulated on the inside of the cabinet.

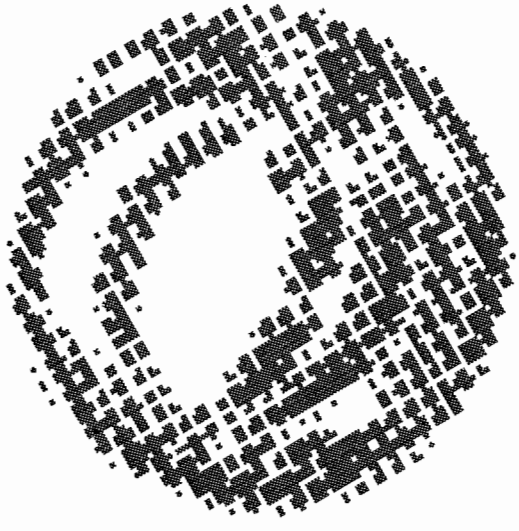
CAUTION

Be extremely careful when cleaning the electrical components inside the cabinet. Avoid touching the electrical components with any solid object other than the soft bristles of the vacuum attachment or a paint brush.

Cleaning the Bubble Dome and Windows

Keep the bubble dome and windows clean so that the players can clearly see the prizes and the results of their shooting.

Use window cleaner and soft paper towels on the dome and window to clean them. If you wipe the dome and windows with dry towels, you will scratch them.



Repairs

The following procedures include infrequent adjustments required by the game as well as removal, disassembly, reassembly, and replacement of game components. You probably will not need to do many of these procedures during the life of the game.

The first procedures are those that have to do with the gun assembly, and the most likely repairs and adjustments to the gun are listed first. The next procedures concern replacing lights. The final procedures concern the feed screw motor, the firing ball delivery assembly, and removing the speaker and game PCB.

Unjamming the Gun Motor

If the gun motor is not working, first check to see if the game is plugged in and the power switch is on. Check that the service door next to the carousels is locked. If this door is not locked, the gun will not operate.

If the game is plugged in, the power is on, and the door is locked, the firing motor is probably jammed.

The firing motor can jam when the power is turned off, balls are in the firing tube, and then the crank handle is turned. The balls jam between the pinch wheel and the firing wheel.

1. Turn off the power to the game.
2. Take off the bolt on the left side of the game using the 3/8-inch tamperproof wrench.
3. Put the release tool (shown in Figure 4-5) into the cabinet through the screw hole. Insert it into slot in the end cap on the motor shaft which is inside the large round hole in the side of the gun.
4. Point the gun down. Turn the release tool clockwise. The jammed firing balls will fall out of the gun.

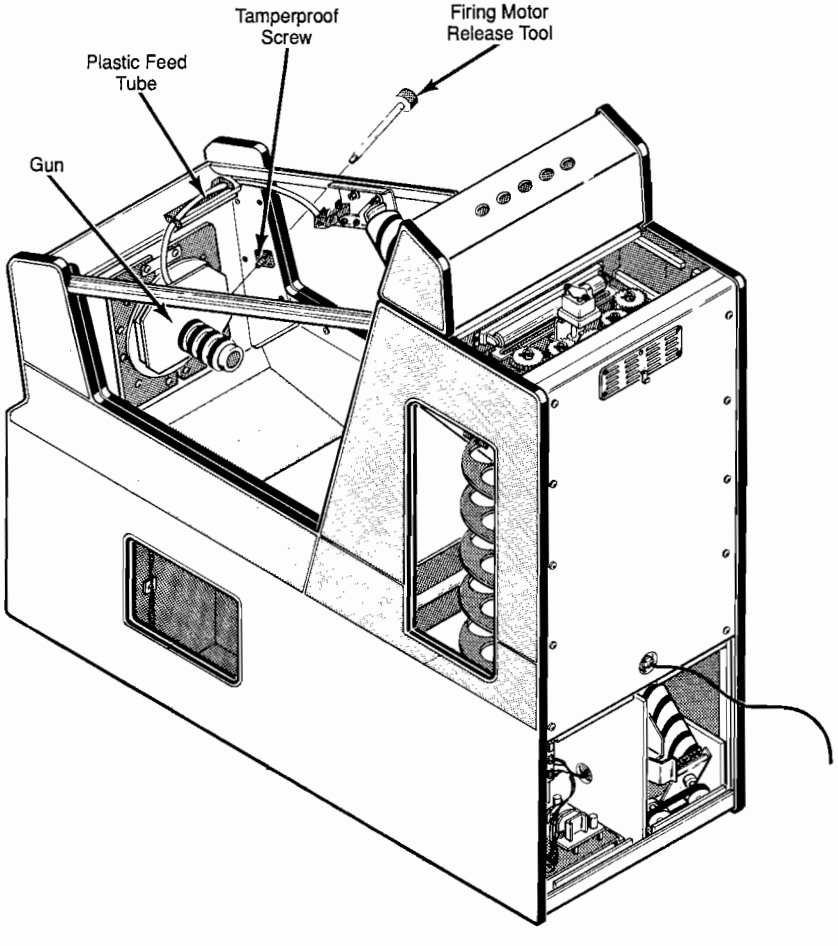


Figure 4-5 Unjamming the Motor

5. Remove the tool. Put the screw back in the side of the game and tighten it.

Adding More Firing Balls

NOTE

You will occasionally find firing balls that have fallen out of the gun onto the step. This is normal. You can put the balls back in the game by opening the prize ball door and dropping them in. Eventually you will need to add new firing balls to the game to replace those lost.

After you have lost at least 50 to 100 balls add more firing balls to the Pot Shot game.

Replacement firing balls were shipped with your game in the storage compartment. If you have already used these, contact your distributor or Atari Customer Service, at the number listed on the inside front cover of this book, to get more firing balls.

If you do not use Atari-supplied firing balls, but have another source, be sure that the balls are completely clean, and do not have any grease or dirt on them. If the balls are not clean, they will jam in the distributor and jam in the feed screw. You will probably have to replace the feed screw if you use dirty or greasy balls.

1. Turn on the power to the game.
2. Open rear door to the ball reservoir area. See Figure 4-1.
3. Turn on the feed screw by opening the coin door and pressing down on the auxiliary coin switch enough times to give three games, then pressing the Start button quickly three times.
4. As the screw turns, add 50 to 100 balls.

CAUTION

If you put too many firing balls in the game, the balls will jam in the distributor, keeping any balls from going to the feed screw.

5. To make sure that you haven't added too many balls watch the ball distributor to see if the balls jams. If the balls do jam, remove some of the balls.
6. After you are sure the balls are not jamming, put the door back on the ball reservoir area.

Replacing the Gun Ratchet Assembly Spring

If the crank handle does not make any noise when it is turned clockwise, and you have already tightened the ratchet wheel, the ratchet assembly spring is probably sprung and must be replaced.

1. Turn off the game power.
2. Take off the outside gun cover by removing the seven washers and screws on each side of the gun. Do not remove the two screws on the right side that hold the crank handle on the gun.
3. Remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome.
4. Inside the game, on the flat metal plate against the black rubber diaphragm, remove the two nuts below the chain bracket with a 3/8-inch nut driver.
5. Pull off the outside gun cover carefully, using the gun handle.
6. Inside the gun, opposite the crank handle, is the ratchet wheel and the ratchet assembly that strikes against the wheel. See Figure 6-2. The spring is in the ratchet assembly.
7. Unhook the spring from around the screw at the end of the striker.
8. Remove the ratchet assembly by unscrewing the two socket-head screws holding the assembly on the gun. Use a 5/32-inch Allen wrench.
9. Take out the assembly and unhook the old spring from the floor of the gun. Put the hook of the new spring through these holes.
10. Reinstall the ratchet assembly. Be sure the ratchet pin is centered on the ratchet wheel.
11. Adjust the ratchet assembly so the pin stops the ratchet wheel from rotating backwards.
12. Hook the new spring on the screw at the end of the striker.
13. Push the gun cover back on. Push the four studs through the diaphragm and the metal plate. Put nuts on the top two studs. The bottom studs are used only as guides.
14. Replace the seven screws and washers on each side of the outside gun cover.
15. Reinstall the bubble dome.

Replacing the Gun Pinch Wheel Cushion

The pinch wheel cushion will eventually wear and need to be replaced.

1. Turn off the game power.
2. Take off the outside gun cover by removing the seven screws and washers on each side of the gun. Do not remove the two screws on the right side that hold the crank handle on the gun.
3. Remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome.
4. Inside the game, on the flat metal plate against the rubber diaphragm, remove the two nuts below the chain bracket with a 3/8-inch nut driver.
5. Carefully pull the outside gun cover off using the gun handle.
6. Remove the two socket-head screws that hold the sprocket and pinch wheel assembly on the bottom of the gun. Use a 5/32-inch Allen wrench. See Figure 6-2.
7. Pull the assembly to the front of the gun so you can work on it.
8. Pull off the old pinch wheel cushion.
9. Put on the new pinch wheel cushion. Make sure it is centered on the pinch wheel.

> **NOTE**
> Make sure the pinch wheel is centered on the slot in the firing tube.

10. Reinstall the sprocket and pinch wheel assembly.
11. Push the outside gun cover back on. Push the four studs through the diaphragm and the flat metal plate. Put nuts on the top two studs. The bottom studs are used only as guides.
12. Reinstall and tighten the 14 screws and washers on the outside gun cover.
13. Adjust the firing tube as described in *Adjusting the Firing Tube* in the Preventive Maintenance section of this chapter.

Replacing the Gun Support Chain

The chain holding the gun weight may need to be replaced. See Figure 6-1. The chain bar, screwed into the cabinet above the gun, holds the chain. The chain is attached to the gun by the chain bracket on the flat metal plate.

1. Turn off the game power.
2. First remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome.
3. Remove the nuts holding the chain bracket on the flat metal plate. Use a 3/8-inch wrench. (The diaphragm can support the weight of the gun temporarily.)
4. Remove one cotter pin from the chain bracket. Remove the rod. The bottom part of the chain is now free.
5. Remove the bolts from the chain bar on the cabinet with a 7/16-inch nut driver or box open-end wrench. Take the chain off the bar.
6. Put the new chain in place on the bracket on the metal plate. Slide the rod through the bracket and chain. Install a new cotter pin to hold the rod in place.
7. Replace the screws holding the chain bracket on the flat metal plate. Use a 3/8-inch wrench.
8. Install the new chain on the bar on the cabinet. Put the screws holding the chain bar back in and tighten them.
9. Reinstall the bubble dome.

Replacing the Gun Diaphragm

If the black rubber diaphragm is worn or has holes in it, it must be replaced.

1. Turn off the game power.
2. First remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the bubble dome.
3. Take off the small square metal cover in the lower corner of the cabinet interior. This cover protects the electical harness connections for the gun. Carefully pull out the wires until you can reach the connectors. Disconnect the connectors.
4. Remove the four tamperproof screws from the gun movement restrictor panel on the front of the cabinet. See Figure 6-1.
5. Turn the crank handle parallel to the bottom of the gun.
6. Remove the 10 screws in the right and left diaphragm holders that press the black rubber diaphragm against the inside of the cabinet. Use a 7/16-inch socket to remove the screws.
7. Remove the two screws that hold the chain bar on

the cabinet above the gun. Put a piece of wood between the gun and the bottom of the cabinet to support the weight of the gun. Do not let the gun drop.

8. Pull the gun out of the cabinet towards the back of the game.
9. Lay the gun on a work bench. Refer to Figure 6-2 for an exploded illustration of the gun. Remove the inside gun cover. Take off the four nuts facing the player side of the game with a 3/8-inch wrench. Pull the gun cover off enough to clear the studs. Then slide the gun cover to the left. Finally, pull the cover completely.
10. Take off the outside gun cover by removing the seven screws and washers on each side of the gun. Do not remove the two screws on the right side that hold the crank handle on the gun.
11. Use a 3/8-inch socket to remove the two nuts below the chain bracket on the flat metal plate. Pull off the outside gun cover.
12. Remove the firing assembly bracket. The two nuts that hold the bracket are in the outside part of the gun. Use a 7/16-inch nut driver to remove the nuts.
13. Remove the five nuts holding the diaphragm between the flat metal plate and welded gun case. Use a 7/16-inch socket. You do not need to remove the middle gun cover from the flat metal plate.
14. Install the new diaphragm between the welded gun case and the flat metal plate. Tighten the five nuts with a 7/16-inch nut driver.
15. Install the firing assembly bracket. Use a 7/16-inch nut driver to tighten the two nuts. Check the firing tube adjustment following the procedure in *Adjusting the Firing Tube* in this chapter.
16. Reinstall the outside gun cover. Install the inside gun cover over the firing assembly.
17. Be sure the crank handle is still parallel to the bottom of the gun. Put the gun back in the game.
18. Suspend gun from the chain on the chain bar. Put the two screws into the chain bar and screw them into the cabinet.
19. Put on the gun movement restrictor panel on the outside of the cabinet. Screw the four tamperproof screws into the cabinet.
20. Reinstall the left and right diapharagm holders that press the black rubber diaphragm against the inside of the cabinet. Install the 10 screws.
21. Reconnect the electrical connectors.
22. Reinstall the bubble dome.

Replacing the Gun Firing Tube

The firing tube may eventually wear. Do the following procedure to remove and replace it.

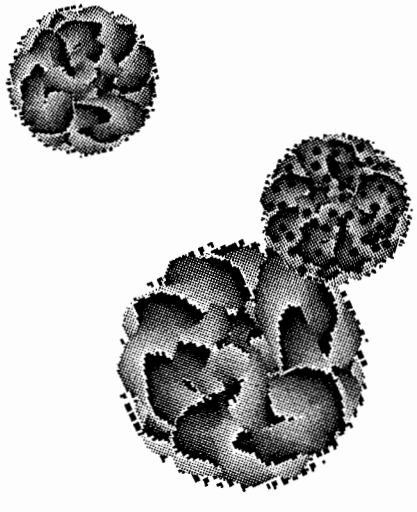
1. Turn off the game power.
2. First remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome.
3. Remove the inside gun cover. Take off the four nuts facing the player side of the game with a 3/8-inch wrench. Pull the gun cover towards the back of the game enough to clear the studs. Then slide the gun cover to the left. Finally, pull off the cover towards the back of the game.
4. Loosen the hose clamp and remove the plastic feed tube from the gun.
5. Remove the nuts that hold the firing tube on the firing assembly bracket. See Figure 4-3. Remove the nut below the motor with a 3/8-inch box open-end wrench and the two above the motor with a 3/8-inch socket.
6. Put in the new firing tube. Put on the nuts. Do not tighten the nuts.
7. Do the procedure *Adjusting the Firing Tube* in the Preventive Maintenance section of this chapter.
8. Do the procedure *Adjusting the Firing Wheel* in the Preventive Maintenance section of this chapter.

Replacing the Gun Firing Motor

If the firing motor does not work anymore, do the following procedure to replace it.

1. Shoot any firing balls that are in the plastic feed tube or in the gun.
2. Turn off the power.
3. Remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the bubble dome.
4. Remove the inside gun cover. Take off the four nuts facing the player side of the game with a 3/8-inch wrench. Pull the gun cover towards the back of the game enough to clear the studs. Then slide the gun cover to the left. Finally, pull off the cover towards the back of the game.
5. Loosen the hose clamp and remove the plastic feed tube from the gun.
6. Loosen the socket-head screw holding the firing wheel on the motor with a 5/32-inch Allen wrench. See Figure 4-3. Take the firing wheel off the motor.

7. Take the wires out of the tie wrap below the gun.
8. Disconnect the motor electrical connectors.
9. Remove the three nuts and washers that hold the motor on the firing assembly bracket. Loosen the three motor mount nuts with a 3/8-inch socket. These nuts are on either side of the motor. See Figure 4-3.
10. Take the motor out of the game and remove the fan and the large slotted end cap on the motor shaft.
11. Remove the two nuts on the motor clamp plate on the top of the motor with a 3/8-inch wrench. Then take off the two nuts that hold the motor in the motor mount. Use an 11/32-inch nut driver. Remove the motor.
12. Put the new motor into the motor bracket. **First**, put the motor clamp plate back on the top of the bracket and tighten the nuts until the plate touches the motor, but does not clamp it.
13. Put two nuts on the motor studs and tighten them with an 11/32-inch nut driver, so you pull the motor towards the front of the motor bracket.
14. When the motor is tight against the bracket, tighten the nuts on the top in the clamp plate.
15. Put the fan and the large slotted end cap back on the motor shaft and tighten the set screws that hold them on.
16. Put the motor assembly back on the firing assembly bracket. Put on the three nuts that hold it on the bracket. Do not tighten the nuts.
17. Put on a new tie wrap to hold the wires. Reconnect the motor wiring with the wiring harness.



18. Put the firing wheel back on. Line up the firing wheel on the center of the firing tube.
19. Check the centering of the firing wheel from the end of the gun. You can hold a mirror in front of the sensor block on the gun to look at the reflection of the firing wheel through the hole in the sensor block.

The most dangerous way to check the centering is to look down the firing tube through the hole in the sensor block at the end of the gun. **You can be shot in the eye** if the game power is on. If you do it this way, hold a clear acrylic panel between you and the gun.

> **CAUTION**
> Be sure no firing balls are in the firing tube or the plastic feed tube.

20. After you have centered the firing wheel, turn on the game power and watch the gun from above to see if the firing wheel is actually centered over the firing tube. If not, turn off the power and try again. Always check the centering with the motor running.
21. When the firing wheel is centered, turn off the power, and tighten the set screw on the firing wheel.
22. Finally, adjust the firing wheel height as described in *Adjusting the Firing Wheel* in the Preventive Maintenance section of this chapter.

Replacing the Gun Shot Sensor

If no noise is produced when the gun fires, replace the shot sensor and emitter.

1. Turn off the game power.
2. First remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome.
3. Remove the inside gun cover. Take off the four nuts facing the player side of the game with a 3/8-inch wrench. Pull the gun cover towards the back of the game enough to clear the studs. Then slide the gun cover to the left. Finally, pull off the cover towards the back of the game.
4. The shot sensor and emitter are in the black box on the end of the gun. Both sensor and emitter have two wires attached to their holders. See Figure 4-3.

5. Loosen the two lock nuts on the socket-head screws on either side of the cutout in the middle of the box. Use a 1/4-inch flat wrench.
6. Loosen the socket head screws. Carefully remove the component holders and the components by gently pulling them out of their holes on the sides of the box. If the components won't come out of the holes, loosen the screws more.
7. Replace the sensor and the emitter in the holders.
8. Put the holders with the components back in the holes. Tighten the screws finger tight. If you overtighten the screws, you can crush the components.
9. Tighten the two lock nuts with a 1/4-inch flat wrench.
10. Put the gun cover on, tighten the nuts, and put the bubble dome back on.

Replacing the Start Switch or Button

If you need to replace either of these, take off the instruction panel.

1. Turn off the game power.
2. Take off the top and bottom retainers on the instruction panel by removing the four screws in each retainer.
3. Remove the retainers, holding the graphics and plastic shield on the game.
4. Carefully lift off the plastic shield a little ways off the game. Pull out the start button light assembly. The start switch is on the bottom of this light.
5. Take off the instruction panel.
6. If you are replacing the start button, unscrew it from the panel.
7. Assemble in reverse order.

Replacing Lights

If the game lights are burned out, replace them immediately. If the prizes are not properly lit, earnings may drop.

Instruction Panel Lights

1. Turn off the game power.
2. Take off the top and bottom retainers of the instruction panel by removing the four screws in each retainer.
3. Remove the retainers, holding the graphics and plastic shield on the game.
4. Carefully lift off the plastic shield a little ways off the game. Pull out the start button light assembly.
5. Take off the instruction panel.
6. Remove the fluorescent light from the light fixture.
7. To remove the entire light fixture open the upper coin door and disconnect the light harness connector. The light harness is a flat white wire.
8. Use a Phillips screwdriver to remove the two screws holding the light fixture. Remove the light fixture.
9. Replace the fluorescent light and/or light fixture in the reverse order of removal.

Playfield Light

1. Turn off the game power so you are not accidentally shot.
2. Either take off the bubble dome or open a carousel access door and remove a carousel to gain access to the screws holding the acrylic sheet over the playfield light.
3. Use a Phillips screwdriver to remove the five screws that hold the acrylic shield over the light.
4. Lift off the shield. Remove the graphics.
5. Remove the fluorescent light from the light fixture.
6. To remove the entire light fixture, disconnect the light harness connector by the side of the light.
7. Use a Phillips screwdriver to remove the two screws holding the light fixture. Remove the light fixture.
8. Replace the fluorescent light and/or light fixture in the reverse order of removal.

"Hold Your Fire" Lights

CAUTION

Replace these lights only with the proper type of light bulb. **Do not** use ordinary household incandescent bulbs. They will melt the panel over the lights and possibly start a fire.

1. Turn off the game power to avoid being shot.
2. Either take off the bubble dome or open a carousel access door and remove a carousel to gain access to the screws holding the acrylic sheet over the light.
3. Use a Phillips screwdriver to remove the five screws that hold the acrylic shield over the light.
4. Remove the acrylic shield.
5. Remove the light from the light fixture.

6. To remove the entire light fixture, disconnect the wires from the light.
7. Remove the four screws holding the light fixture. Remove the light fixture.
8. Replace the light and/or light fixture in the reverse order of removal.

Lights Over Prizes

1. Turn off the game power.
2. Open the gear assembly area.
3. Remove the fluorescent light from the light fixture.
4. To remove the entire light fixture, disconnect the light harness connector.
5. Use a Phillips screwdriver to remove the two screws holding the light fixture. Remove the light fixture.
6. Replace the fluorescent light and/or light fixture in the reverse order of removal.

Marquee Light

1. Turn the game power off.
2. Use a Phillips screwdriver to remove the four screws in the retainer on the top of the cabinet that hold the attraction shield in place. Remove the retainer.
3. Remove the attraction shield by pulling it up and out.
4. Remove the fluorescent light from the light fixture.
5. To remove the entire light fixture, open the gear assembly access door. Disconnect the light harness connector in the gear assembly area.
6. Use a Phillips screwdriver to remove the two screws holding the light fixture. Remove the light fixture.
7. Replace the fluorescent light and/or light fixture in the reverse order of removal.
8. Put the attraction shield back.
9. Put the retainer back on and tighten the four screws.

Replacing the Feed Screw Pulley Belt

If the feed screw pulley belt is worn and slips, replace it following this procedure.

1. Turn off the game power.
2. Open the ball reservoir area.
3. Loosen the screws that hold the motor on the floor of the game. See Figure 4-1.
4. Take off the old belt.
5. Put on the new belt and adjust it: move the motor back and forth until the belt has about 1/2 inch of slack when you push or pull on it.

Replacing the Feed Screw Motor

If the feed screw motor does not work, replace it following this procedure.

1. Turn off the game power.
2. Open the ball reservoir area.
3. The motor is held to the floor of the game by two screws. See Figure 4-1. Remove these screws.
4. Take off the belt. Check the belt for wear. If it is worn, replace it, following the procedure in *Replacing the Feed Screw Motor Belt.*
5. Install a new motor. Put the belt on the motor pulley. Tighten the screws enough to hold the motor in place.
6. Adjust the belt tension by moving the motor back and forth. The belt should have about 1/2 inch of slack when you push or pull on it.
7. Tighten the screws when the belt has the proper amount of slack.

Replacing the Firing Ball Delivery Sensors

If the firing balls are not counted correctly every game, and you have checked the settings on the DIP switches on the Game PCB to be sure the number of firing balls allotted every game is correct, you may need to replace the sensors.

> **NOTE**
> Do not change the alignment of the feed screw to the ball receiver assembly.

1. Turn off the game power.
2. First remove the bubble dome by removing all the tamperproof screws holding the dome on the game. Lift off the dome.
3. The ball delivery sensor and emitter are in the black block between the plastic feed tube and the feed screw. See Figure 4-2.
4. Loosen the two lock nuts on the socket-head screws on the top of the block with a 1/4-inch wrench.

5. Loosen the socket head screws. Carefully remove the component holders and the components by gently pulling them out of their holes on the sides of the block. If the components won't come out of the holes, loosen the screws more.
6. Replace the sensor and the emitter in the holders.
7. Put the holders with the components back in the holes. Tighten the screws finger tight. If you overtighten the screws, you can crush the components.
8. Tighten the two lock nuts.
9. Put the bubble dome back on.

Removing the Game PCB

Perform the following procedure to remove or replace the Game PCB. See Figure 3-1 for the location of the game PCB.

1. Turn the game power off.
2. Unlock and remove the rear door to the the power supply and PCB area.
3. Disconnect the harness connectors from the Game PCB.
4. Use a Phillips screwdriver to remove the screw and washer holding the Game PCB to the cabinet.
5. Grasp the edge of the Game PCB and gently slide it to the right and up.
6. Replace the Game PCB in the reverse order of removal.

Removing the Speaker

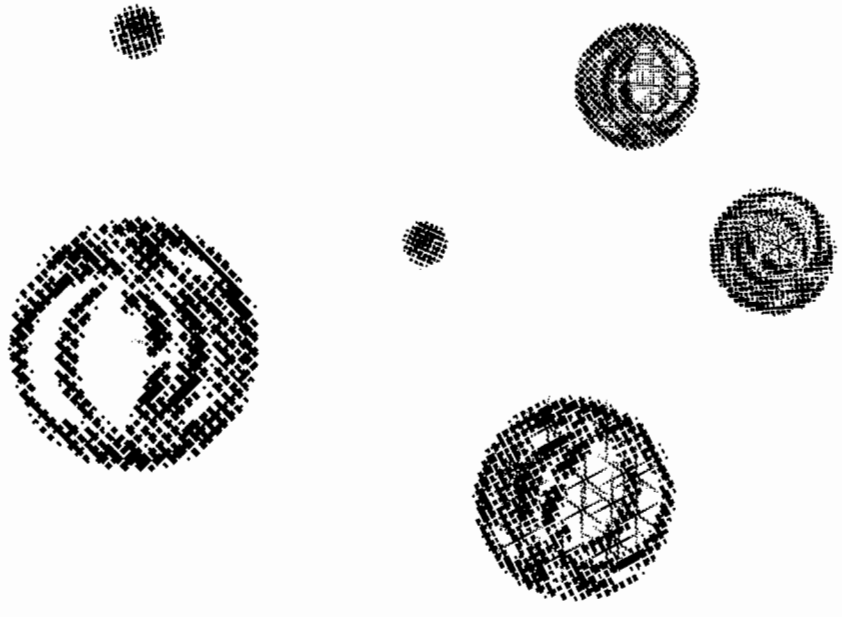
Perform the following procedure to remove or replace the speaker.

1. Turn the game power off.
2. Remove the four tamperproof screws holding the speaker grille to the cabinet. Remove the grille.

CAUTION
Do not touch the speaker cones when handling the speakers. The cone material is fragile and can be easily damaged.

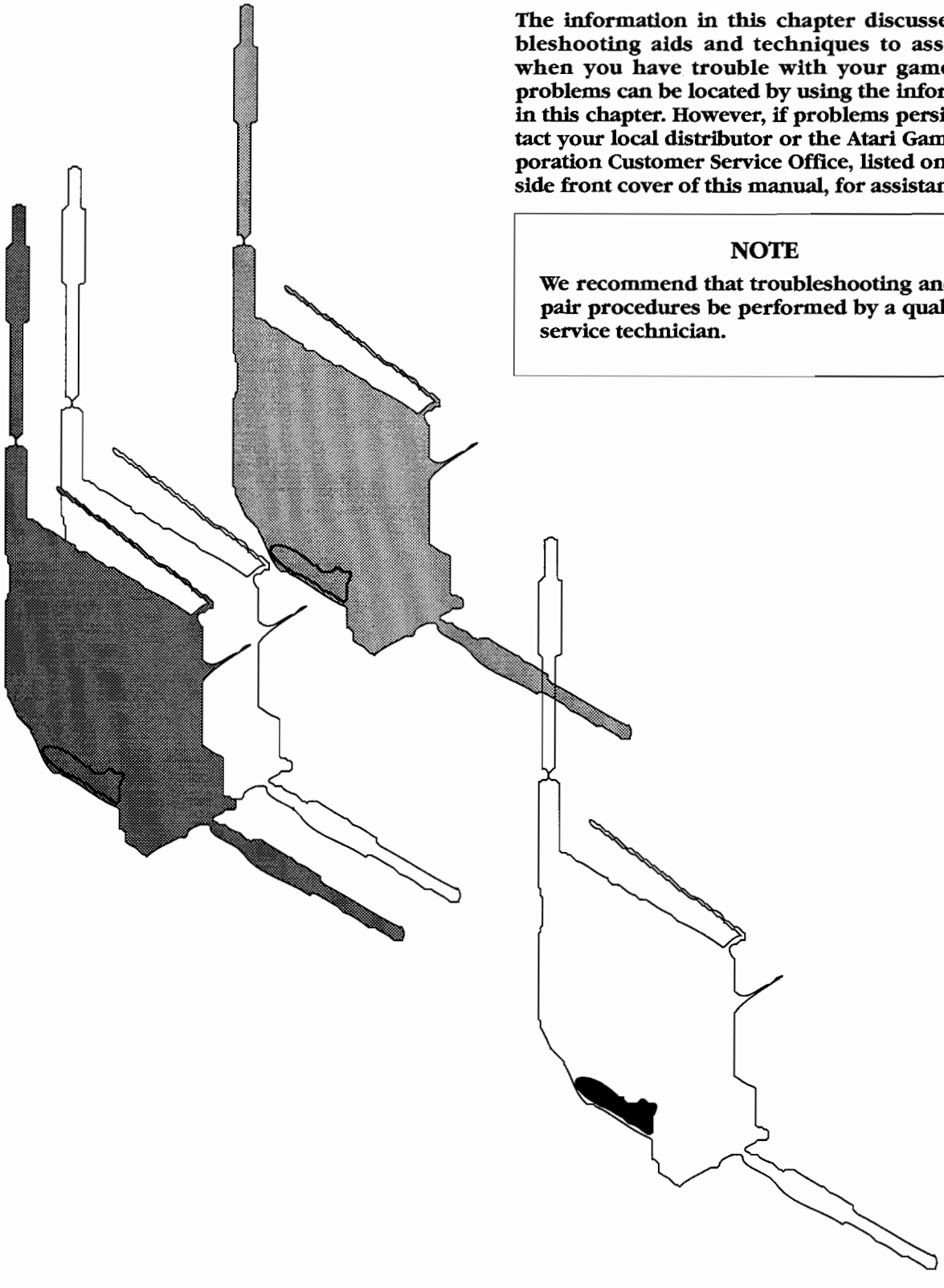
3. Use a Phillips screwdriver to remove the four screws holding the speaker to the cabinet. Do not let the speaker fall.
4. Remove the speaker just far enough to disconnect the two speaker wires. When you reassemble the speaker and the wires, be sure that you hook up the wires correctly.

   The signal wire for the speaker should be attached to the speaker tab marked with color, a + sign, or a round dot. (The signal wires are shown on the game wiring diagram; refer to the schematic included in the manual.)
5. Replace the speaker in the reverse order of removal.



Chapter 5

Troubleshooting



The information in this chapter discusses troubleshooting aids and techniques to assist you when you have trouble with your game. Most problems can be located by using the information in this chapter. However, if problems persist, contact your local distributor or the Atari Games Corporation Customer Service Office, listed on the inside front cover of this manual, for assistance.

NOTE

We recommend that troubleshooting and repair procedures be performed by a qualified service technician.

Mechanical Troubleshooting

You should perform the preventive maintenance procedures in Chapter 4 on a regular basis to avoid some of the problems listed below. If you have problems, try the first suggestion in the series. If that does not work, try the next suggestion. After you have tried all the suggestions that apply to your problem, call your distributor or Atari Customer Service if you still have not solved your problem.

Firing Ball Problems

- **Firing balls are not loading, no music is playing, and no lights are on.**
  1. Check that the game is plugged in.
  2. Check that the game power is on.
  3. Check if any fuses are blown on the power supply.
- **Firing balls are not loading, but the music is playing, and the feed screw is turning.**
  1. The balls are probably jammed in the ball distributor. You have too many firing balls in the game. Open the door to the ball reservoir area and take out about 30 balls. If this does not cure the problem, take out more balls.
  2. If there are no balls in the reservoir, the balls are probably jammed on the return surface. They will jam there if the game is not level. Level the game following the procedure *Levelling the Game* in Chapter 1.
- **Firing balls are not loading and the gun doesn't work, but the lights are on and the carousels are turning.**

  The carousel access doors are probably unlocked. The feed screw and gun will not work if the doors are unlocked.
- **Firing balls do not roll smoothly through the plastic feed tube.**
  1. Check for kinks and twists in the feed tube.
  2. Replace the feed tube if it is extremely dirty.
- **Balls do not fire.**
  1. Check the carousel service doors. They must be locked before the gun can fire.
  2. If the power to the game has been off, try unjamming the motor. The directions for this procedure are in Chapter 4 in *Unjamming the Motor.*

     If this is a problem that has recently gotten worse, try the following:
     a. Check the O-ring in the gun firing assembly and see if it is worn. Replace it if it is. The directions for this procedure are in Chapter 4 in *Replacing the Gun O-Ring.*
     b. Adjust the firing wheel. The directions for this procedure are in Chapter 4 in *Adjusting the Firing Wheel.*
     c. If you have taken out the firing motor, you may not have adjusted the firing wheel correctly when you put it back in. Follow the procedure *Replacing the Firing Motor* in Chapter 4.
- **The balls fire, but they are not fired with enough force to knock out prizes.**
  1. Check to see if the O-ring in the gun firing assembly is worn. Replace it if necessary, following the procedure in *Replacing the Gun O-Ring* in Chapter 4.
  2. Adjust the firing wheel. The directions for this procedure are in *Adjusting the Firing Wheel* in Chapter 4.
  3. If you have tried steps 1 and 2, and the game has been operating for a number of months, you might need a new firing tube. The directions for replacing the firing tube are in Chapter 4, *Replacing the Firing Tube.*
  4. If you have taken out the firing motor, you may not have adjusted the firing wheel correctly when you put it back in. Follow the procedure *Replacing the Firing Motor* in Chapter 4.
- **Balls do not always fire, or too many fire, when the crank handle is turned.**
  1. Check the firing tube adjustment. Follow the procedure in *Adjusting the Firing Tube* in Chapter 4.
  2. Check the pinch wheel cushion for wear. If it is worn, replace it. Follow the procedure in *Replacing the Pinch Wheel Cushion* in Chapter 4.
  3. If you have replaced the pinch wheel cushion and still have this problem, be sure that the pinch wheel is centered over the firing tube.
- **Firing balls occasionally drop out of the gun on the player side.**

  This is normal for the game. Put the firing balls back in the game by dropping them inside the prize door.
- **Firing balls are not going into the plastic feed tube.**

  In normal operation, some of the balls will fall out of the ball receiver assembly while the plastic feed tube is filling. The firing ball delivery sensor

counts the number of balls that actually go into the plastic feed tube, so every player receives the number of balls selected on the DIP switches on the game PCB.

- **Too many balls are delivered by the feed screw and the feed tube is already full.**
  1. If this happens occasionally, the player has probably put in more coins than needed for one game and then pushed the Start button more than once quickly.
  2. If this happens in every game, check the DIP switches at 4E on the game PCB. You have probably chosen more than 90 balls to be delivered each game. Instructions for changing the DIP switches are in *Switch Options* in Chapter 3.
  3. If the DIP switches at 4E on the game PCB are set to 90 balls or less, and this always happens, replace the ball delivery sensors. Follow the procedure in *Replacing the Ball Delivery Sensors* in Chapter 4.
- **The feed screw delivers balls very slowly.**
  1. Take the slack out of the feed screw motor belt. Follow the procedure in *Checking the Feed Screw Motor Belt* in Chapter 4.
  2. If the belt is worn, replace it. Follow the procedure in *Replacing the Feed Screw Motor Belt* in Chapter 4.
- **The feed screw delivers too few balls.**
  1. If this happens occasionally, check the ball distributor and see if the balls are jammed. The game will jam if it has too many firing balls. Open the door to the ball reservoir area and take out about 30 balls. If the balls continue to jam, take out more balls.
  2. If this happens occasionally, check the ball distributor and see if the balls are returning to the distributor. If there are only a few balls in the reservoir and distributor, the balls may be jammed on the return surface. This happens when the game is not level. Level the game, following the directions in Chapter 1 in *Levelling the Game.*
  3. If this happens in every game, check the DIP switches at 4E on the game PCB to see how many balls are to be delivered each game. You may have chosen too few firing balls to be delivered each game. Instructions for changing the DIP switches are in Chapter 3 in *Switch* Options.
  4. If this happens in every game, check the feed screw motor belt. Follow the procedure in *Checking the Feed Screw Motor Belt* in Chapter 4.

Gun Crank Problems

- **Crank handle does not make noise.**

  Refer to *Sound Problems,* below.
- **When the crank handle is turned, balls do not fire or too many fire.**

  Refer to *Firing Ball Problems,* above.

Prize Ball Problems

- **Prize balls do not roll to the prize door.**

  Make sure your game is level. If the back of the game is lower than the front, the balls will not roll to the prize door. Level the game according to the directions in *Levelling the Game* in Chapter 1.

Carousel Problems

- **Upper platform discs on the carousel are not turning or turning slower than the lower platform discs.**

  The top spacer was not pressed down hard enough when the screw was tightened. Take the carousel out, loosen the screw in the top spacer, press down on the top spacer, and tighten the screw.

Sound Problems

- **When the crank handle turns, it makes little or no noise.**
  1. Adjust the ratchet wheel. Follow the procedure in *Checking the Crank Handle* in Chapter 4.
  2. Adjust the ratchet assembly. The assembly may have gotten loose and slid back from the ratchet wheel. Follow the procedure in *Replacing the Ratchet Assembly Screw* in Chapter 4, but only adjust the assembly, do not replace the spring.
  3. Replace the ratchet assembly spring. The spring is probably sprung (stretched out). Follow the procedure in *Replacing the Ratchet Assembly Screw* in Chapter 4.
- **No shot sound is produced when balls are fired.**

  Replace the gun shot sensors.
- **No game sounds at all.**
  1. Check the speakers and the wiring.
  2. Check the +12 Volt supply from the power supply board.

Electronic Troubleshooting

WARNING

To avoid electrical shock, turn off the game power before attempting to troubleshoot this

Check Fuses

Check for open fuses. Refer to the power supply parts list in Chapter 6 for the location and rating of each fuse used in this game. Make sure that replacement fuses are the proper type and rating.

Check Power-Supply Voltages

If no circuits are operating correctly, you probably have a power supply problem. Be sure that the proper line voltage is available to the game. Refer to the label on the back of the game for its voltage rating.

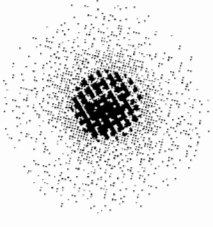
Check the LED on the Game PCB to make sure the +5 V supply is good.

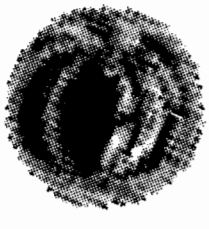
Visual Check

Check for obvious problems in the portion of the game where the trouble is suspected. For example, check for loose or defective solder connections, integrated circuits loose in their sockets, loose cable connections, broken wires, and damaged components.

Check Individual Components

Check soldered-in passive components (e.g., resistors, capacitors, diodes) by disconnecting one end to isolate the measurement from the effects of the surrounding circuitry. Often, the most practical way to determine if a component is faulty is to substitute a new component. Before you do this, make sure that you do not have some other circuit problem that could damage the new component.





Chapter 6

Illustrated Parts Lists and Schematics

This chapter provides information you need to order parts for your game.

The PCB parts lists are arranged in alphabetical order by component. Each component section is arranged alphanumerically by reference designator.

Other parts lists are arranged alphanumerically by Atari part number. In these parts lists, all A- prefix numbers come first. Next come part numbers with a two number designation followed by a hyphen (00- through 99-). Ending the list are part numbers with six numbers followed by a hyphen (000598- through 201000-).

When you order parts, give the part number, part name, the number of this manual, and the serial number of your game. With this information, we can fill your order rapidly and correctly. We hope this will create less downtime and more profit from your games.

Atari Customer Service phone numbers are listed on the inside front cover of this manual.

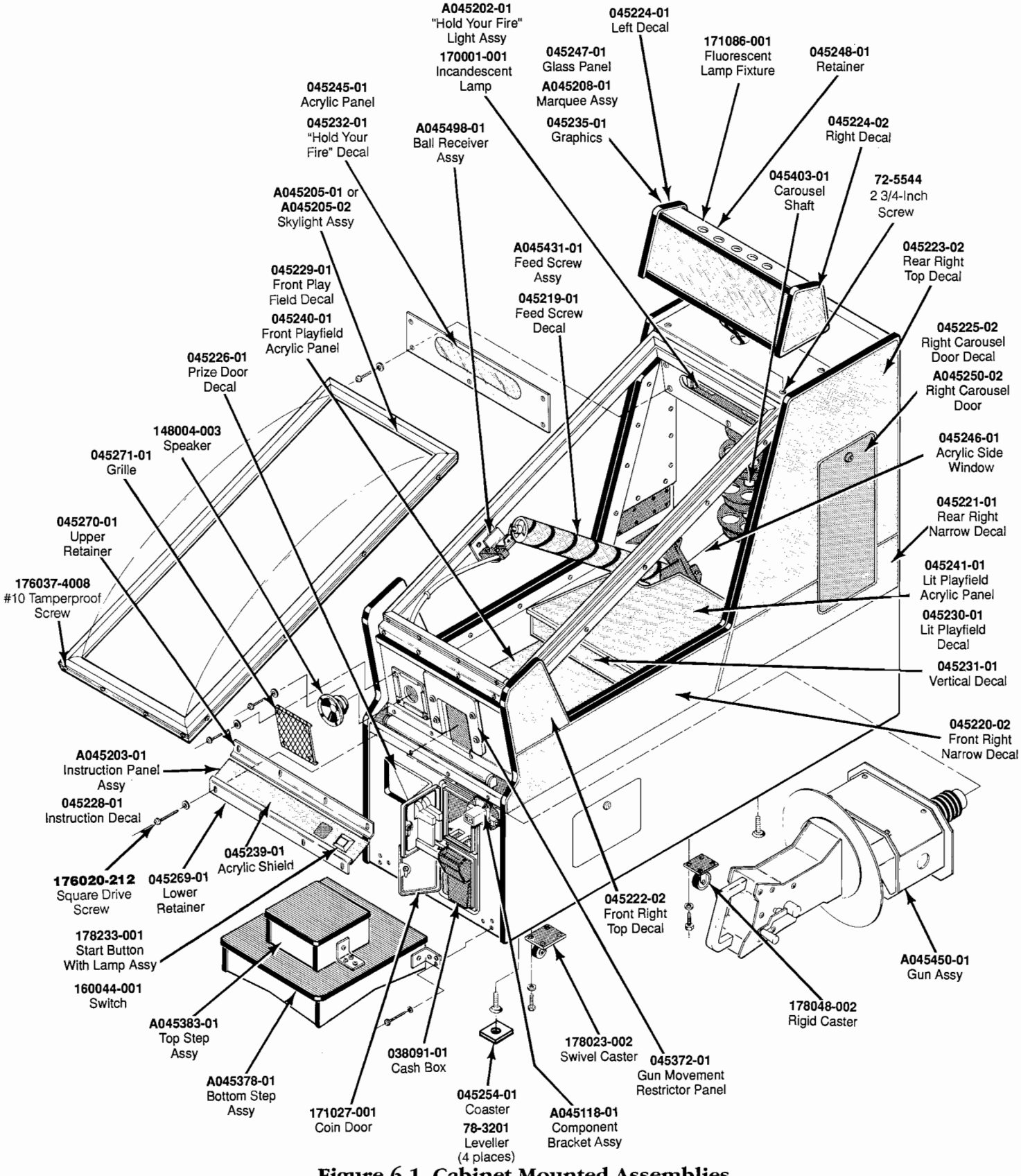


Figure 6-1 Cabinet-Mounted Assemblies A045200-01 A

Items Not Shown:

045225-01
Left Carousel Door Decal

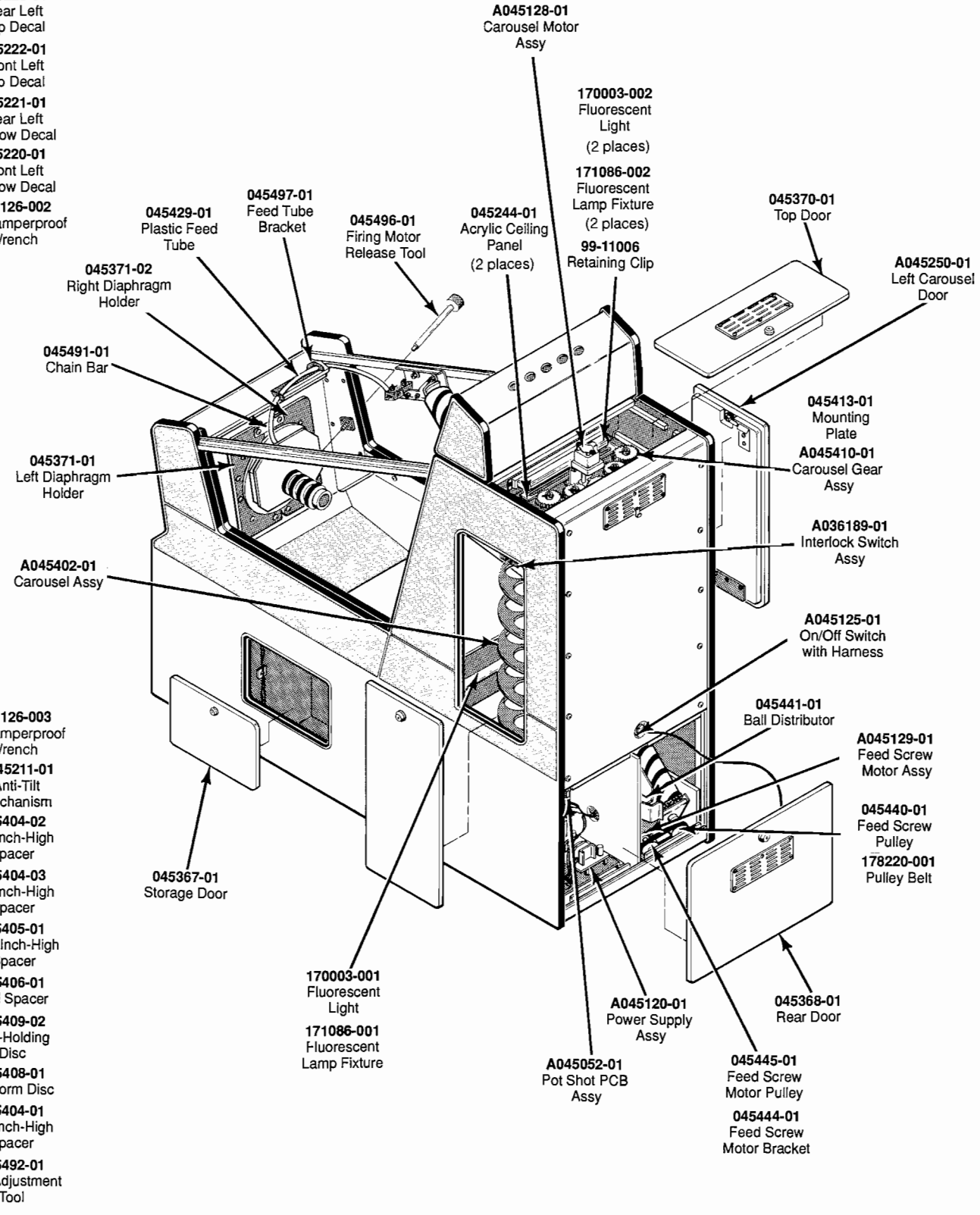
045223-01
Rear Left Top Decal

045222-01
Front Left Top Decal

045221-01
Rear Left Narrow Decal

045220-01
Front Left Narrow Decal

178126-002
#10 Tamperproof Wrench



178126-003
3/8 Tamperproof Wrench

A045211-01
Anti-Tilt Mechanism

045404-02
1/4-Inch-High Spacer

045404-03
1/8-Inch-High Spacer

045405-01
3 1/2-Inch-High Spacer

045406-01
End Spacer

045409-02
Ball-Holding Disc

045408-01
Platform Disc

045404-01
3/4-Inch-High Spacer

045492-01
Gun Adjustment Tool

Figure 6-1 Cabinet-Mounted Assemblies, Continued

Cabinet-Mounted Assemblies
Parts List

Part No.	Description
A036189-01	Interlock Switch Assembly
A045052-01	Pot Shot PCB Assembly
A045112-01	Main Assembly Harness
A045113-01	Upper Light Assembly Harness
A045114-01	Lower Light Assembly Harness
A045118-01	Component Bracket Assembly
A045120-01	Power Supply Assembly
A045125-01	Power On/Off Switch with Harness Assembly
A045129-01	Feed Screw Motor Assembly
A045201-01	Cabinet With Pallet Assembly
A045202-01	Flashing Light "Hold Your Fire" Assembly. Replaceable Parts:
179239-001	Rear-Terminating Lamp Receptacle
A045203-01	Instruction Panel Assembly. Replaceable Parts:
045234-01	Coinage Label
045228-01	Instruction Decal
045239-01	Acrylic Shield for Instruction Decal
160044-001	Snap-Action Switch
178233-001	Square Green Start Button With 6.3 Volts Lamp Assembly
A045204-01	Lit Playfield Assembly. Replaceable Parts:
170003-001	18-Inch 15-Watt Fluorescent Light
171086-001	18-Inch Fluorescent Lamp Fixture
176015-110	Tapping Pan Hd. Cross-Recessed #10 x 5/8-Inch Lg. Screw
99-11006	Fluorescent Lamp Retaining Clip
A045205-01	Skylight Assembly
A045206-01	Carousel Components Kit:
045404-03	1/8-Inch-High Spacer
045404-04	1/16-Inch-High Spacer
045409-01	Ball-Holding Disc With 2 7/8-Inch Diameter Holes
73-00624	3/32 x 1 1/2-Inch Steel Cotter Pin
A045207-01	Steel Firing Ball Kit (850 Balls)
A045207-02	Spare Firing Ball Kit (100 Balls)
A045208-01	Marquee Assembly. Replaceable Parts:
045224-01	Left Marquee Decal
045224-02	Right Marquee Decal
045235-01	Marquee Graphics
045247-01	Glass Panel
045248-01	Retainer
170003-002	24-Inch 20-Watt Fluorescent Light
171086-002	24-Inch Fluorescent Lamp Fixture
99-11006	Fluorescent Lamp Retaining Clip
A045211-01	Anti-Tilt Mechanism
A045250-01	Left Carousel Access Door
A045250-02	Right Carousel Access Door
A045378-01	Bottom Step Assembly (Shipped assembled with the Top Step Assembly, Part No. A045383-01)
A045383-01	Top Step Assembly (Shipped assembled with the Bottom Step Assembly, Part No. A045378-01)

Cabinet-Mounted Assemblies
Parts List, Continued

Part No.	Description
A045402-01	Carousel Assembly. Replaceable Parts:
045403-01	Carousel Shaft
045404-01	3/4-Inch-High Spacer
045404-02	1/4-Inch-High Spacer
045404-03	1/8-Inch-High Spacer
045405-01	3 1/2-Inch-High Standard Spacer
045406-01	End Spacer
045408-01	Platform Disc
045409-02	Ball-Holding Disc with 3 3/8-Inch Diameter Holes
72-5112	#10-24 x 3/4-Inch Hex Head Machine Screw
A045410-01	Carousel Gear Assembly. Replaceable Parts:
A045128-01	Carousel Motor Assembly
045413-01	Mounting Plate
177010-241	Polymer Hex Lock Nut
73-00612	3/32 x 3/4-Inch Steel Cotter Pin
73-00624	3/32 x 1 1/2-Inch Steel Cotter Pin
75-910d	#10-32 Hex Nut
A045431-01	Feed Screw Assembly
A045450-01	Gun Assembly (See Figure 6-2)
A045498-01	Ball Receiver Assembly
045219-01	Feed Screw Decal (Included with Feed Screw Assembly, Part No. A045431-01)
045220-01	Front Left Narrow Decal
045220-02	Front Right Narrow Decal
045221-01	Rear Left Narrow Decal
045221-01	Rear Right Narrow Decal
045222-01	Front Left Top Decal
045222-02	Front Right Top Decal
045223-01	Rear Left Top Decal
045223-02	Rear Right Top Decal
045225-01	Left Carousel Door Decal
045225-02	Left Carousel Door Decal
045226-01	Prize Door Decal
045229-01	Front Playfield Decal
045230-01	Lit Playfield Decal
045231-01	Decal on Vertical Panel in front of Lit Playfield
045232-01	"Hold Your Fire" Decal
045233-01	Upper Redemption Decal
045233-02	Redemption Decal
045240-01	Front Playfield Acrylic Panel
045241-01	Lit Playfield Acrylic Panel
045244-01	Ceiling Light Acrylic Panel
045245-01	"Hold Your Fire" Acrylic Panel
045246-01	Acrylic Side Window
045247-01	Glass Marquee Panel
045253-01	Redemption Decal Overlay

Cabinet-Mounted Assemblies
Parts List, Continued

Part No.	Description
045254-01	Leveller Coaster
045258-01	High Voltage Cover
045269-01	Lower Retainer for Instruction Panel
045270-01	Upper Retainer for Instruction Panel
045271-01	Speaker Grille
045367-01	Storage Compartment Door
045368-01	Rear Door
045370-01	Top Door
045371-01	Left Gun Diaphragm Holder
045371-02	Right Gun Diaphragm Holder
045372-01	Gun Movement Restrictor Panel
045429-01	Plastic Feed Tube
045440-01	Feed Screw Pulley
045441-01	Ball Distributor
045444-01	Feed Screw Motor Bracket
045445-01	Feed Screw Motor Pulley
045491-01	Chain Bar
045492-01	Gun Adjustment Tool
045496-01	Firing Motor Release Tool
045497-01	Plastic Feed Tube Bracket
129002-505	Capacitor, 5µF, 370 VAC
148004-003	5-Inch-Round, 5-Watt 8-Ohm Unshielded Speaker
170001-001	Incandescent Tubular 25W Clear Lamp (for "Hold Your Fire" Light Assembly)
170003-002	24-Inch 20-Watt Fluorescent Light (above Carousels and behind Instruction Panel)
171027-001	Over/Under 25¢/25¢ Coin Door
171086-002	24-Inch Fluorescent Lamp Fixture (above Carousels and behind Instruction Panel)
176037-4008	#10 Button Head Tamperproof Screw
176037-4832	3/8 Button Head Tamperproof Screw
178023-002	3-Inch x 1 1/4-Inch Hard Wheel Swivel Caster
178048-002	4-Inch x 1 1/2-Inch Rigid Wheel Caster
178126-002	#10 Tamperproof Wrench
178126-003	3/8 Tamperproof Wrench
178220-001	Feed Screw Pulley Belt
72-5544	1/4 x 2 3/4-Inch Screw
73-00624	3/32 x 1 1/2-Inch Steel Cotter Pin
78-3201	Leveller
99-11006	Fluorescent Lamp Retaining Clip (above Carousels and behind Instruction Panel)
038091-01	Cash Box
	These items are the technical information supplements to the game:
ST-318	Pot Shot Troubleshooting Label
TM-318	Pot Shot Operators Manual

N O T E S

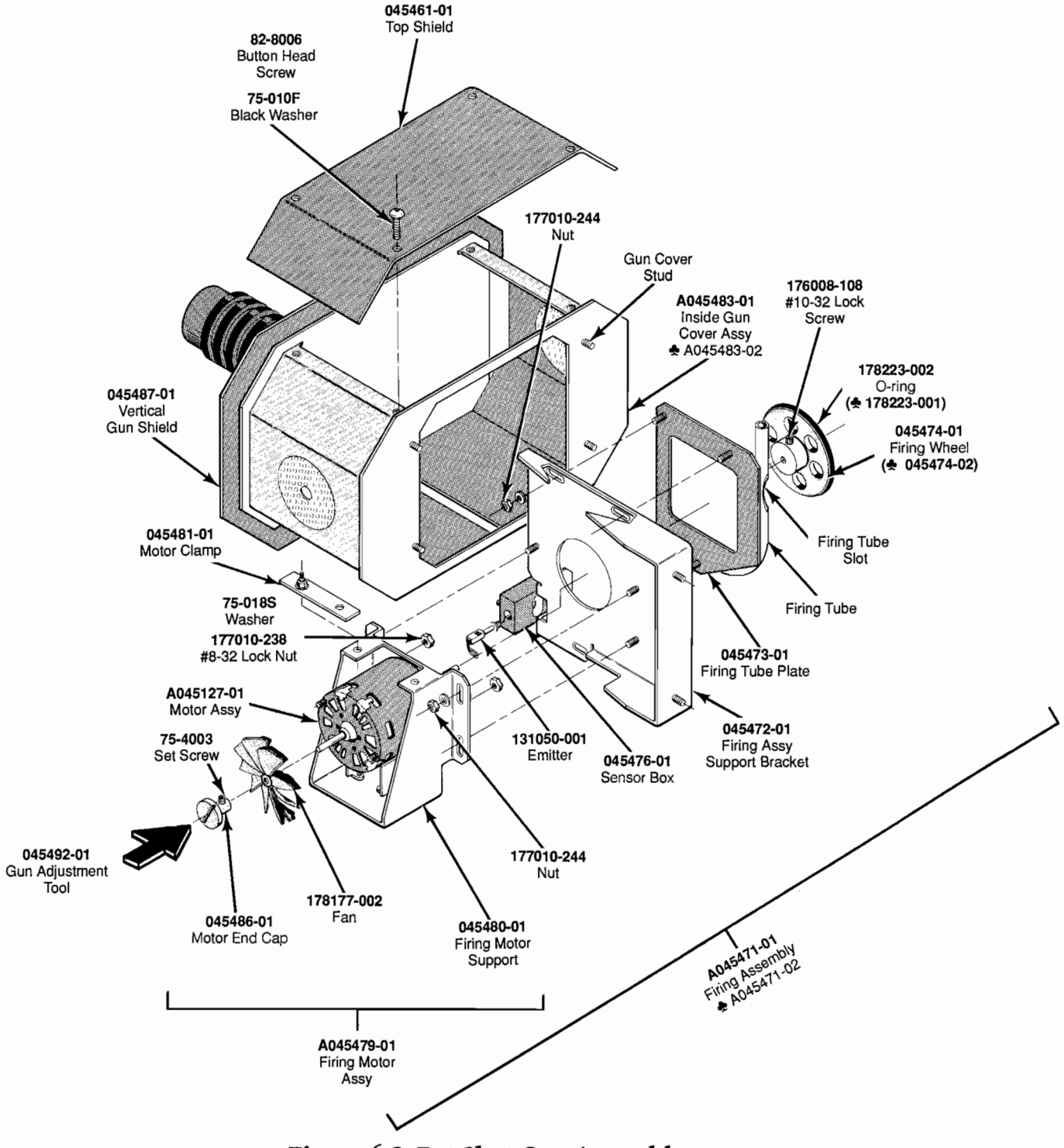


Figure 6-2 Pot Shot Gun Assembly
A045450-01 C

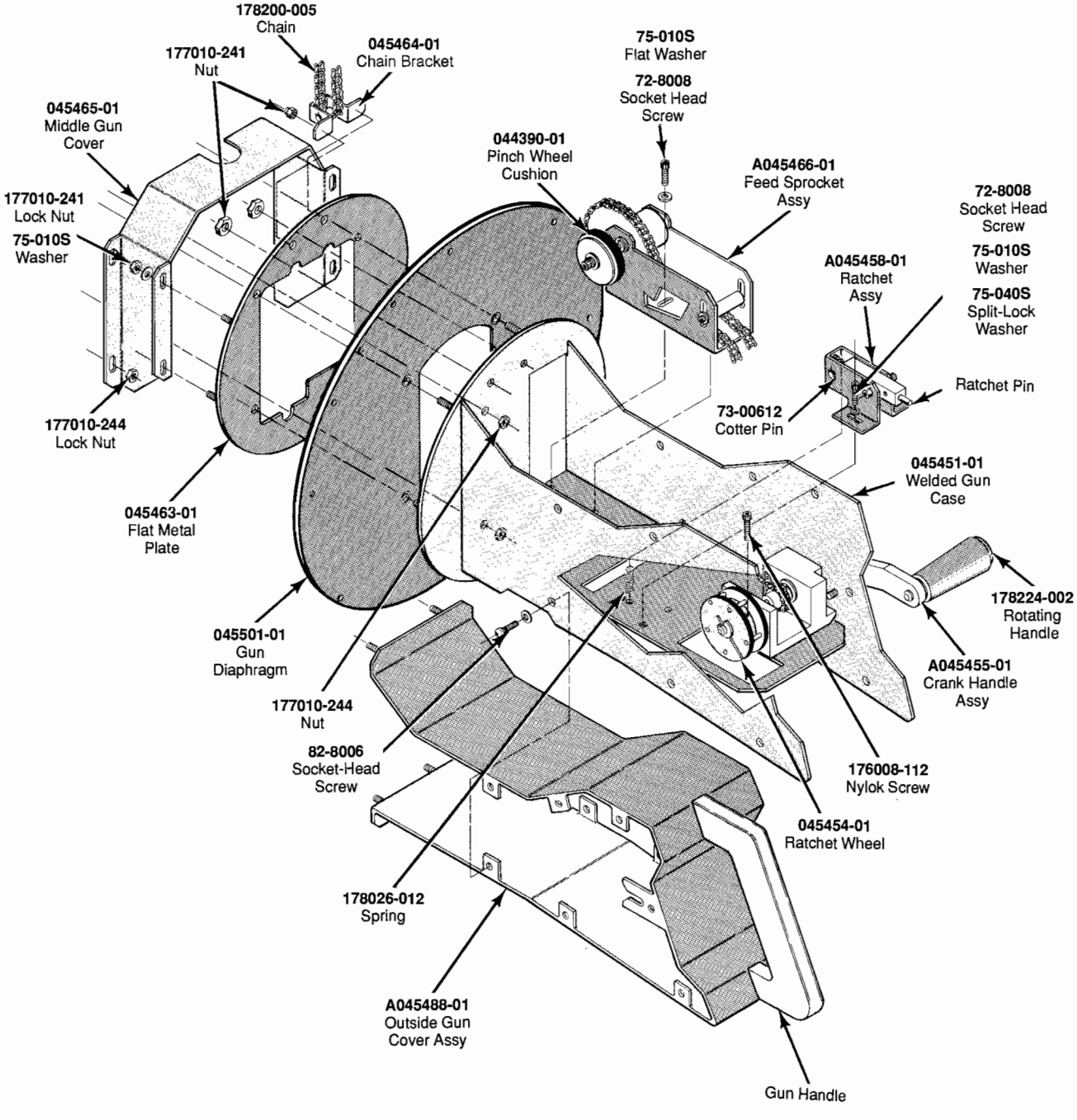


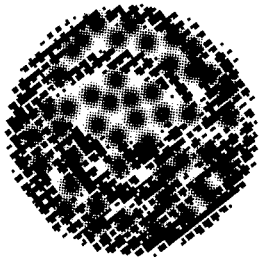
Figure 6-2 Pot Shot Gun Assembly, Continued

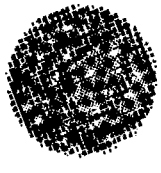
Pot Shot Gun Assembly
Parts List

Part No.	Description
A045455-01	Crank Handle Assembly
178224-002	Rotating Handle on Crank Assembly (sold separately from part no. A045455-01, Crank Handle Assembly)
A045458-01	Ratchet Assembly. Replaceable Parts:
82-8010	#10-32 x 5/8-Inch Socket-Head Screw
178026-012	Spring
A045466-01	Feed Sprocket Assembly. Replaceable Parts:
044390-01	Pinch Wheel Cushion
72-8008	#10-32 x 1/2-Inch Socket Head Screw
75-010S	Flat #10 Washer
75-040S	Split-Lock #10 Washer
A045471-01	Firing Assembly (♣ Ireland-built cabinets use part no. A045471-02). Replaceable Parts:
045472-01	Support Bracket
045473-01	Firing Tube Plate
045474-01	Firing Wheel (♣ Ireland-built cabinets use part no. 045475-01)
045476-01	Sensor Box
045486-01	Slotted Motor End Cap
131050-001	Emitter
133038-001	Sensor
176008-108	#10-32 x 1/2-Inch Socket-Head Polymer Lock Screw
177010-241	#10-32 Polymer Hex-Head Lock Nut
178065-100	Tie Wrap
178177-002	Fan
178223-002	O-Ring (♣ Ireland-built cabinets use part no. 178223-001)
72-8409	#4-40 x 9/16-Inch Socket-Head Screw
75-4003	#10-32 x 3/16-Inch Hex-Head Cup Set Screw
75-914D	#4-40 Hex Head Nut
A045479-01	Firing Motor Assembly. Replaceable Parts:
A045127-01	Motor Assembly
045480-01	Firing Motor Support
045481-01	Motor Clamp
177010-238	#8-32 Polymer Hex Head Lock Nut
177010-241	#10-32 Polymer Hex Head Lock Nut
75-018S	Flat #8 Washer
A045483-01	Inside Gun Cover Assembly (♣ Ireland-built cabinets use part no. A045483-02). Replaceable Parts:
045487-01	Inside Vertical Gun Shield
A045488-01	Outside Gun Cover Assembly
045451-01	Welded Gun Case
045454-01	Ratchet Wheel
045461-01	ABS Top Shield on Inside Gun Cover
045501-01	Gun Diaphragm
045463-01	Flat Metal Plate
045464-01	Chain Bracket
045465-01	Middle Gun Cover

Pot Shot Gun Assembly
Parts List, Continued

Part No.	Description
045492-01	Gun Adjustment Tool
176008-112	#10-32 Nylok Socket-Head Screw
177010-241	#10-32 Lock Nut
177010-244	#1/4-20 Lock Nut
178200-005	Endless Chain
72-8008	#10-32 Socket-Head Screw
73-00612	3/32 x 3/4-Inch Steel Cotter Pin
75-010F	#10 Black Oxide Washer
75-010S	#10 Washer
75-040S	#10 Split-Lock Washer
82-8006	#10-32 Button-Head Screw





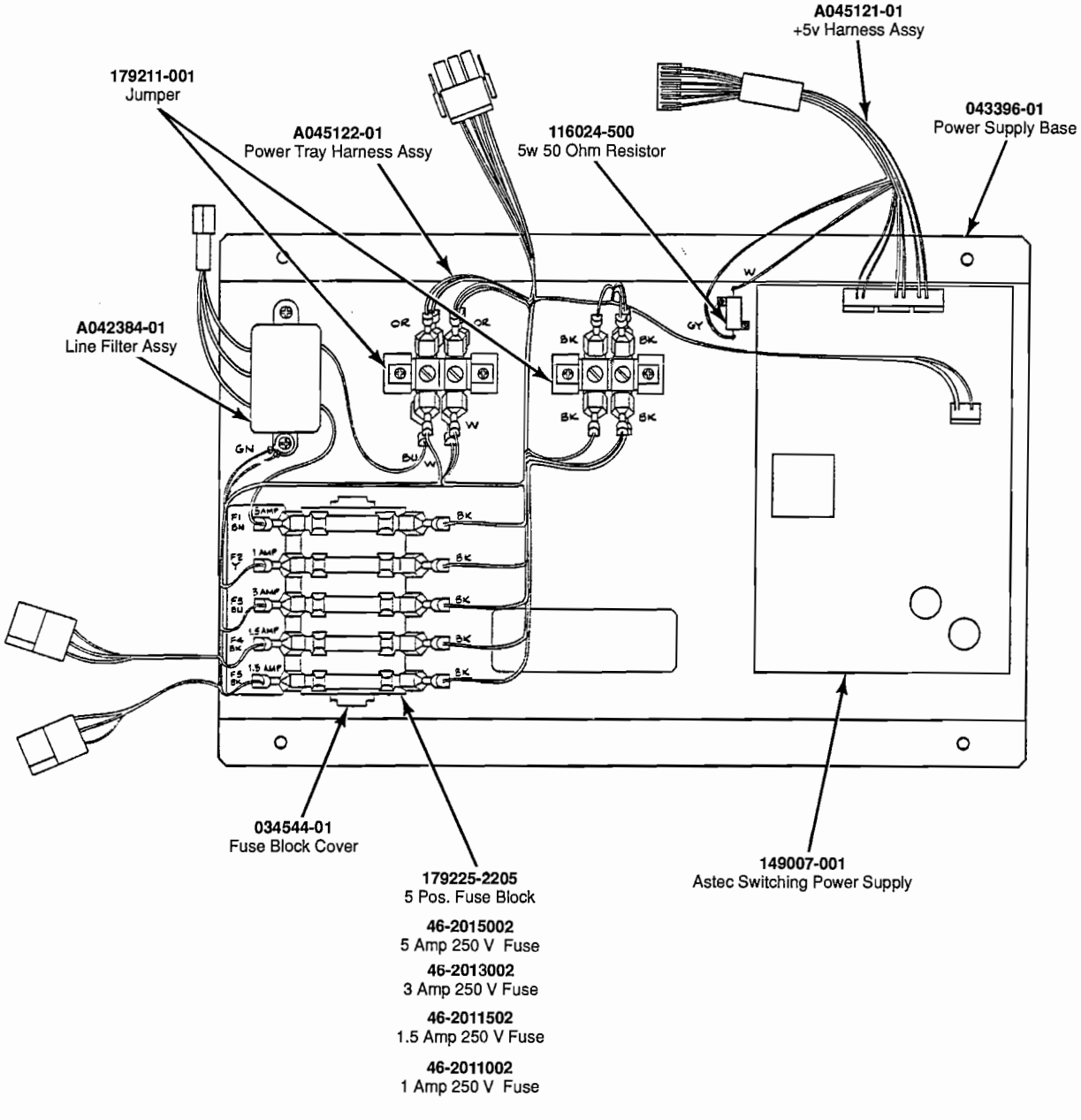


Figure 6-3 Power Supply Assembly
A045120-01 A

Power Supply Assembly Parts List

Part No.	Description
A042384-01	Line Filter Assembly
A045121-01	+5V Harness Assembly
A045122-01	Power Tray Harness Assembly
034544-01	Fuse Block Cover
043396-01	Power Supply Chassis Base
116024-500	5W 50-Ohm Chassis Mount Resistor
149007-001	5V/12V 5-Amp Astec Switching Power Supply Sub-Assembly (see parts list below)
178181-6808	Aluminum Stand-Off
179211-001	Terminal Block Jumper
179225-2205	5 Position Fuse Block
179231-002	2 Position Terminal Block
46-2011002	1 Amp 250 V Slow-Blow Fuse
46-2011502	1.5 Amp 250 V Slow-Blow Fuse
46-2013002	3 Amp 250 V Slow-Blow Fuse
46-2015002	5 Amp 250 V Slow-Blow Fuse

Astec 5-Volt Power Supply Sub-Assembly Model SA40-1304 Parts List

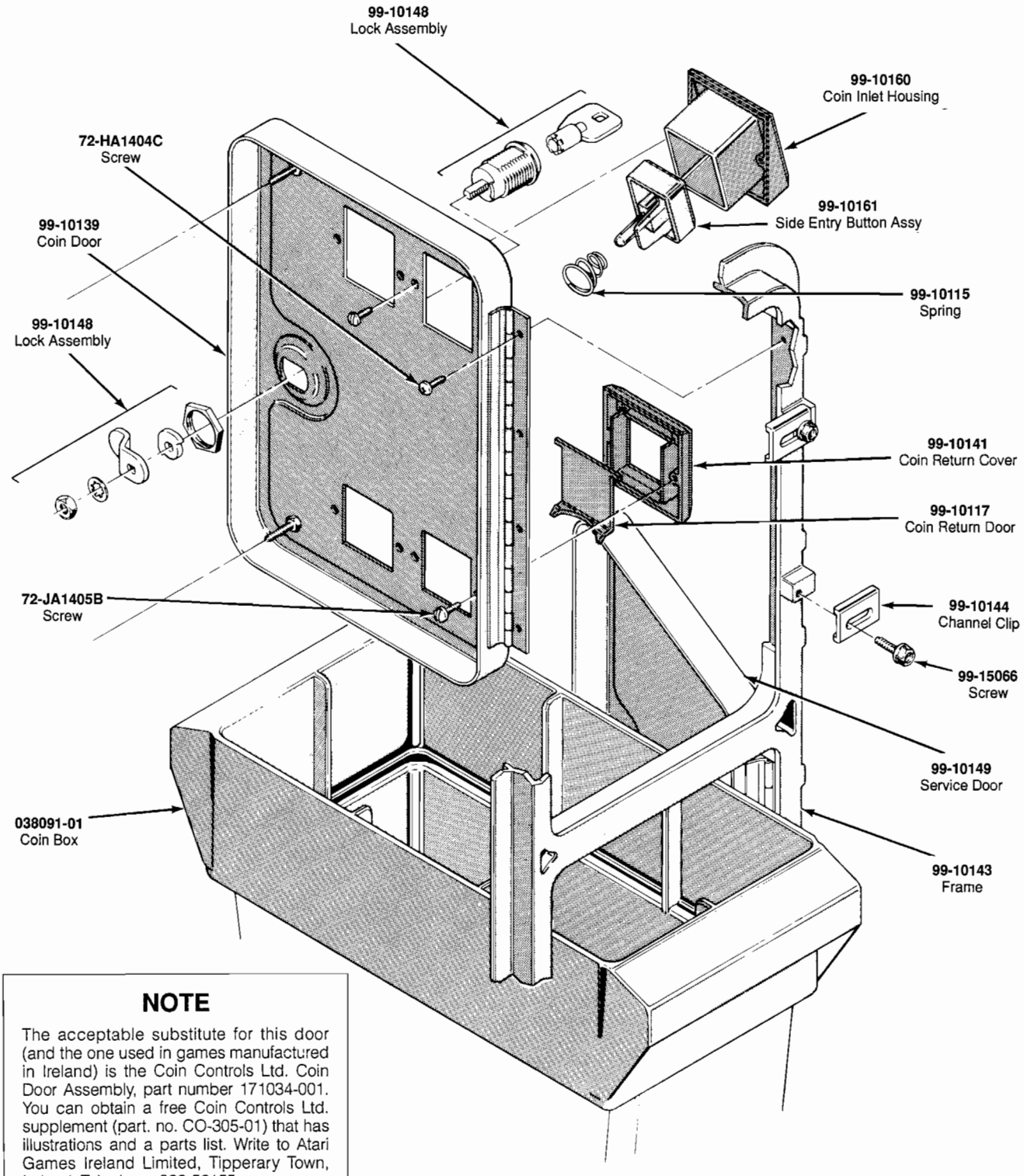
Designator	Description	Part No.
	Capacitors	
C1, C2	Capacitor, Met Poly, .1 µF, ±20%, 250 VAC	99-209076
C3, C4	Capacitor, Poly, 2200 pF, ±20%, 250 VAC	99-209077
C5	Capacitor, Met Poly, 2200 pF, ±20%, 250 V	99-209080
C8	Capacitor, Electrolytic, 220 µF, +100 -±10%, 10 V	99-209072
C9	Capacitor, Ceramic, 1000 pF, ±20%, 3 KV, Z5P	99-209068
C10	Capacitor, Met Poly, .022 µF, ±20%, 250 VAC	99-209079
C11	Capacitor, Poly, .22 µF, ±10%, 100 V	99-209014
C12	Capacitor, Electrolytic, 2200 µF, ±20%, 16 V, Sxa	99-209073
C13	Capacitor, Poly, .01 µF, ±5%, 50 V	99-209075
C14	Capacitor, Electrolytic, 100 µF, ±20%, 25 V, Sxa	99-209006
C15	Capacitor, Electrolytic, 1000 µF, ±20%, 16 V, Sxa	99-209008
C16	Capacitor, Poly, .022 µF, ±20%, 50 V	99-209078
C17	Capacitor, Electrolytic, 1000 µF, ±20%, 10 V, Sm	99-209071
C18	Capacitor, Ceramic, 330 pF, ±20%, 100 V, Sl	99-209069
C19	Capacitor, Electrolytic, 470 µF, ±20%, 16 V, Sm	99-209074
C20	Capacitor, Electrolytic, 100 µF, ±20%, 16 V, Sm	99-209070
C21	Capacitor, Poly, .22 µF, ±10%, 100 V	99-209014
C23	Capacitor, Ceramic, .01 µF, +80–20%, 100 V, Z5U	99-209003
	Diodes	
D1	Diode, RGP10A	99-209083
D2	Diode, RGP10J	99-209033
D3	Diode, GP10A	99-209084
D4, D5	Diode, RGP10J	99-209033

Astec 5-Volt Power Supply Sub-Assembly Model SA40-1304 Parts List, Continued

Designator	Description	Part No.
D6, D7	Diode, 1N4606	99-209030
D8	Assembly, Regulator/SCR/Diode/Heat Sink	99-209105
D8	Diode, 12CTQ035	99-209107
D9	Diode, RGP10B	99-209034
D10	Assembly, Diode/Heat Sink	99-209103
D11	Diode, 1N4606	99-209030
D12, D13	Diode, 1N4001	99-209035
DB1	Diode, Bridge, KBP08	99-209085
	Inductors	
L3	Inductor, 2.2 µH	99-209029
L4	Inductor, 1.5 mH	99-209028
L5	Assembly, Inductor Coil	99-209059
L6	Inductor, 4.4 µH	99-209102
	Transistors	
Q1	Transistor, NPN, 2SC2120	99-209082
Q2	Assembly, Transistor/Heat Sink	99-209104
Q3	Transistor, PNP, 2SB561	99-209022
	Resistors	
R1	Resistor, Carbon Film, 470K Ohm, ±5%, 1/2 W	99-209089
R2	Resistor, Wirewound, 33 Ohm, ±5%, 3 W	99-209097
R3, R4	Resistor, Metal Oxide Film, 100K Ohm, ±5%, 1 W	99-209054
R5	Resistor, Carbon Film, 1K Ohm, ±5%, 1/4 W	99-209086
R6	Resistor, Metal Oxide Film, 120 Ohm, ±5%, 2 W	99-209095
R7	Resistor, Metal Film, 1 Ohm, ±5%, 1 W	99-209025
R8	Resistor, Carbon Film, 27 Ohm, ±5%, 1/4 W	99-209040
R9	Resistor, Carbon Film, 68 Ohm, ±5%, 1/4 W	99-209090
R10	Resistor, Carbon Film, 10 Ohm, ±5%, 1/4 W	99-209037
R11	Resistor, Carbon Film, 15 Ohm, ±5%, 1/4 W	99-209087
R12	Resistor, Metal Film, .75 Ohm, ±5%, 1 W	99-209091
R13	Resistor, Carbon Film, 5.6 Ohm, ±5%, 1/4 W	99-209046
R14	Resistor, Carbon Film, 47 Ohm, ±5%, 1/4 W	99-209043
R15, R16	Resistor, Carbon Film, 270 Ohm, ±5%, 1/2 W	99-209041
R17	Resistor, Carbon Film, 8.2 Ohm, ±5%, 1/4 W	99-209049
R18	Resistor, Carbon Film, 330 Ohm, ±5%, 1/4 W	99-209042
R19	Resistor, Carbon Film, 56 Ohm, ±5%, 1/4 W	99-209045
R20	Resistor, Carbon Film, 68 Ohm, ±5%, 1/4 W	99-209090
R21	Resistor, Carbon Film, 330 Ohm, ±5%, 1/4 W	99-209042
R22	Resistor, Carbon Film, 470 Ohm, ±5%, 1/4 W	99-209044
R23	Resistor, Metal Film, 8.2K Ohm, ±1%, 1/4 W	99-209094
R24	Resistor, Metal Film, 2.7K Ohm, ±1%, 1/4 W	99-209093
R25	Resistor, Metal Film, 18K Ohm, ±1%, 1/4 W	99-209092
R27	Resistor, Carbon Film, 22 Ohm, ±5%, 1/4 W	99-209088
R28	Resistor, Carbon Film, 10 Ohm, ±5%, 1/4 W	99-209037
R29	Resistor, Metal Oxide Film, 120 Ohm, ±5%, 2 W	99-209095
R30	Resistor, Wirewound, 15 Ohm, ±5%, 5 W	99-209096
R32	Resistor, Carbon Film, 10 Ohm, ±5%, 1/4 W	99-209037

Astec 5-Volt Power Supply Sub-Assembly Model SA40-1304 Parts List, Continued

Designator	Description	Part No.
	Transformers	
T1	Com Mode Transformer Assembly	99-209101
T2	Transformer, Power, AC8154	99-209100
T3	Control Transformer Assembly (J/V)	99-209058
	Miscellaneous	
F1	Fuse, 2 A, 250 V	99-209081
IC1	Regulator, 431	99-209023
IC2	Assembly, Regulator/SCR/Diode/Heat Sink	99-209105
IC2	Regulator, UA7912	99-209106
SCR1	Assembly, Regulator/SCR/Diode/Heat Sink	99-209105
SCR1	Thyristor, SCR, 2N6395	99-209108
TM1, TM2	Thermistor, 8 Ohm, ±20%	99-209099
VR1	Potentiometer, Trimming, 1K Ohm	99-209098
Z1	Diode, Zener, 5.6 V, ±5%, 40 mA	99-209031



NOTE

The acceptable substitute for this door (and the one used in games manufactured in Ireland) is the Coin Controls Ltd. Coin Door Assembly, part number 171034-001. You can obtain a free Coin Controls Ltd. supplement (part. no. CO-305-01) that has illustrations and a parts list. Write to Atari Games Ireland Limited, Tipperary Town, Ireland. Telephone 062-52155.

Figure 6-4 Coin Acceptors, Inc. Coin Door Assembly 171027-001 A

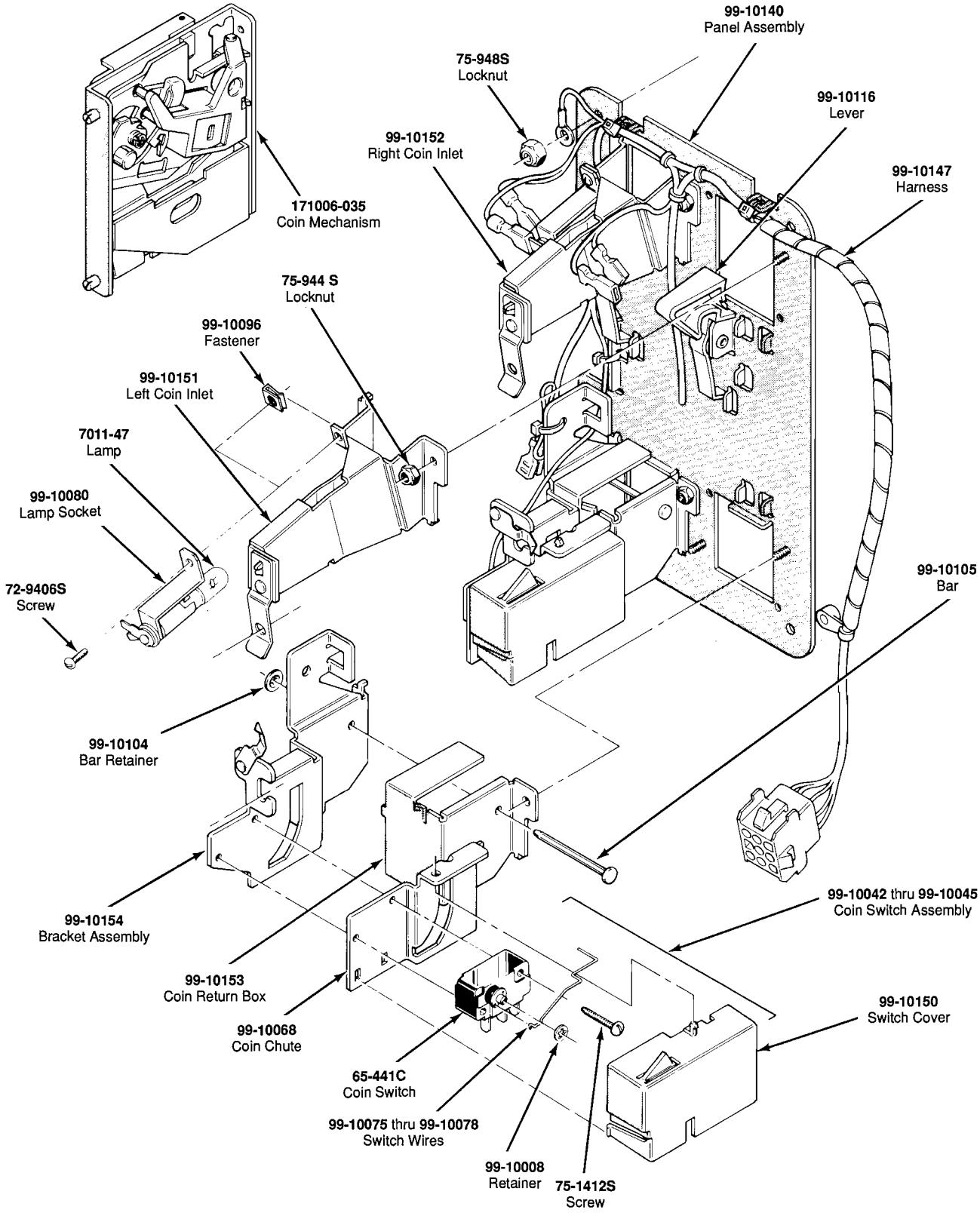


Figure 6-4 Coin Acceptors, Inc. Coin Door Assembly 171027-001 A

Coin Acceptors, Inc. Coin Door Assembly
Parts List

Part No.	Description
65-441C	Coin Switch
70-11-47	Miniature Bayonet Lamp
72-9406S	#4-40 x 3/8-Inch Truss-Head Screw
72-HA1404C	#4-40 x 1/4-Inch Pan-Head Screw
72-JA1405B	#4-40 x .31-Inch Pan-Head Screw
75-1412S	#4-40 x 3/4-Inch Pan-Head Screw
75-994S	#4-40 Locknut
99-10008	Retainer
99-10042	Coin Switch Assembly for Belgian 5 Fr and U.S. 25¢
99-10043	Coin Switch Assembly for German 1 DM, Japanese 100 Yen, Swiss 1 Fr
99-10044	Coin Switch Assembly for German 2 DM, Italian 100 L, U.S. $1.00
99-10045	Coin Switch Assembly for Australian $.20, German 5 DM, British 10 P
99-10068	Coin Return Chute
99-10075	Switch Wire (included in coin switch assembly 99-10043)
99-10076	Switch Wire (included in coin switch assembly 99-10042)
99-10077	Switch Wire (included in coin switch assembly 99-10044)
99-10078	Switch Wire (included in coin switch assembly 99-10045)
99-10080	Lamp Socket
99-10081	Key Holder
99-10096	Fastener
99-10104	Bar Retainer
99-10105	Bar
99-10115	Spring
99-10116	Plastic Coin Return Lever
99-10117	Steel Coin Return Door
99-10139	Coin Door
99-10140	Coin Door Inner-Panel Assembly
99-10141	Die-Cast Coin Return Cover
99-10143	Coin Door Frame
99-10144	Channel Clip
99-10147	Harness
99-10148	Lock Assembly
99-10149	Service Door
99-10150	Switch Cover
99-10151	Left Coin Inlet
99-10152	Right Coin Inlet
99-10153	Coin Return Box
99-10154	Bracket Assembly
99-10160	1-Inch Wide Die-Cast Coin Inlet Housing
99-10161	25¢ Amber Side-Entry Coin Button Assembly
99-15066	Screw for Clamp
171006-035	Metal Coin Mechanism for U.S. 25¢

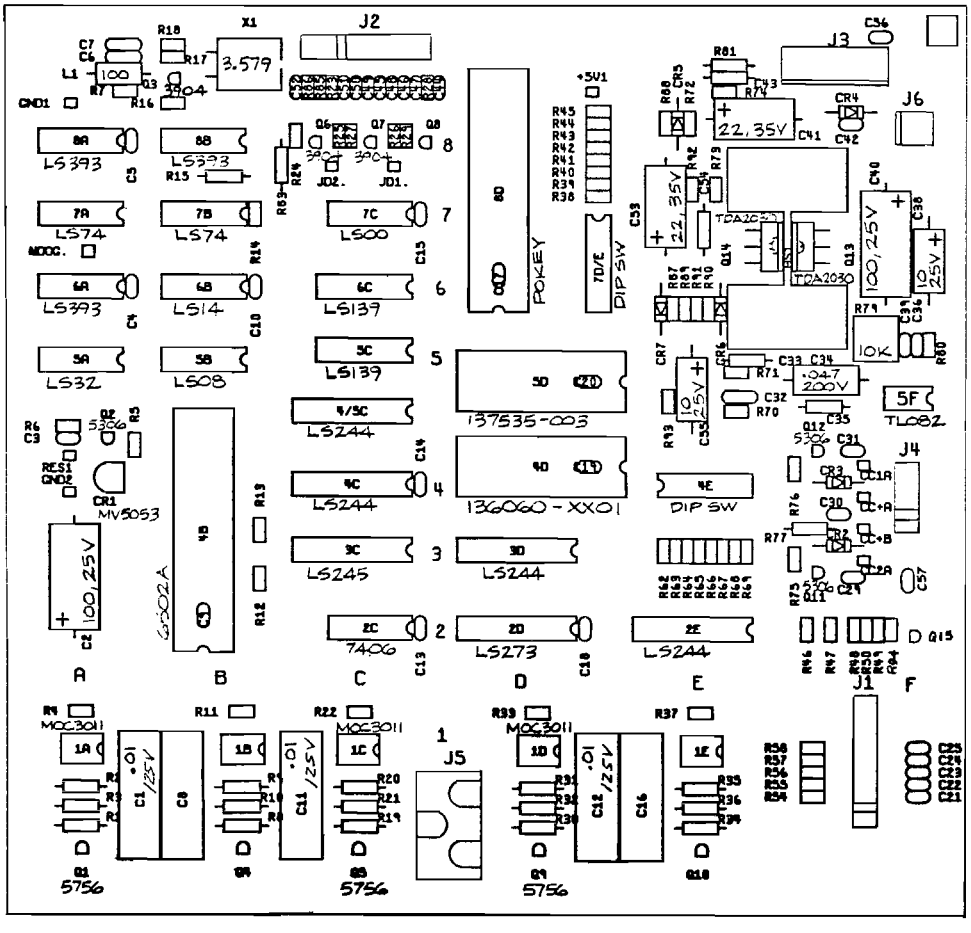


Figure 6-5 Pot Shot Game PCB Assembly
A045052-01 B

Pot Shot Game PCB Assembly
Part List

Designation	Description	Part No.
	Integrated Circuits	
1A, 1C, 1D	Integrated Circuit, MOC3011	37-M0C3011
2C	Integrated Circuit, 7406	37-7406
2D	Integrated Circuit, 74LS273	37-74LS273
2E	Integrated Circuit, 74LS244	37-74LS244
3C	Integrated Circuit, 74LS245	37-74LS245
3D, 4/5C	Integrated Circuit, 74LS244	37-74LS244
4B	Integrated Circuit, 6502 A	90-6013
4C	Integrated Circuit, 74LS244	37-74LS244
4D	Integrated Circuit, 27256, 300 nsec	136060-1101
5A	Integrated Circuit, 74LS32	37-74LS32
5B	Integrated Circuit, 74LS08	37-74LS08
5C	Integrated Circuit, 74LS139	37-74LS139
5F	Integrated Circuit, TL082CP	37-TL082CP
6A	Integrated Circuit, 74LS393	37-74LS393
6B	Integrated Circuit, 74LS14	37-74LS14
6C	Integrated Circuit, 74LS139	37-74LS139
7A, 7B	Integrated Circuit, 74LS74	37-74LS74
7C	Integrated Circuit, 74LS00	37-74LS00
8A, 8B	Integrated Circuit, 74LS393	37-74LS393
8D	Integrated Circuit, POKEY	137430-001
	Capacitors	
C1	Capacitor, Ceramic Disc, .01 µF, 125 VRMS	120010-10
C2	Capacitor, 100 µF, 25 V, Electrolytic	24-250107
C3-C5	Capacitor, .1 µF, 50 V, Ceramic	122002-104
C6	Capacitor, 39 pF, 100 V, Ceramic	122016-390
C7	Capacitor, 100 pF, 100 V, Ceramic	122016-101
C9, C10	Capacitor, .1 µF, 50 V, Ceramic	122002-104
C11, C12	Capacitor, Ceramic Disc, .01 µF, 125 VRMS	120010-103
C13-C15, C17-C25	Capacitor, .1 µF, 50 V, Ceramic	122002-104
C29-C31	Capacitor, .1 µF, 50 V, Ceramic	122002-104
C32	Capacitor, .001 µF, 50 V, Ceramic	122002-102
C33	Capacitor, .22 µF, 50 V, +80% -20%	122002-224
C34	Capacitor, .047 µF, 200 V, Polycarbonate	122010-473
C35	Capacitor, .22 µF, 50 V, +80% –20%	122002-224
C36	Capacitor, .1 µF, 50 V, Ceramic	122002-104
C38	Capacitor, 10 µF, 25 V, Electrolytic	24-250106
C39	Capacitor, .1 µF, 50 V, Ceramic	122002-104
C40	Capacitor, 100 µF, 25 V, Electrolytic	24-250107
C41	Capacitor, 22 µF, 35 V, Electrolytic	24-350226
C42	Capacitor, .1 µF, 50 V, Ceramic	122002-104
C43	Capacitor, .22 µF, 50 V, +80% –20%	122002-224
C44-C47	Capacitor, .1 µF, 50 V, Ceramic	122002-104
C48, C49	Capacitor, .001 µF, 50 V, Ceramic	122002-102
C50-C52	Capacitor, .1 µF, 50 V, Ceramic	122002-104
C53	Capacitor, 22 µF, 35 V, Electrolytic	24-350226

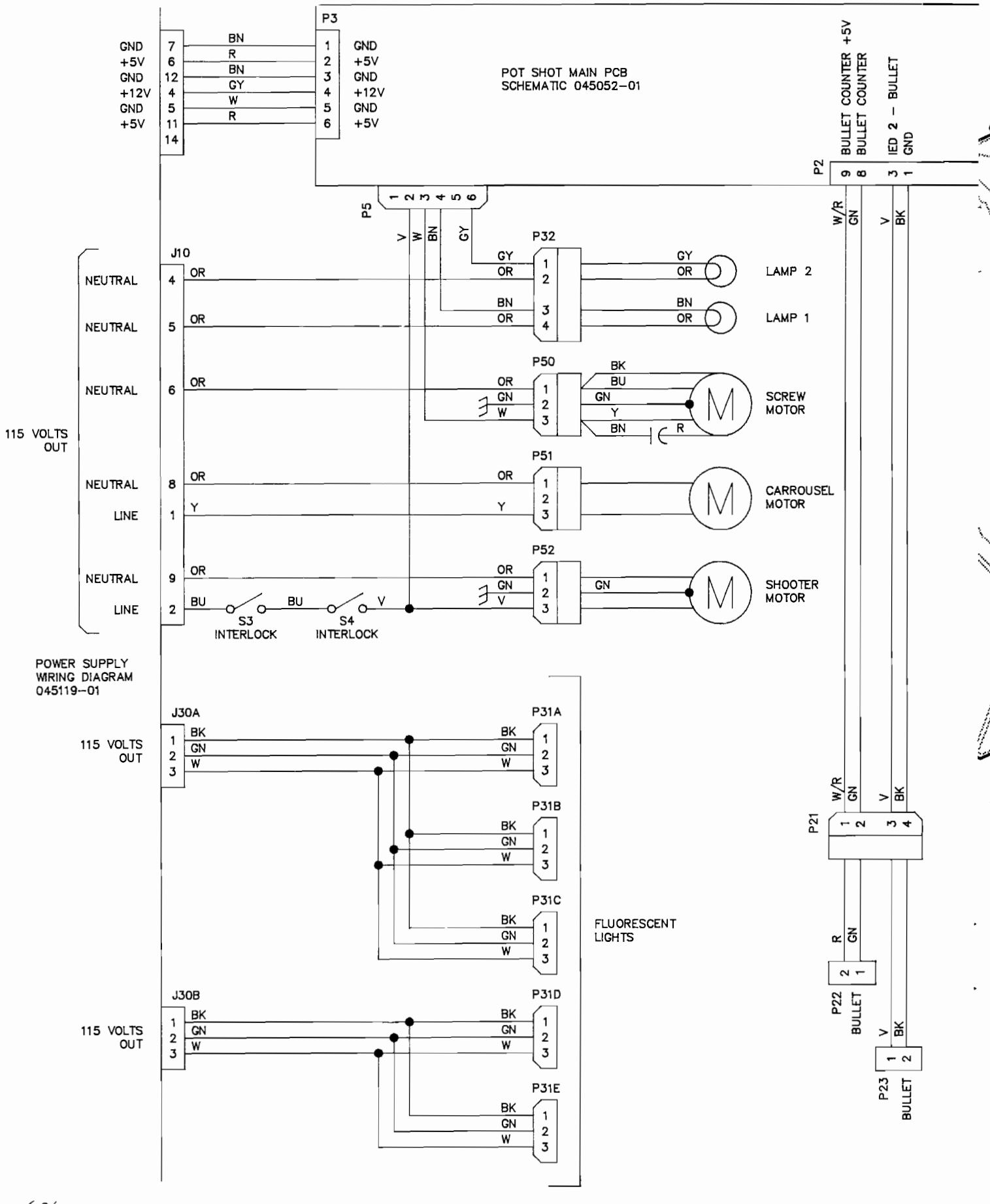
Pot Shot Game PCB Assembly
Part List, Continued

Designation	Description	Part No.
C54	Capacitor, .22 µF, 50 V, +80% –20%	122002-224
C55	Capacitor, 10 µF, 25 V, Electrolytic	24-250106
C56, C57	Capacitor, .1 µF, 50 V, Ceramic	122002-104
	Diodes	
CR1	Diode, MV5053, Light-Emitting	38-MV5053
CR2-CR7	Diode, 1N4001	31-1N4001
	Inductor	
L1	Inductor, 100 µH	41-3003
	Transistors	
Q1	Triac, 2N5756, 2.5 A RMS, 400 V	133035-003
Q2	Transistor, 2N5306	133033-001
Q3	Transistor, 2N3904	34-2N3904
Q5	Triac, 2N5756, 2.5 A RMS, 400 V	133035-003
Q6, Q7	Transistor, 2N3904	34-2N3904
Q9	Triac, 2N5756, 2.5 A RMS, 400 V	133035-003
Q11, Q12	Transistor, 2N5306	133033-001
Q13, Q14	Integrated Circuit, TDA2030	137301-001
Q15	Transistor, 2N5306	133033-001
	Resistors	
R1	Resistor, 10 K Ohm, ±5%, 1/4 W	110000-103
R2	Resistor, 1 K Ohm, ±5%, 1/4 W	110000-102
R3	Resistor, 100 Ohm, ±5%, 1/4 W	110000-101
R4	Resistor, 220 Ohm, ±5%, 1/8 W	110027-221
R5	Resistor, 240 Ohm, ±5%, 1/8 W	110027-241
R6	Resistor, 100 K Ohm, ±5%, 1/8 W	110027-104
R7, R11	Resistor, 220 Ohm, ±5%, 1/8 W	110027-221
R12, R13	Resistor, 10 K Ohm, ±5%, 1/8 W	110027-103
R14	Resistor, 1 K Ohm, ±5%, 1/8 W	110027-102
R16	Resistor, 470 Ohm, ±5%, 1/8 W	110027-471
R17, R18	Resistor, 150 K Ohm, ±5%, 1/8 W	110027-154
R19	Resistor, 10 K Ohm, ±5%, 1/4 W	110000-103
R20	Resistor, 1 K Ohm, ±5%, 1/4 W	110000-102
R21	Resistor, 100 Ohm, ±5%, 1/4 W	110000-101
R22	Resistor, 220 Ohm, ±5%, 1/8 W	110027-221
R23	Resistor, 150 Ohm, ±5%, 1/8 W	110027-151
R24	Resistor, 4.7 K Ohm, ±5%, 1/8 W	110027-472
R25	Resistor, 470 Ohm, ±5%, 1/8 W	110027-471
R26	Resistor, 4.7 K Ohm, ±5%, 1/8 W	110027-472
R27, R29	Resistor, 470 Ohm, ±5%, 1/8 W	110027-471
R30	Resistor, 10 K Ohm, ±5%, 1/4 W	110000-103
R31	Resistor, 1 K Ohm, ±5%, 1/4 W	110000-102
R32	Resistor, 100 Ohm, ±5%, 1/4 W	110000-101
R33, R37	Resistor, 220 Ohm, ±5%, 1/8 W	110027-221
R38-R50	Resistor, 1 K Ohm, ±5%, 1/8 W	110027-102
R54-R58	Resistor, 470 Ohm, ±5%, 1/8 W	110027-471
R62-R69	Resistor, 1 K Ohm, ±5%, 1/8 W	110027-102
R70	Resistor, 470 Ohm, ±5%, 1/8 W	110027-471

Pot Shot Game PCB Assembly
Part List, Continued

Designation	Description	Part No.
R71	Resistor, 22 K Ohm, ±5%, 1/8 W	110027-223
R72	Resistor, 3.3 K Ohm, ±5%, 1/8 W	110027-332
R73	Resistor, 1 K Ohm, ±5%, 1/8 W	110027-102
R74	Resistor, 1 Ohm, ±5%, 1/8 W	110027-010
R75, R76	Resistor, 1 K Ohm, ±5%, 1/8 W	110027-102
R77	Resistor, 0 Ohm, ±5%, 1/4 W	110005-001
R79	Potentiometer, 10 K Ohm, Horizontal	119002-103
R80	Resistor, 10 K Ohm, ±5%, 1/8 W	110027-103
R85, R86	Resistor, 150 Ohm, ±5%, 1/8 W	110027-151
R87, R88	Resistor, 10 K Ohm, ±5%, 1/8 W	110027-103
R89	Resistor, 1 Ohm, ±5%, 1/8 W	110027-010
R90	Resistor, 1 K Ohm, ±5%, 1/8 W	110027-102
R91	Resistor, 22 K Ohm, ±5%, 1/8 W	110027-223
R92-R94	Resistor, 1 K Ohm, ±5%, 1/8 W	110027-102
	Connectors	
J1, J2	Connector, 11 Circuit, Header, .100 Ctr	179118-011
J3	Connector, 6 Circuit, Header, .156 Ctr	179213-006
J4	Connector, 6 Circuit, Header, .100 Ctr	179118-006
J5	Connector, 6 Circuit, Header, .250 Ctr	179069-006
J6	Connector, 2 Circuit, Header, .156 Ctr	179213-002
	Sockets	
4B	Socket, 40-Pin	79-42C40
4D, 5D	Socket, 28-Pin	79-42C28
8D	Socket, 40-Pin	79-42C40
	Miscellaneous	
X1	Crystal, 3.579 MHz	144007-001
HS1	Heat Sink, TDA2030	178190-032
7D/E	Switch, 8-Position DIP	160031-008
4E	Switch, 8-Position DIP	160031-008
	Test Point	179051-001

N O T E S


POT SHOT MAIN PCB
SCHEMATIC 045052-01
P3
GND
+5V
GND
+12V
GND
+5V
BN
R
BN
GY
W
R
GND
+5V
GND
+12V
GND
+5V
P2
BULLET COUNTER +5V
BULLET COUNTER
IED 2 – BULLET
GND
P5
V
W
BN
GY
J10
NEUTRAL
NEUTRAL
NEUTRAL
NEUTRAL
LINE
NEUTRAL
LINE
115 VOLTS OUT
OR
Y
BU
S3 INTERLOCK
S4 INTERLOCK
P32
LAMP 2
LAMP 1
P50
SCREW MOTOR
BK
BU
GN
Y
BN
R
P51
CARROUSEL MOTOR
P52
SHOOTER MOTOR
POWER SUPPLY WIRING DIAGRAM 045119-01
J30A
J30B
115 VOLTS OUT
BK
GN
W
P31A
P31B
P31C
P31D
P31E
FLUORESCENT LIGHTS
P21
P22 BULLET
P23 BULLET
W/R
GN
V
BK
R

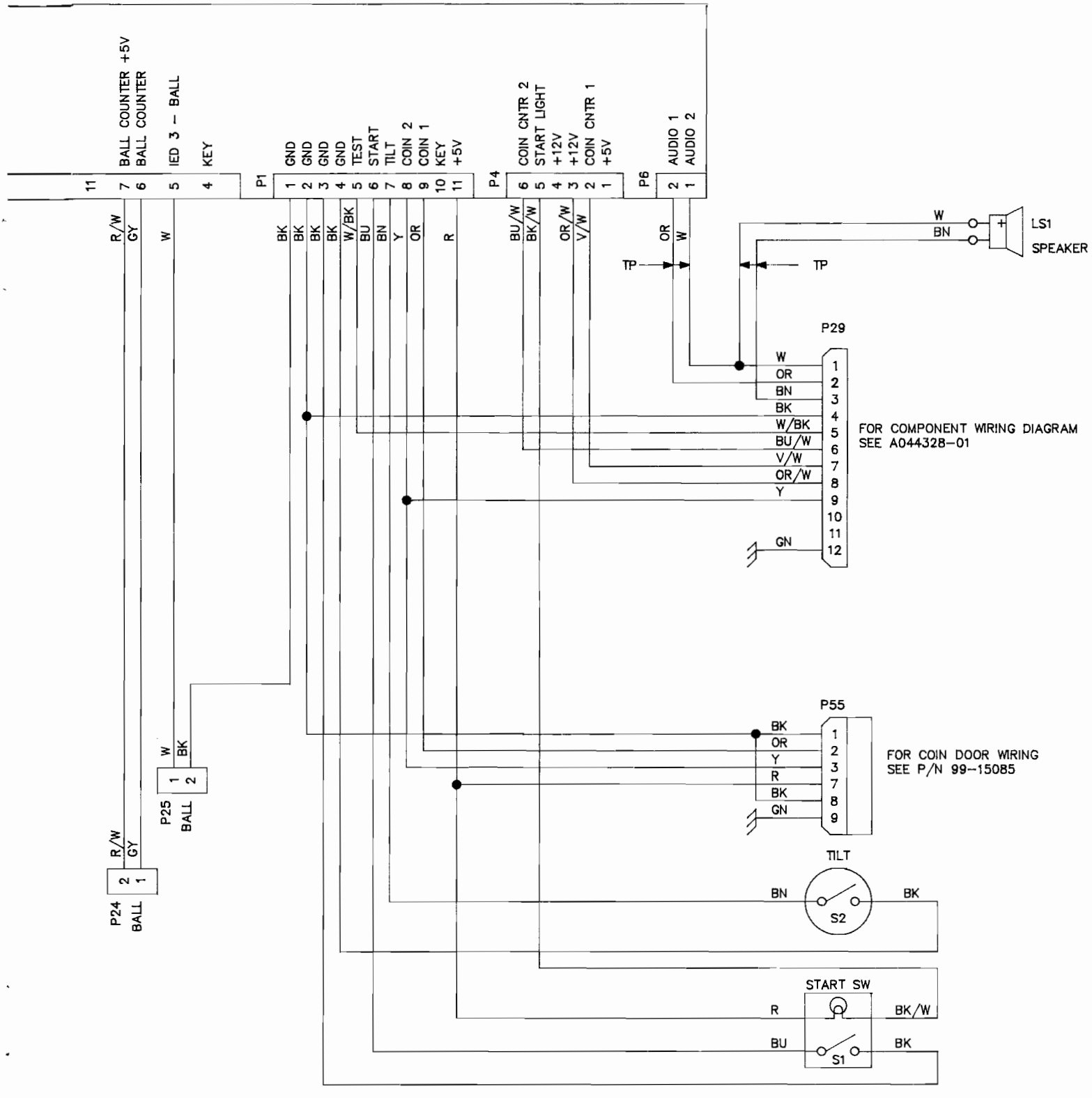
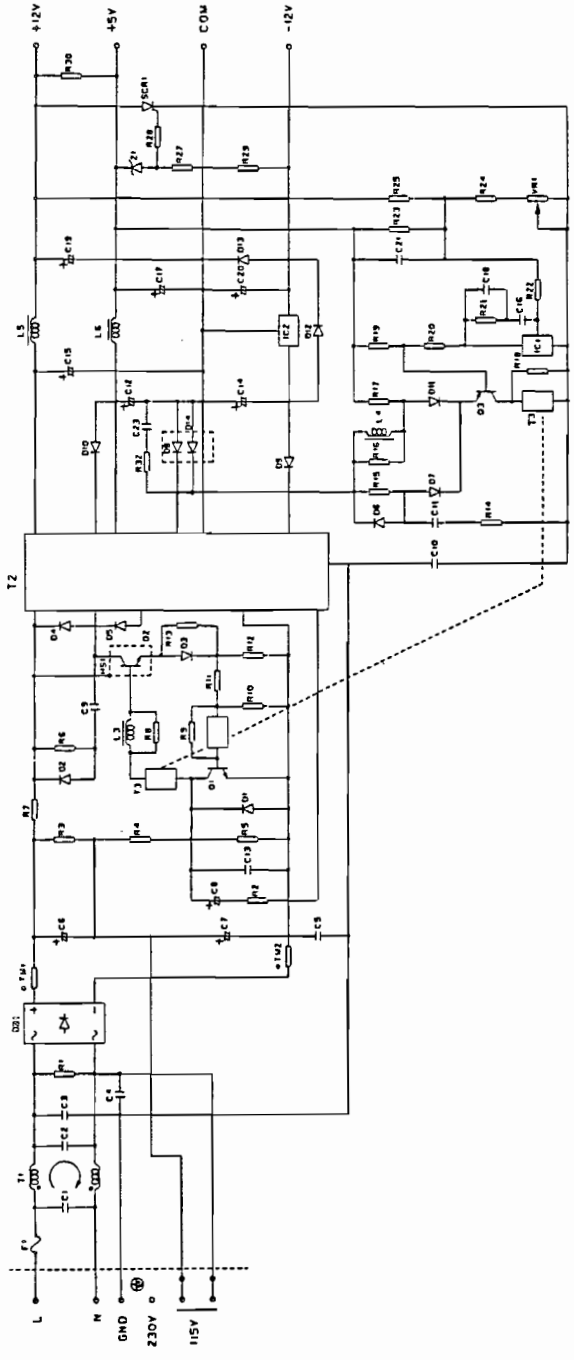


Figure 6-6 Game Wiring Diagram



Astec 5V 5-Amp/12V 1-Amp Power Supply Wiring Diagram

Figure 6-7 Power Supply and Coin Door Wiring Diagrams

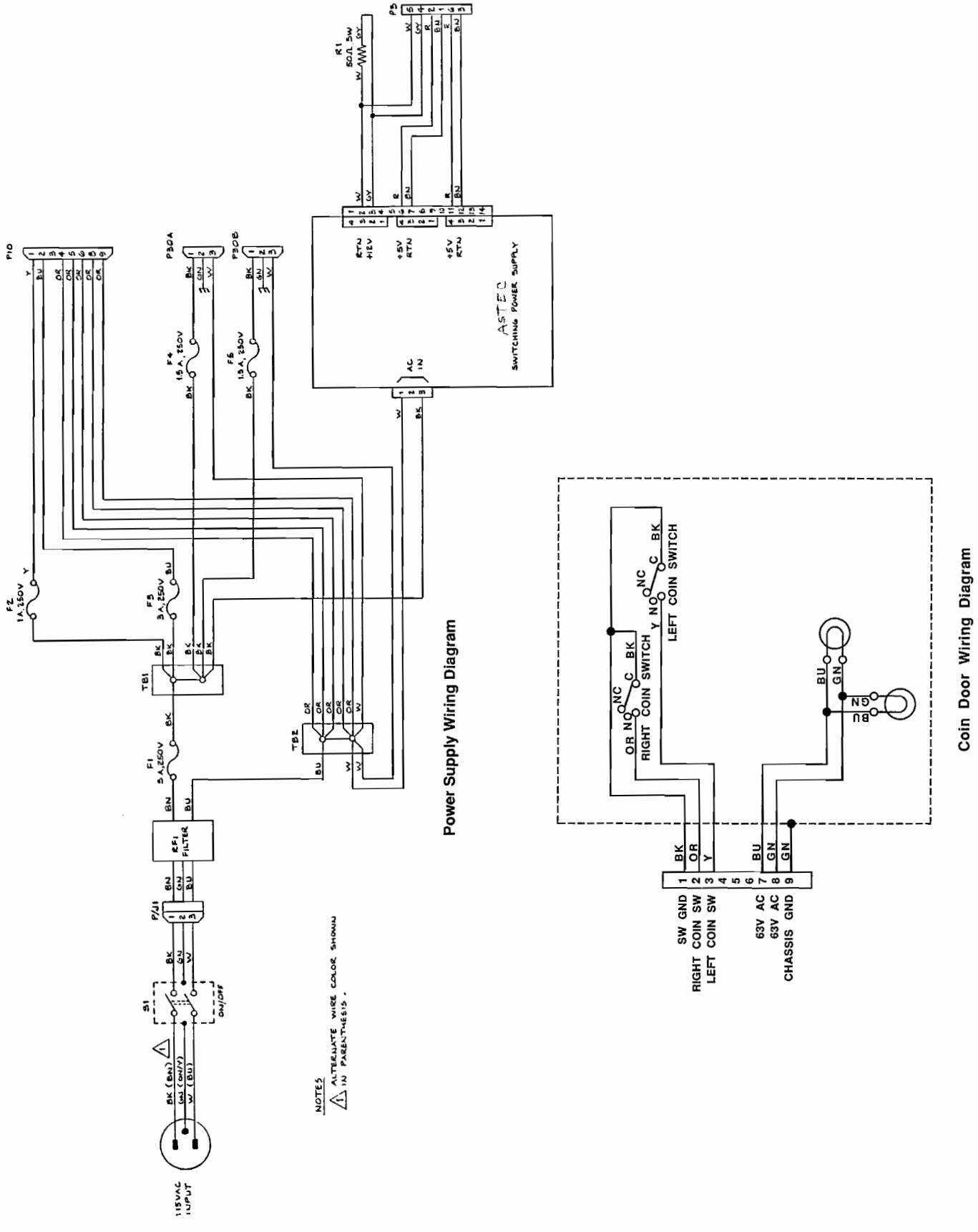
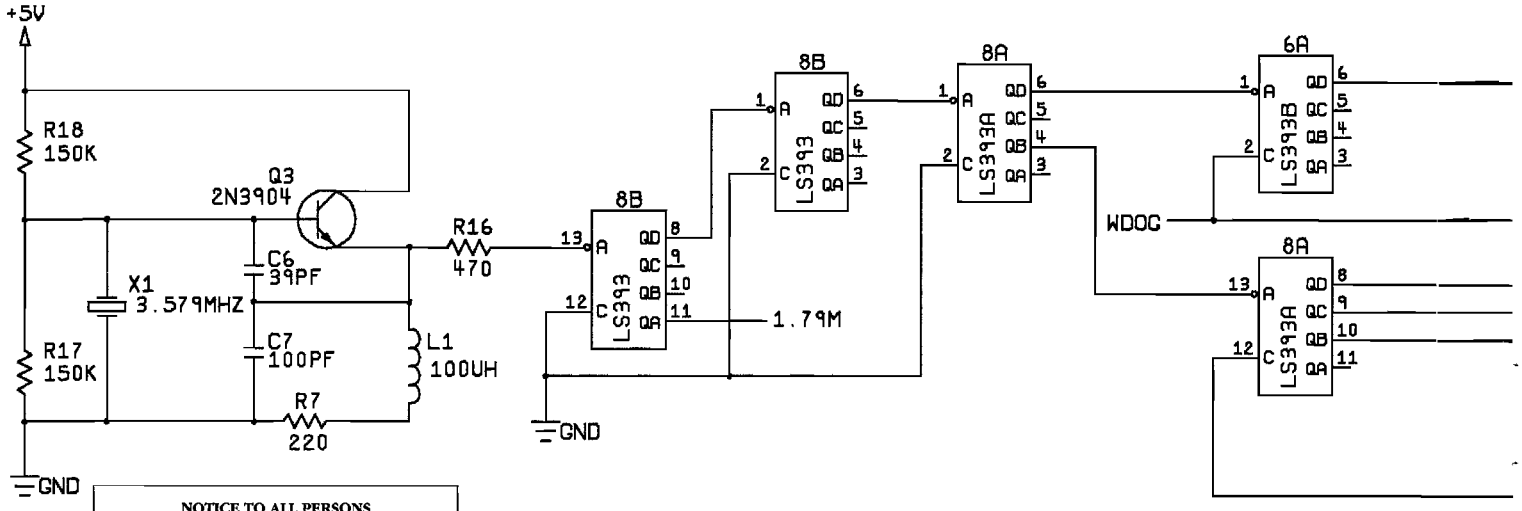
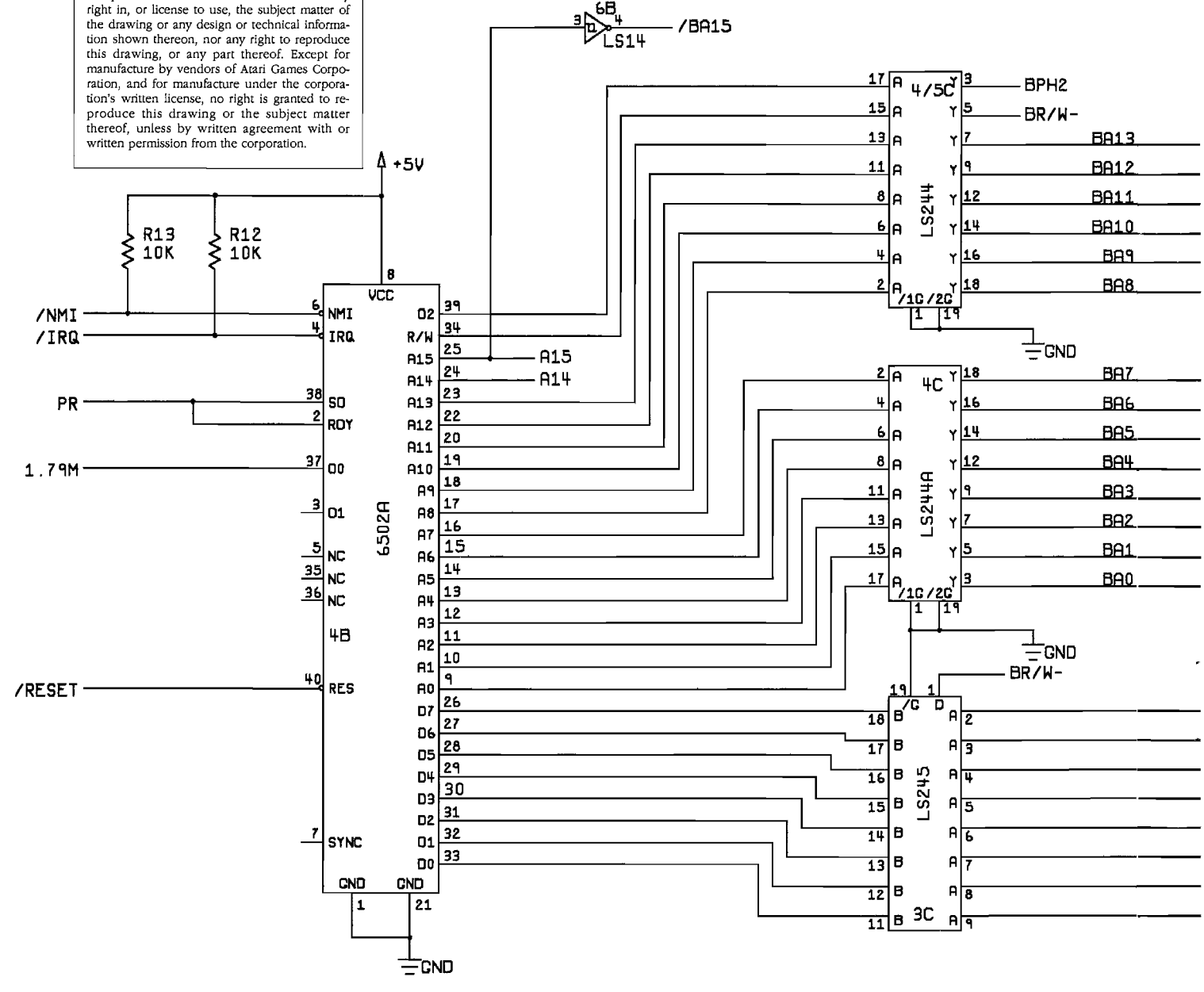


Figure 6-7 Power Supply and Coin Door Wiring Diagrams, Continued





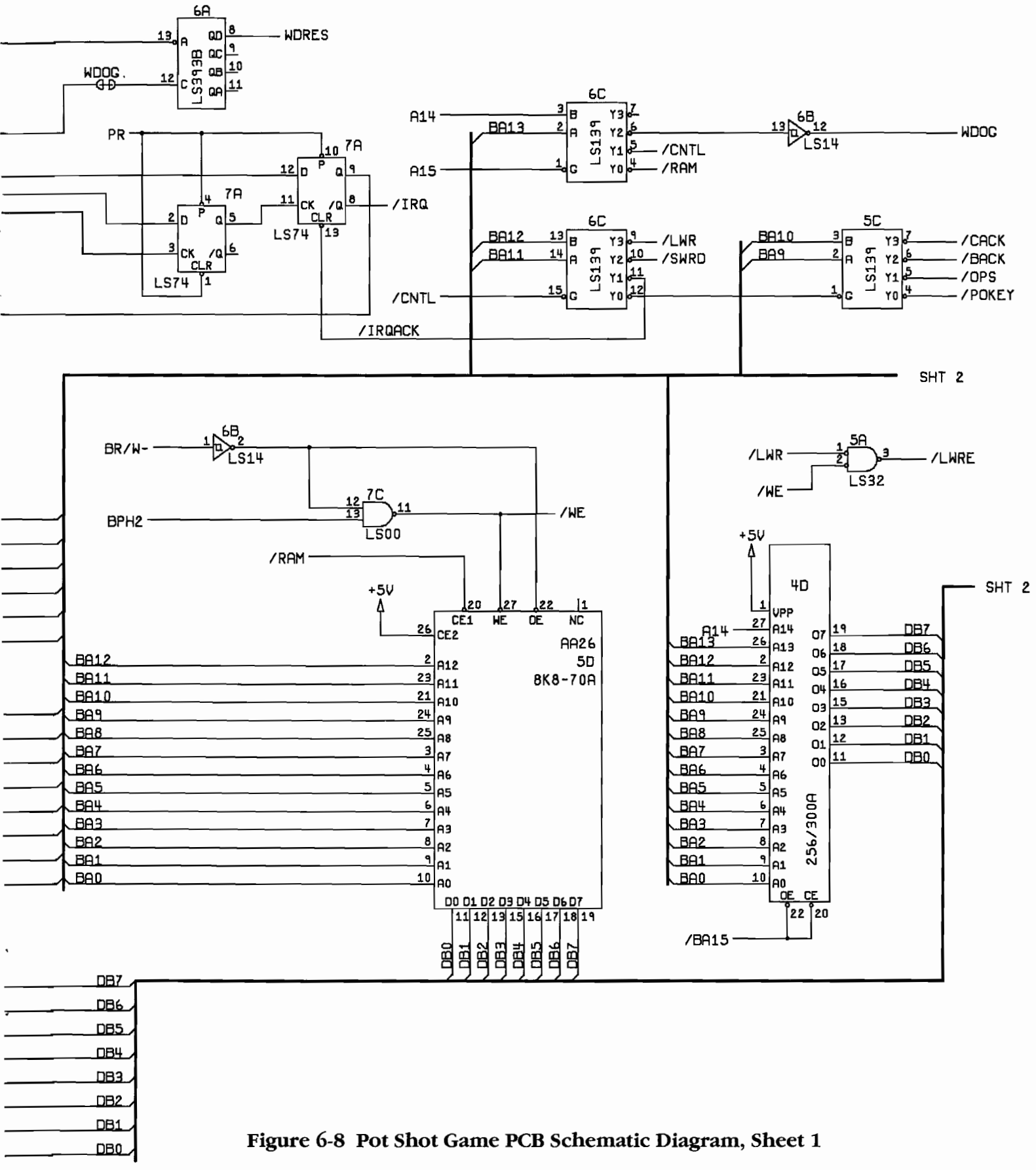
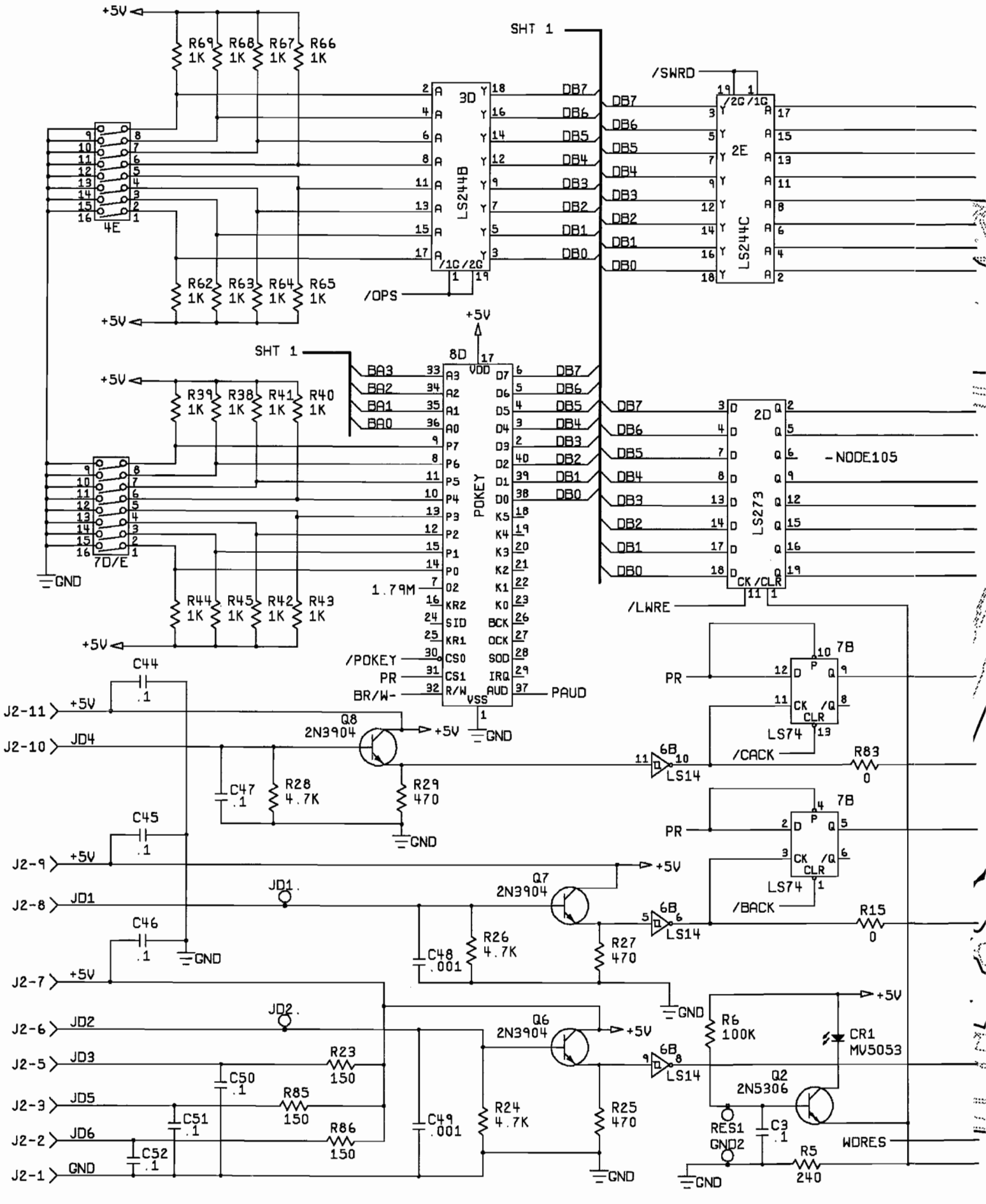


Figure 6-8 Pot Shot Game PCB Schematic Diagram, Sheet 1


+5V
R69 1K
R68 1K
R67 1K
R66 1K
4E
R62 1K
R63 1K
R64 1K
R65 1K
SHT 1
3D
LS244B
/1G /2G
/OPS
DB7
DB6
DB5
DB4
DB3
DB2
DB1
DB0
/SWRD
/2G /1G
2E
LS244C
8D
POKEY
BA3
BA2
BA1
BA0
R39 1K
R38 1K
R41 1K
R40 1K
7D/E
R44 1K
R45 1K
R42 1K
R43 1K
GND
1.79M
/POKEY
PR
BR/W-
PAUD
2D
LS273
-NODE105
CK /CLR
/LWRE
7B
LS74
/CACK
/BACK
R83 0
R15 0
LS14
6B
C44 .1
C45 .1
C46 .1
C47 .1
C48 .001
C49 .001
C50 .1
C51 .1
C52 .1
J2-11
J2-10
J2-9
J2-8
J2-7
J2-6
J2-5
J2-3
J2-2
J2-1
JD4
JD1
JD2
JD3
JD5
JD6
Q8 2N3904
Q7 2N3904
Q6 2N3904
R28 4.7K
R29 470
R26 4.7K
R27 470
R24 4.7K
R25 470
R23 150
R85 150
R86 150
Q2 2N5306
R6 100K
CR1 MV5053
RES1
GND2
C3 .1
R5 240
WDRES

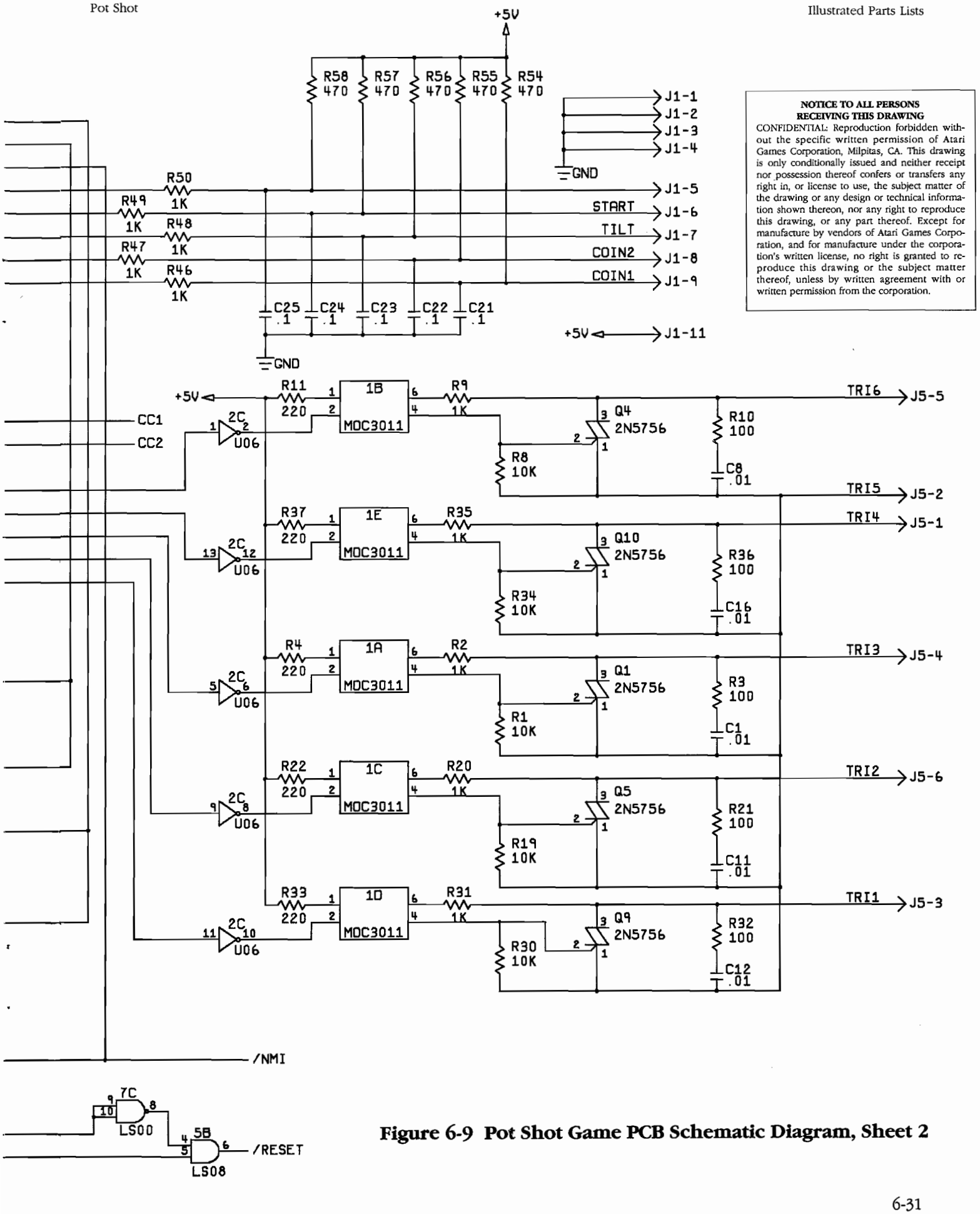
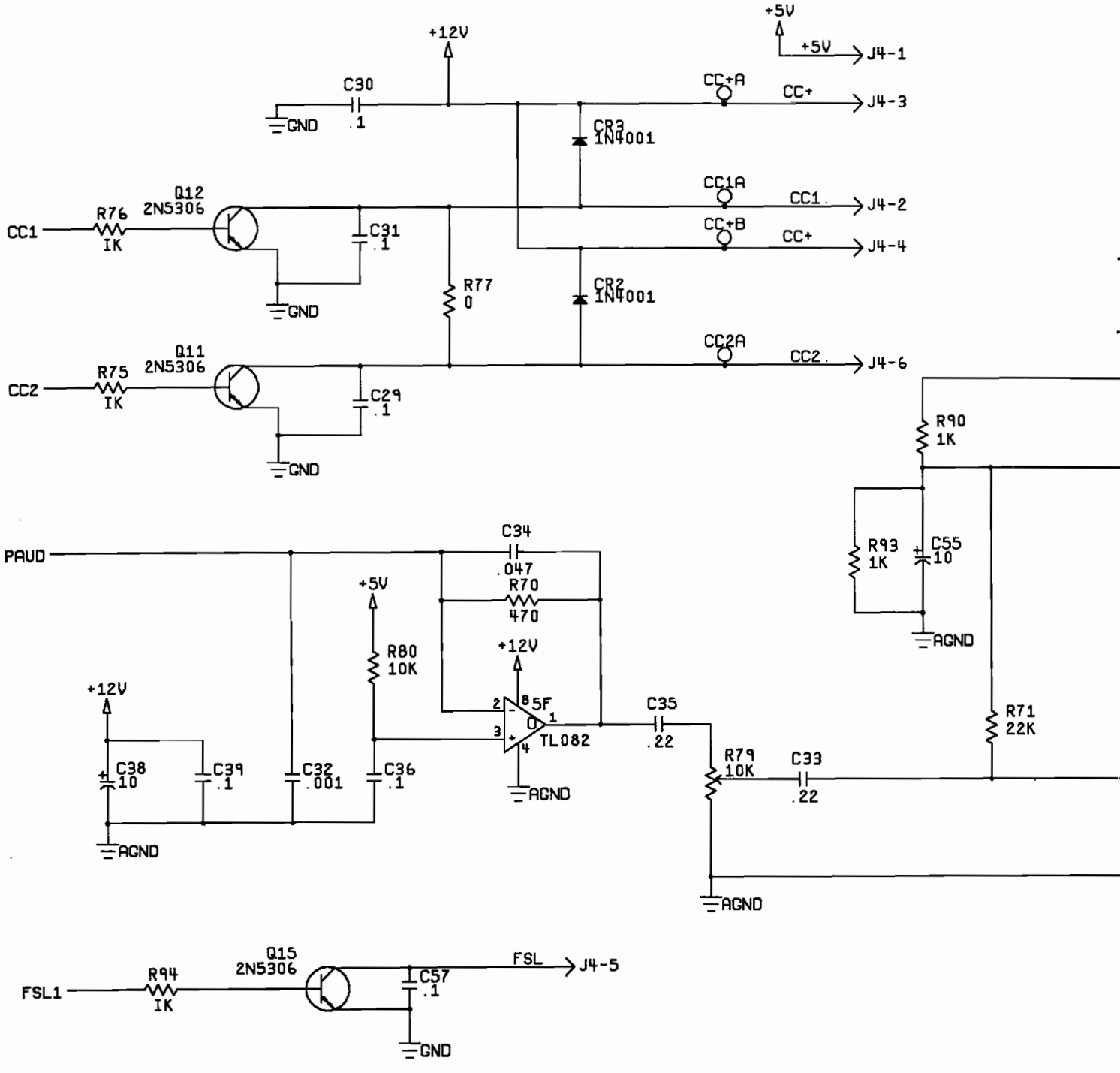
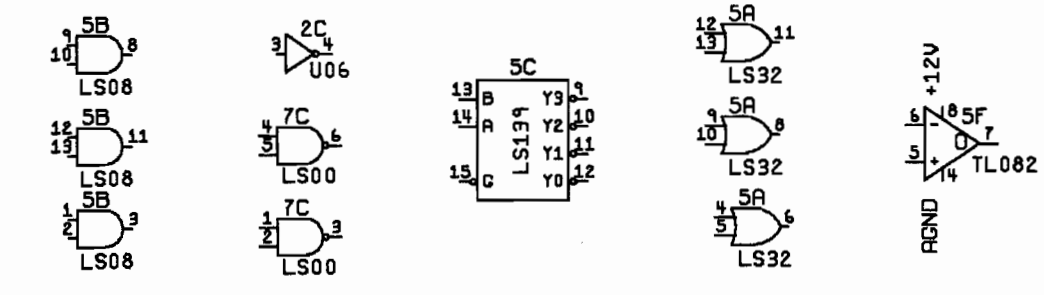


Figure 6-9 Pot Shot Game PCB Schematic Diagram, Sheet 2


+5V
+12V
+5V
J4-1
C30
.1
GND
CC+A
CC+
J4-3
CR3
1N4001
CC1A
CC1
J4-2
Q12
2N5306
R76
1K
CC1
C31
.1
CC+B
CC+
J4-4
R77
0
CR2
1N4001
CC2A
CC2
J4-6
Q11
2N5306
R75
1K
CC2
C29
.1
R90
1K
R93
1K
C55
10
AGND
PAUD
C34
.047
R70
470
+5V
R80
10K
+12V
5F
TL082
C35
.22
R71
22K
+12V
C38
10
C39
.1
C32
.001
C36
.1
AGND
R79
10K
C33
.22
AGND
Q15
2N5306
R94
1K
FSL1
C57
.1
FSL
J4-5
GND

SPARE GATES


5B
LS08
5B
LS08
5B
LS08
2C
U06
7C
LS00
7C
LS00
5C
LS139
5A
LS32
5A
LS32
5A
LS32
+12V
5F
TL082
AGND

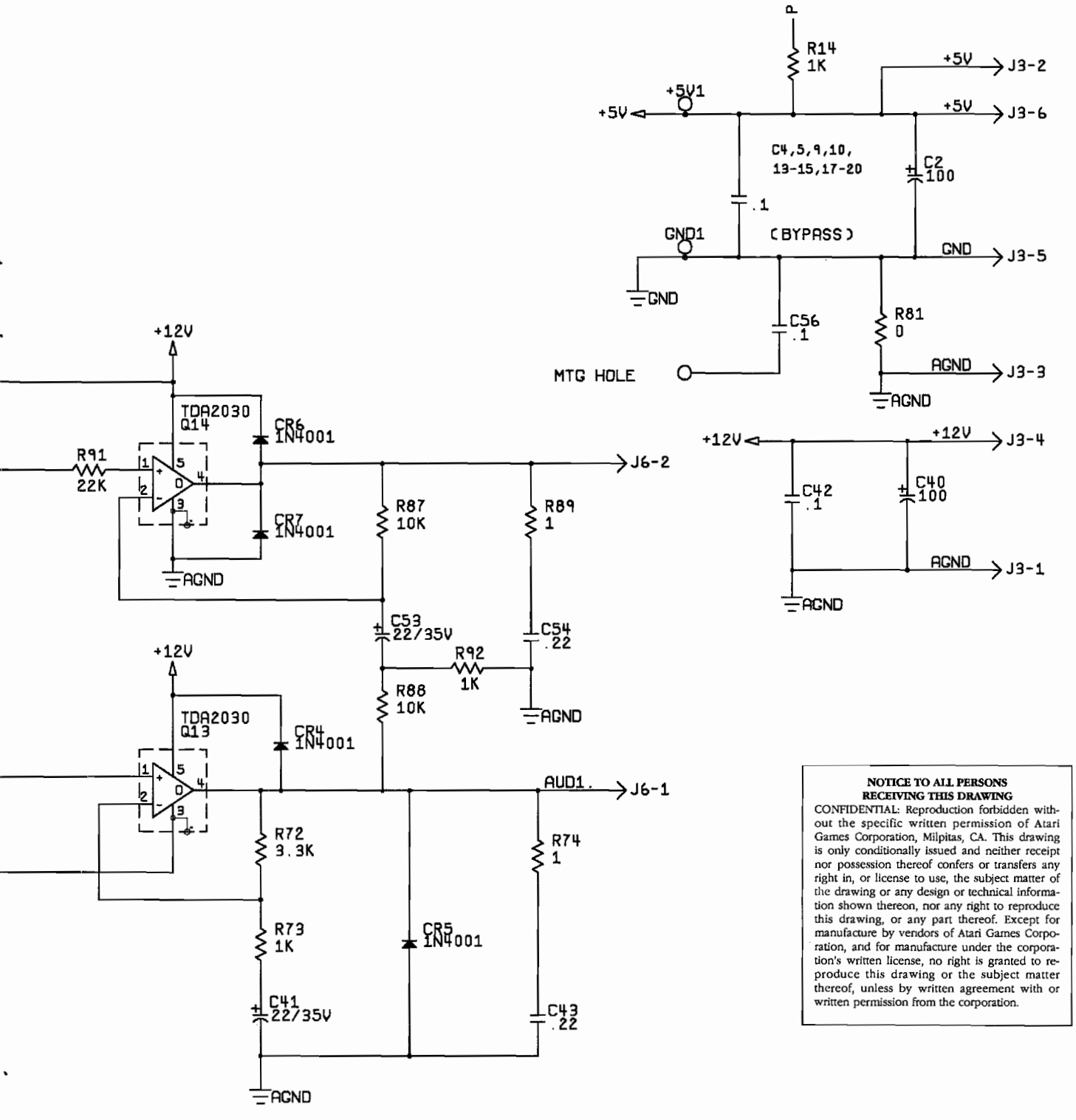


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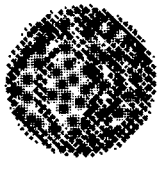
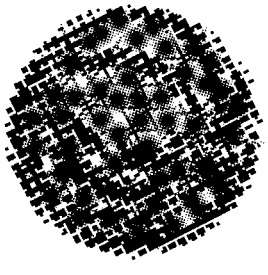
Figure 6-10 Pot Shot Game PCB Schematic Diagram, Sheet 3

N O T E S





Glossary

AC
Alternating current; from zero it rises to a maximum positive level, then passes through zero again to a maximum negative level.

ACTIVE STATE
The true state of a signal. For example: The active state for is low.

ADDRESS
A value that identifies a specific location of data in memory; normally expressed in hexadecimal notation.

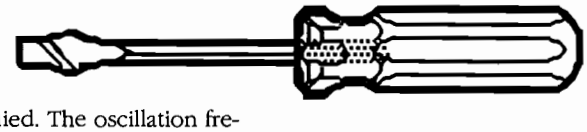
ANALOG
Measurable in an absolute quantity (as opposed to on or off). Analog devices are volume controls, light dimmers, stereo amplifiers, etc.

ANODE
The positive (arrow) end of a diode.

AMPLIFIER
A device used to increase the strength of an applied signal.

AMPLITUDE
The maximum instantaneous value of a waveform pulse from zero.

ASTABLE
Having no normal state. An astable device will free-run or oscillate as long as operating voltage is applied. The oscillation frequency is usually controlled by external circuitry.



AUXILIARY COIN SWITCH
A momentary-contact pushbutton switch with a black cap located on the utility panel. The auxiliary coin switch adds credits to the game without activating a coin counter.

BEZEL
A cut, formed, or machined retention device, such as the conical device used to mount a pushbutton switch to a control panel, or the formed device used to frame the video display screen.

BIDIRECTIONAL
Able to send or receive data on the same line (e.g., the data bus of a microprocessor).

BINARY
A number system that expresses all values by using two digits (0 and 1).

BIT
A binary digit; expressed as 1 or 0.

BLANKING
Turning off the beam on a cathode-ray tube during retrace.

BLOCK DIAGRAM
A drawing in which functional circuitry units are represented by blocks. Very useful during initial troubleshooting.

BUFFER
1. An isolating circuit designed to eliminate the reaction of a driven circuit on the circuits driving it (e.g., a buffer amplifier).

2. A device used to supply additional drive capability.

BUS
An electrical path over which information is transferred from any of several sources to any of several destinations.

CAPACITOR
A device capable of storing electrical energy. A capacitor blocks the flow of DC current while allowing AC current to pass.

CATHODE
The negative end of a diode.

CHIP
An integrated circuit comprising many circuits on a single wafer slice.

CLOCK
A repetitive timing signal for synchronizing system functions.

COINCIDENCE
Occurring at the same time.

COIN COUNTER
A 6-digit electromechanical device that counts the coins inserted in the coin mechanism(s).

COIN MECHANISM
A device on the inside of the coin door that inspects the coin to determine if the correct coin has been inserted.

COMPLEMENTARY
Having opposite states, such as the outputs of a flip-flop.

COMPOSITE SYNC
Horizontal and vertical synchronization pulses that are bused together into a single signal. This signal provides the timing necessary to keep the display in synchronization with the game circuitry.

COMPOSITE VIDEO
Complete video signal from the game system to drive the display circuitry, usually comprising H SYNC, V SYNC, and the video.

CREDIT
One play for one person based on the game switch settings.

CRT
Cathode-ray tube.

DATA
General term for the numbers, letters, and symbols that serve as input for device processing.

DARLINGTON
A two-transistor amplifier that provides extremely high gain.

DC
Direct current, meaning current flowing in one direction and of a fixed value.

DEFLECTION YOKE
Electromagnetic coils around the neck of a cathode-ray tube. One set of coils deflects the electron beam horizontally and the other set deflects the beam vertically.

DIAGNOSTICS
A programmed routine for checking circuitry. For example: the self-test is a diagnostic routine.

DIODE
A semiconductor device that conducts in only one direction.

DISCRETE
Non-integrated components, such as resistors, capacitors, and transistors.

DMA
Direct memory access. DMA is a process of accessing memory that bypasses the microprocessor logic. DMA is normally used for transferring data between the input/output ports and memory.

DOWN TIME
The period during which a game is malfunctioning or not operating correctly due to machine failure.

EAROM
Electrically alterable read-only memory (see ROM). The EAROM is a memory that can be changed by the application of high voltage.

FLYBACK
A step-up transformer used in a display to provide the high voltage.

GATE
1. A circuit with one output that responds only when a certain combination of pulses is present at the inputs.

2. A circuit in which one signal switches another signal on and off.

3. To control the passage of a pulse or signal.

HARNESS
A prefabricated assembly of insulated wires and terminals ready to be attached to a piece of equipment.

HEXADECIMAL
A number system using the equivalent of the decimal number 16 as a base. The symbols 0–9 and A–F are usually used.

IMPLODE
To burst inward; the inward collapse of a vacuum tube.

I/O
Input/Output.

IRQ
Interrupt request. IRQ is a control signal to the microprocessor that is generated by external logic. This signal tells the microprocessor that external logic needs attention. Depending on the program, the processor may or may not respond.

LED
The abbreviation for a light-emitting diode.

LOCKOUT COIL
Directs coins into the coin return box when there is no power to the game.

LOGIC STATE
The binary (1 or 0) value at the node of a logic element or integrated circuit during a particular time. Also called the logic level. The list below shows the voltage levels corresponding to the logic states (levels) in a TTL system.

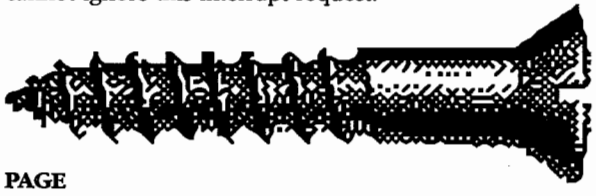
Logic 0, Low = 0 VDC to +0.8 VDC

Grey Area (Tri-State Level) = +0.8 VDC to +2.4 VDC

Logic 1, High = +2.4 VDC to +5 VDC

MULTIPLEXER
A device that takes several low-speed inputs and combines them into one high-speed data stream for simultaneous transmission on a single line.

NMI
Non-maskable interrupt. NMI is a request for service by the microprocessor from external logic. The microprocessor cannot ignore this interrupt request.



PAGE
A subsection of memory. A read-only memory device (see ROM) is broken into discrete blocks of data. These blocks are called pages. Each block has X number of bytes.

PCB
The abbreviation for a printed-circuit board.

PHOTOTRANSISTOR
A transistor that is activated by an external light source.

POTENTIOMETER
1. A resistor that has a continuously moving contact which is generally mounted on a moving shaft. Used chiefly as a voltage divider. Also called a pot (slang).

2. An instrument for measuring a voltage by balancing it against a known voltage.

RAM
Random-access memory. A device for the temporary storage of data.

RASTER-SCAN DISPLAY
A display system whereby images are displayed by continuously scanning the cathode-ray tube horizontally and vertically with an electron beam. The display system controls the intensity of the electron beam.

RETRACE
In a raster-scan display, retrace is the time during which the cathode-ray tube electron beam is resetting either from right to left or from bottom to top.

RESISTOR
A device designed to have a definite amount of resistance. Used in circuits to limit current flow or to provide a voltage drop.

ROM
Read-only memory. A device for the permanent storage of data.

SIGNATURE ANALYSIS
A process of isolating digital logic faults at the component level by means of special test equipment called signature analyzers. Basically, signature analyzers (e.g., the ATARI® CAT Box) convert lengthy bit streams into four-digit hexadecimal signatures. The signature read by the analyzer at each circuit node is then compared with the known good signature for that node. This process continues until a fault is located.

TROUBLESHOOT
The process of locating and repairing a fault.

VECTOR
A line segment drawn between specific X and Y coordinates on a cathode-ray tube.

WATCHDOG
A counter circuit designed to protect the microprocessor from self-destruction if a program malfunction occurs. If a malfunction does occur, the counter applies continuous pulses to the reset line of the microprocessor, which causes the microprocessor to keep resetting.

X-Y DISPLAY
A display system whereby images are displayed with vectors.

ZENER DIODE
A special diode used as a regulator. Its main characteristic is breaking down at a specified reverse-bias (Zener) voltage.

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