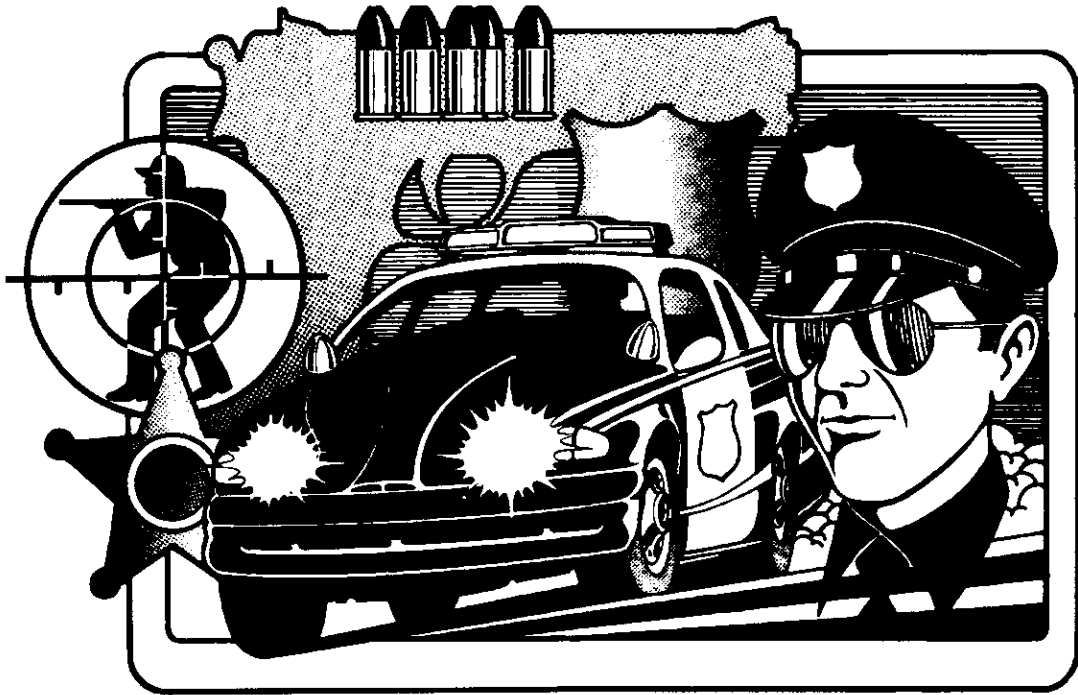


COPIES™



Operator's Manual



TIME WARNER INTERACTIVE

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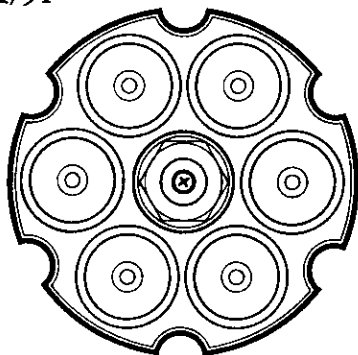
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NOTICE RE

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:

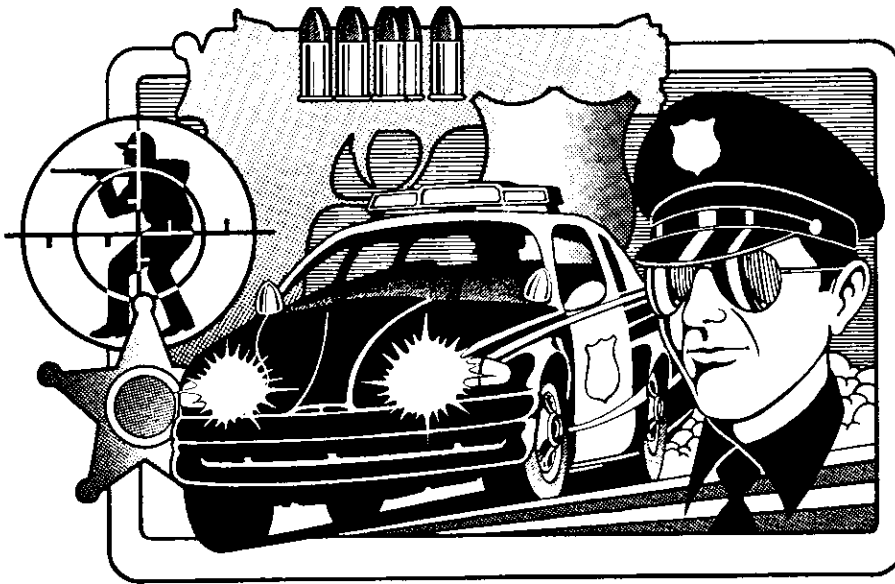
- Substitute non-Atari parts in the game.
- Modify or alter any circuits in the game by using kits or parts *not* supplied by Atari Games Corporation.

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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 that the game printed-circuit boards (PCBs) are properly installed on the EMI ground plane and that the end board is securely installed with **all** screws in place and tightened.

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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S A F E T Y S U M M A R Y

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 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.

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 tubes (CRTs). Do not touch the internal parts of the display with your hands or with metal objects! Always discharge the high voltage from the CRTs before servicing them. Do this after you disconnect them 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 CRTs With Care. If you drop a 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.

Précautions de'Emploi Générales ▶▶▶

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Set-Up

HOW TO USE THIS MANUAL

THIS MANUAL IS written for operators and service personnel. It provides information for setting up, playing, testing, and maintaining your Cops™ game.

Cops is a one-player game featuring realistic cops-and-robbers drama and state-of-the-art video animation.

Chapter 1 of this manual contains set-up and game play information. ♦ Chapter 2 contains a description of the test modes and option settings. The test modes are important in the Cops game. Using the tests, you can troubleshoot the laser disc player, the

boards, and the controls. You should regularly do these tests to keep your game in peak condition and at top earnings. ♦ Chapter 3 contains a troubleshooting table, plus maintenance and repair procedures for the game components. If you have problems with your

game, use this chapter to troubleshoot and repair it. Be sure to perform the preventive maintenance tasks to keep your game in good condition. ♦ Chapter 4 contains the illustrations and PCB parts lists. ♦ Chapter 5 contains the wiring diagrams for the game and the power supply.



Operating the Game

To operate your game for maximum income, you should regularly use the self-test to check the electronics, controls and sound. By using the self-test regularly, you can find and fix problems immediately. This lets you keep your game in top condition.

Installation

This game is designed for indoor use only. The game must NOT be installed outdoors or under the following conditions:

- In areas directly exposed to sunlight, high humidity, direct water contact, dust, high heat or extreme cold.
- In locations that would present an obstacle in the case of an emergency, i.e., near fire equipment or emergency exits.
- On an unstable surface or subject to floor or other vibration.

Special Precautions

- Do not subject the game to excess physical shock when transporting or moving it. **Do not transport the game with a laser disc or CD-ROM loaded in the player.**
- The cabinet must be grounded with a securely connected grounded plug.
- Be sure to switch the power OFF before replacing any parts or connecting/disconnecting the electrical connectors.
- DO NOT attempt to repair the printed-circuit boards (PCB) yourself. This will void the warranty. The PCBs contain sensitive components that could easily be damaged by the small internal voltage of a multi-meter. Always return the faulty PCB to your distributor for repair.
- When unplugging the game from the electrical outlet, grasp the plug, NOT the cable.
- Do not use any fuse that does not meet the specified rating.
- Make complete connections to all the PCBs and other parts of the circuit. Insufficient insertion of ICs and connectors will lead to unreliability and possible damage to the machine.
- The operating (ambient) temperature range is from 5° C to 35° C.

Characteristic	Specification
Input Current	3 Amps at 120 V
Line Fuse Rating	4 Amps at 250 V, slow blow
Line Voltage	102 to 132 VAC
Temperature	37° to 100° F (5° to 38° C)
Humidity	Not to exceed 95% relative
Width*	44 inches (111.8 cm)
Depth*	86 inches (218.4 cm)
Height*	80 inches (203.2 cm)
Weight*	650 lbs. (295 kg)

*Unboxed

Table 1-1 Game Specifications

The Cops game has 7 casters and 8 adjustable feet. To secure the machine in place, all feet must be lowered (unscrewed) so that the casters are at least 0.2-inch above the floor.

When transporting or moving the machine, retract the adjustable feet from the floor so that the weight of the machine rests on the casters.

When the cabinet is in its new playing position, the feet should be re-adjusted to secure the machine in place.

When cleaning the monitor CRT face (which should be done at regular intervals), use a soft cloth and glass cleaner. Do not apply solvents such as thinners or benzene.

Special Disassembly

Because of the unusual size of the Cops game, it may be necessary to disassemble the game into two sections so that it can pass through entrances of less than 44". To do so, unbolt the roll bars. Then, in the coin box, use a 7/16" wrench inserted through the openings at the edges of the box. Here you will have access to the connections to the central connecting plate that holds the main unit and the seat assembly together. Disconnect the harness interconnects.

CAUTION

Do not disassemble or tip the game with the CD-ROM or laser disc installed. You could damage the players internally.

Reassemble in the reverse order.

Inspecting the Game

WARNING

To avoid electrical shock, do not plug in the cabinet until it has been properly inspected and set up for the line voltage in your area.

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

Make note of the power consumption when you set up this game so that you do not overload your electrical circuit. See Table 1-1 for the power consumption and the other important specifications of this game.

Inspect your Cops game carefully to ensure that the game is complete and was delivered to you in good condition. Inspect the cabinet and seat as follows:

1. Examine the exterior of the cabinet for dents, chips, or broken parts.
2. Open the lower-rear access panels. Unlock and open the coin door. Inspect the interior of the cabinet as follows:
 - a. Check that all plug-in connectors on the cabinet harnesses are firmly plugged in. Do not force the connectors together. The connectors are keyed so they fit only in the proper orientation. A reversed connector can damage a printed-circuit board (PCB). This will void your warranty.
 - b. Ensure that all plug-in integrated circuits on each PCB are firmly plugged into their sockets.
 - c. Inspect the power cord for any cuts or dents in the insulation.
 - d. Inspect the power supply. Make sure that the correct fuses are installed. Check that the harness is plugged in correctly. Check that the green ground wires are connected.
 - e. Inspect other sub-assemblies, such as the video displays, controls, printed-circuit boards, speakers, laser disc player, and CD player. Make sure that they are mounted securely and that the ground wires are connected.

Disc Installation and Handling

To avoid damage to the game, the laser and CD-ROM discs are not shipped inside their players.

CAUTION

Do not operate the game right after having transported it from a cold location directly to a warm location or in a room where the temperature rises suddenly. Moisture may condense in the operating section of the unit.

WAIT FOR 2 HOURS before turning the power on in the new location, or, to evaporate the moisture rapidly, leave the game turned on for at least an hour without the discs loaded. If the game is operated with moisture condensation, the laser disc player may be damaged.

To install the discs, perform the following steps:

Unpacking the Discs

The factory does not install the CD-ROM disc and laser disc in their players, to protect the player mechanisms. Instead, the discs are stored in protective cardboard sleeves in the left monitor access compartment (as viewed when you are sitting in the seat).

Remove the two screws that secure the left monitor access panel. Open the lock on the panel, and remove the two discs. Once you have installed the discs, you should store the cardboard sleeves in this compartment for future use.

Laser Disc Installation

1. Remove the cabinet's lower rear cover.
2. Turn on power to the game.
3. Press the open/close button on the right-hand side of the large laser disc player. The tray will slide out.
4. Pick up the laser disc by its edges (the larger of the two discs). Place the disc in the tray with the label "Side One" facing up.
5. Press the open/close button on the laser disc player.

CD-ROM Disc Installation

1. Remove the cabinet's lower rear cover.
2. Turn on power to the game.
3. Press the open/close button on the right-hand side of the small CD player. The tray will slide out.
4. Pick up the CD-ROM disc by its edges (the smaller of the two discs). Place the disc in the tray with the label "Side One" facing up.
5. Press the open/close button on the CD-ROM player.
6. If the tray does not open, turn off the power, turn it back on again, and push the eject button immediately.

Laser Disc Player

The laser disc player is the Model LDP-1450 manufactured by Sony Corporation. This player is an industrial version designed for long-term reliability and use. However, problems can occur if the player is subjected to condensation.

NOTE

The audio and video of the Cops game CD-ROM and laser disc will not make sense if played on a standard home audio CD player or laser disc player. (The audio and video will not be sequential.) However, you will not damage the discs by playing them in such equipment.

Handling Laser Discs

Always hold the discs by their edges and keep the discs clean.

Do not stick paper or tape on the disc surface.

Do not expose the discs to direct sunlight or heat sources (such as hot air ducts) or leave them in a parked car in direct sunlight (where they will experience high temperatures).

Do not use solvents (such as benzene or thinners) or commercially available cleaners or anti-static sprays intended for audio discs.

Startup Messages

After turning on the power and loading the discs, you should see these four messages on the alphanumeric display:

LD COM 0, 1

(laser disc communicate)

CD COM 0, 1

(compact disc communicate)

CHKSUM 2B6077

(The exact hexadecimal checksum number displayed will differ, depending on the revision of the ROM software. However, the checksum should always stay the same for one disc. If a checksum number is not displayed, you may have a fault.)

INSERT COIN

The music should then begin playing. If these messages do not appear, you have a problem. See Chapter 3 of this manual for troubleshooting hints.

CAUTION

You can leave the two discs in their players overnight, if you turn off the power to all your games each night. However, do not move, disassemble, or tip the Cops game with the discs still loaded in their players. You could damage the players internally.

Filtering and Cooling

The Cops game contains an axial fan that provides cooling and air filtration. The air is drawn from inside the cabinet and is filtered to prevent coarse dust particles from entering the cabinet. The air flow also provides cooling for the electronics and monitor.

After the cool air has entered the cabinet, it is filtered to remove fine dust particles and is directed towards the laser disc player on the lower shelf. By drawing filtered air from the lower enclosure (which is only complete when the rear service panel is in place), dust accumulation inside the laser disc player is kept to a minimum.

CAUTION

To ensure proper operation of this game, you should regularly check the condition of the removable filter mesh. If the mesh has dust or dirt on it, you should remove it, wash it in soapy water, let it dry, and reinstall it.

Controls and Switch Locations

All the controls are located on the back of the cabinet or behind the coin doors. The following paragraphs describe these locations in more detail.

Power On/Off Switch

The power on/off switch is a toggle switch located on the power entry module, above the cabinet's lower rear panel.

Volume Control

There is no volume adjustment knob on any PCB in this game. Instead, volume is adjusted in the self-test software. Refer to Chapter 2 of this manual for more information.

Self-Test Switches

The self-test switches are mounted on a bracket located on the inside left panel of the game cabinet. To perform the self-test, open the upper coin door and activate the appropriate self-test switches. Please refer to Chapter 2 of this manual for more information.

Coin Counter

The coin counter is located below the coin box, inside the coin door.

Ticket Dispenser

A ticket dispenser is optional, and may be purchased separately. It is not supported by Atari Games. Contact your distributor for available ticket dispensers.

Setting the Coin and Game Options

The Cops coin and game options are set in the test modes. Please refer to Chapter 2 for the recommended settings and the procedure for setting the options.

Game Play

This section describes the features and play of the Cops game.

Introduction

Cops is a game featuring video action based on the hit television series by the same name. Players choose play options ranging from high-speed car chases to armed confrontations, all set in Los Angeles.

Cops utilizes a proprietary new stop-motion animation technique that provides realistic and life-like character motion. In addition to state-of-the-art graphics, Cops features an audio system that provides great stereo sound to punctuate the high-impact game play.

Game Play Hints

Players should follow the instructions shown on the alphanumeric display. Cops is programmed for players to be in a certain part of the lane and to take turns accordingly. The display will point with arrows if they are off course. Failure to follow these instructions will cause players to use fuel more rapidly and may not allow them to finish the course on the first coin.

The player's foot should always be on the gas: the laser will look slow and jerky if that is not done.

Generally, players should wait for the "bad guys" to pull their guns and stop running before they can "kill" them. With the exception of one sequence, only one shot is necessary (if properly placed) to finish off a bad guy.

Game Play — Prolonging Life

Player lose a life after sustaining three hits by gunfire. However, the game then allows one more chance. If the players experience three more hits, then the game can be extended by inserting more coins. The number of coins necessary to keep playing depends upon the options set in the test modes. Refer to Chapter 2 for further instructions.

It does not matter if players start from the shooting or driving section. However, if players do poorly in the driving section, they have to coin up again to complete it. When shooting, they still get another chance.

On the originally shipped laser disc are four driving scenes (two daytime and two nighttime) and eight shooting scenes in regular play. At the end is a bonus nighttime driving scene that players can coin-up as many times as needed to get through.

The final shooting sequence is three shots only. The play will end and the players will have to play the entire game to reach that sequence again.

Self-Test Modes

INTRODUCTION

USE THE COPS™ self-test to check the condition of the game circuitry and controls.

You will see the self-test information on the video display and hear the sound test information through the speakers.

You do not need any additional equipment to perform the self-test. Perform the self-test when you first set up the

COPS

game, each time you collect the money, or when you suspect game problems. This chapter describes the screens in the

self-test and explains each of the tests. The screen descriptions and explanations are arranged in the order they appear in the self-test.

Self-Test Modes

The game's self-test switches are located behind the coin door. They are used to check the different functions of the game. There are three different self-test modes: Test Menu, Setup Menu, and Credit Options.

- Test Menu checks the different functions of the game. For example, the display test is used to check the orange alphanumeric display.
- Set-up Menu initializes game settings such as the audio level and game difficulty.
- Credit Options Menu sets such options as the number of coins per play and the free play option.

All tests and adjustments are carried out using the four pushbutton switches located on a bracket inside the coin door. Switch A is on top.

Switch	Function
Switch A	Scrolls up a menu
Switch B	Scrolls down a menu
Switch C	Executes test, locks in new settings
Service	Enters/exits individual tests or the entire test mode

Table 2-1 Summary of Self-Test Switch Functions

To enter the self-test mode, press the switch marked **Service** once. Press Switch A to scroll to the self-test menu of your choice. Press Switch C to enter the self-test menu. Press the **Service Switch** to exit from the current menu. Pressing the **Service Switch** a second time and holding it for several seconds exits the self-test mode. This pattern is repeated for all tests and settings.

Use Switches A and B to scroll up and down the selected self-test menu. Press Switch C to select a menu option.

Test Menu

Lamp Test

Pressing Switch A causes all display lamps to be lighted in sequence. The relevant lamp is identified on the display. This test is not interruptible: once it has begun, it must be completed before you will be allowed to proceed to the next test. The following lamps are lighted in this order:

1. Gun activate right
2. Vest hit 3
3. Vest hit 2
4. Gun activate left
5. Vest hit 1
6. Damage
7. Stop
8. Off Road Right 4
9. Off Road Right 3
10. Off Road Right 2
11. Off Road Right 1
12. Off Road Left 4
13. Off Road Left 3
14. Off Road Left 2
15. Off Road Left 1
16. Bullet Lamp 6
17. Bullet Lamp 5
18. Bullet Lamp 4
19. Bullet Lamp 3
20. Bullet Lamp 2
21. Bullet Lamp 1
22. Flash Red
23. Flash Blue

Press Switch A again to exit this test.

Laser Disc Player (LDP) Test

This test checks the laser disc player and provides a report. This test will automatically sequence through a series of still frames on the monitor. During this test the display will read *SEARCHING.....x*. (The *X* is a digit that changes with each frame.)

When the test is successfully completed, the display will read ****PASSED****. Press Switch A to exit this test.

Ticket Test

Pressing Switch C causes the ticket dispenser (if installed) to dispense one ticket. If the dispenser is not working properly (or not installed), the words *TICKET JAMMED* will appear on the display. Press Switch A to exit this test.

Coin Meter Test

Pressing Switch C causes the coin meter to be pulsed twice. Press Switch A to exit this test.

Display Test

Pressing Switch C produces *s and Os flashing alternately in each character of the alphanumeric display. Make sure that each segment lights up. Press Switch A to exit this test.

Shake Motor Test

Press Switch C to start the shake motor. Press Switch C again to stop the shake motor. Press Switch A to exit this test.

CAUTION

Do not test the shake motor for more than five minutes continuously or you may damage it.

Audio Test

NOTE

The audio boards, the CD player, and the CD-ROM disc must be installed and connected to the game to perform this test.

Repeatedly pressing Switch A during this test causes sounds to be produced from all the loudspeakers in the following order:

CHAN A	Tone from the top left speaker; the volume will go up and down.
CHAN B	Static noise from the top right speaker
CHAN C	Siren from the lower left speaker
CHAN D	Music from the lower right speaker
CHAN LEFT	Tire sounds from the lower left speaker
CHAN RIGHT	Tire sounds from the lower right speaker
CHAN BEEP	Beeps from the center speaker

Press Switch C to exit this test.

DAC/Steer Test

Pressing Switch C produces a two-digit code on the display. Allow the steering wheel to center itself, and adjust the set steering multi-turn 5K potentiometer on the Logic Control board until the display reads 80. (This pot is located next to the U47 chip.)

The two-digit code should change from 00 to FC when the steering wheel is rotated from left to right.

Press Switch C to lock in the settings.

NOTE

The Steering Test will not work correctly if the DAC Set Test has not been successfully completed.

Switch Test

This test checks the coin and gas pedal switches. To enter this test mode, press Switch C. Each switch pressed will then be identified on the display. Press and hold the Service Switch for 3 seconds to exit this test.

Setup Menu

Adjust Center

Pressing Switch C produces a still picture of a gun target on the monitor. Press Switch A to move the picture left, or Switch B to move the picture right. You should position the target in the center of the screen. Press Switch C to lock in the new settings. Press Switch A to exit this test.

Set Difficulty

Pressing Switch C shows the current game difficulty setting on the display. Press Switch A to step through the difficulty settings — easy, medium, and difficult. Press Switch C to lock in the desired setting. Press Switch A to exit this test.

Set Demo Sound (In Attract Mode)

Pressing Switch C shows you how frequently the attract-mode audio is played. Pressing Switch A toggles through the settings 1/1 (sound on continuously), 1/2, 1/4, and 1/8 (sound on every 8th attract sequence). Press Switch C to lock in the new setting. Press Switch A to exit this test.

Adjust Volume

Pressing Switch C shows the current volume setting on the display. Press Switch B to increase, or Switch A to decrease, the volume until the desired level is achieved. Press Switch C to lock in the setting. Press Switch A to exit this test.

CAUTION

Atari Games' field testing has shown that setting the volume too low will cause substantially reduced earnings.

Gun Setup

Press Switch C. *SHOOT CENTER* appears on the video display.

1. Using the gun, fire at the center cross to check the sight alignment. The "bullet hole" may appear off-center.
2. The display changes to *TEST AIM*. Shoot at an object on the screen and check the "bullet hole" alignment with the target. Estimate the distance and direction of the shooting error.
3. Press Switch B and aim the gun the same distance from and in the opposite direction of your estimated shooting error from the center of the target.
4. Repeat steps 2 and 3 until the shooting error is minimized.
5. Press Switch C. *SET UP COMPLETE* appears on the display.
6. Press Switch A to exit this test.

NOTE

It is normal for the gun to "scatter" a little when shooting repeatedly at a target.

Monitor Setup

These test screens can be used to adjust the color levels, purity, convergence and focus of the monitor. The following test screens are provided:

- Red/green/blue/grey color scales
- Vertical and horizontal color bars
- Red/green/blue/white rasters
- White grid pattern
- Still frames from the laser disc

Use Switch A to sequence through the test screens. Press Switch C to complete the test. Press Switch A to exit this test.

Credit Options

Set Price/Play

Pressing Switch C shows the current price per play setting. Repeatedly press Switch A to select the price per game — the numbers 1 through 8 will appear (representing the eight initial game options in Table 2-2). Press Switch C to lock in the setting.

Discount

This option allows you to discount the price to continue a game. Pressing Switch A toggles between setting the discount to continue the game on or off (Yes or No). Refer to Table 2-2 for the price options available with the discount set on. Press Switch C to lock in the desired setting.

Option	Initial Game*	Continued Game*
1	25¢	25¢
2	50¢	25¢
3 ✓	75¢	50¢
4	\$1.00	50¢
5	\$1.25	50¢
6	\$1.50	75¢
7	\$1.75	75¢
8	\$2.00	\$1.00

✓ *Manufacturer's recommended setting*

*If the Discount to Continue option is turned off, then the Initial Game prices apply to **all** games and you should ignore the Continued Game column above.

Table 2-2 Game Price Options

Display (USA/Non-USA Coinage)

This option allows you to set the price display to U.S. coinage (cents) or non-U.S. (British pence) coinage.

Ticket Option

This option lets you set the number of tickets to be dispensed for every 10,000 points scored. The choices range from 0 to 9 tickets. Use Switch A to select the ticket option. Press Switch C to lock in the desired setting.

Promo Items

This option allows you to display the message *Promotional Items are Available at this Location* after the tickets are vended. Press Switch A to set this option to yes or no. Press Switch C to lock in the desired setting. Press Switch C to lock in the desired setting.

Free Play Options

This option allows you to set the game for free play (on or off). Use Switch A to select the free play option. Press Switch C to lock in the desired setting. Press Switch A to exit this test.

Troubleshooting & Maintenance

INTRODUCTION

THIS CHAPTER contains maintenance, troubleshooting and repair procedures for your Cops™ game. The maintenance section gives information on cleaning the parts. The troubleshooting section contains several tables to help determine the source of a problem and the steps necessary to repair it. The repair section contains the steps necessary to remove and install the serviceable parts. Together, these three sections provide a complete guide to servicing your Cops™ game.



Problem	Suggested Action
Coin Mechanism Problems	<ol style="list-style-type: none"> 1. Check the wiring connections to the coin mechanism. 2. Check the voltage to the + side of the mechanism. 3. Test the coin mechanism with the Controls Test screen in the self-test. 4. Check the power distribution board fuses.
Gun or Steering Wheel Problems	<ol style="list-style-type: none"> 1. Use the Test Modes to check the functioning of the gun and steering wheel. 2. Check the harnesses and connectors. 3. If you took the control apart, have you reassembled it correctly? 4. Make sure all the parts of the control are in good order. Repair or replace parts as needed.
Sound Problems	<ol style="list-style-type: none"> 1. Check the speaker volume setting; make sure the volume isn't zero! 2. Check the Sound Test in the Test Mode. 3. Check to make sure that the CD-ROM and laser disc are properly loaded in their players. 4. Check the harness connections on the CD-ROM player. 5. Check the resistance of the speakers for 4 Ohms on all five speakers.
Video Display Problems	
Screen is dark	<ol style="list-style-type: none"> 1. Check to see that the game is plugged in and powered on. 2. Check the line fuse if no power is present. 3. Check the display brightness. 4. Check the solder connections on the line filter and the transformer. 5. Check the edge connector to the PCB. 6. Check the harnesses and connectors to the video display PCB. 7. Check the voltage levels to the video display PCB. 8. Run through the following checklist. If you answer <i>no</i> to any question, you have a problem with the video display, not with the game circuitry. In this case, refer to your video display service manual. <ol style="list-style-type: none"> a. Do you have power to the video display? b. Are the video display's filaments lit? c. Do you have the correct voltage to the video display?
Picture wavers or is too small	<ol style="list-style-type: none"> 1. Check the voltage levels to the video display PCB. 2. Check the B+ to the video display. (Refer to the video display manual.)
Attraction panel does not light	<ol style="list-style-type: none"> 1. Check the bulb in the attraction panel. 2. Check the fuses on the power supply.
Picture is wavy	<ol style="list-style-type: none"> 1. Check the connection of the monitor ground wire to the monitor. 2. Check the connections of the sync inputs.
Picture is upside down or reversed	<ol style="list-style-type: none"> 1. If you replaced the monitor recently, check the horizontal or vertical yoke wire connections to the video display. They may be switched.
Convergence, purity or color problems	<ol style="list-style-type: none"> 1. Use the adjustment procedures in your video display manual.
Picture is not centered	<ol style="list-style-type: none"> 1. Use the centering procedures in your video display manual.
Only still picture appears	<ol style="list-style-type: none"> 1. The laser disc player is probably not communicating with the Logic PCB. Check the connection to the laser disc player from the PCB. 2. Check for a blown fuse on the power supply PCB, and check for 5 Volts at the laser disc player.
CD-ROM Problems	
CD won't eject (tray won't open)	<ol style="list-style-type: none"> 1. Turn the power off, then on again. Immediately thereafter push the eject button.

Table 3-1 General Troubleshooting

Maintenance Procedures

Introduction

This section describes the maintenance procedures for all of the major assemblies and components of the game. The maintenance procedures should be performed regularly. We recommend every 3–4 months.

WARNING

Before performing any maintenance or repairs, please observe all of the following safety precautions:

1. Turn the game's power off.
2. Unplug the power cord from the electrical socket.
3. Secure loose clothing such as ties and long sleeves that could get caught within the game. Secure long hair.
4. Remove all metal jewelry such as watches and necklaces that could conduct electricity from the game's power sources.

Cleaning Procedure for Coin Mechanisms

Regular use of the coin mechanism can result in a build-up of residue and dirt. To clean the coin mechanism, perform the following steps (please refer to Figure 4-5 for detailed part information on the coin door):

1. Open the upper coin door.
2. Open the gate on the door that covers the magnet. Use the blade of a screwdriver to scrape away any metal filings that have collected on the magnet.
3. Clean the loose dust and dirt from the coin mechanism with a lint-free rag or a soft brush.
4. Clean the dirt and residue from the coin path with a toothbrush. Hot, soapy water may be used to help dissolve dirt and residue.
5. Blow out all the loose dirt, and dry the coin mechanism with compressed air.
6. Close the gate on the door covering the magnet. Then close the upper coin door.

CAUTION

Never lubricate the coin mechanism with oil or grease.

Troubleshooting Procedures

You should pinpoint the cause of a malfunction by using the test procedures described in Chapter 2. Any repairs, other than minor procedures such as bulb replacement or filter cleaning, should be referred to qualified service personnel.

Repair Procedures

Introduction

This section describes the repair procedures for all of the major assemblies and components of the game. Before performing any repairs, use the tables in the *Troubleshooting Procedures* section to help discover the source of the problem. The *Maintenance Procedures* section can also be a good starting point for fixing many game problems before beginning what might be unnecessary repairs.

Speakers

Each game has five speakers: two Bose speakers mounted on each side of the attraction panel, and three speakers mounted at the bottom of the monitor shield. The speakers provide the music and sounds for the game and self-tests. Speaker failure can be the cause of distorted or no sound. To replace the speakers, perform the following removal and installation steps:

Replacing Upper Speakers

1. Open the (left or right) side access panel.
2. Disconnect the harness from the speaker.
3. Reach into the opening, and remove the two bolts securing the Bose speaker to the cabinet.
4. Lift the Bose speaker up from the top of the game.
5. Replace and reinstall the speaker in reverse order.

Replacing Lower Speakers

1. Remove the six screws securing the speaker grille. Remove the speaker grille by pulling it down and out; then set it aside.

2. Remove the four speaker mounting screws, and lift out the speaker panel.
3. Disconnect the harness from the speaker.
4. Replace and reinstall the speaker in reverse order.

Attraction Panel Light Bulb

To replace the attraction panel light bulb, follow the removal and installation steps that follow.

1. Remove the two screws securing the service panels on either side of the attraction screen. Unlock the panel.
2. Attached to the wire harness you will find bayonet-type bulb holders mounted in holes. Squeeze the plastic holder with your thumb and forefinger and withdraw the holder.
3. Remove the bulb from the holder by pulling it straight out.
4. Install the bulb by inserting it firmly into the holder. Squeeze the holder as before and replace it in its hole.

System Logic Assemblies

This section describes the repair and maintenance procedures for the major assemblies and components related to the system's logic and electronics. This includes the printed-circuit boards (PCBs) and the power supply. These components are housed in a slide-out drawer underneath the rear access panel. We recommend that this procedure be performed by qualified service personnel only.

Cops Game PCB Set

The Cops game PCB set is responsible for the display graphics and game play. Failure of the game PCB set may result in erratic or no game play. If this is the case, repair or replace the game PCB set by following the removal and installation steps below.

1. Make sure the power to the game is turned off. Unlock the cabinet's top rear door.
2. Remove the two Phillips-head screws that secure the rear edge of the PCB shelf to the cabinet.
3. Disconnect the harness connectors from the game PCB set. (There are 5 connectors in all.)
4. Carefully slide the shelf that holds the PCB set toward you. Shelf movement may be hindered by the harnesses. If this is the case, disconnect the harnesses.
5. Unfasten the screw and spacer that secure the game PCB set to the shelf. Remove the game PCB set.

CAUTION

Before handling static-sensitive components, properly ground yourself to remove any static charge buildup.

6. Re-install the game PCB set by following the previous steps in the reverse order.

Power Supply

The power supply is responsible for providing power to all of the game assemblies that require it. Failure of the power supply may result in erratic game play or no power at all. To remove the power supply assembly, perform the following steps:

WARNING

The power supply can contain high voltages even after the power is turned off. To avoid injury, observe all of the safety precautions before working on the power supply. (Refer to the Introduction in the Maintenance Procedures section.)

1. Unlock and remove the rear door of the cabinet.
2. Disconnect the wiring harnesses from the power supply.
3. Unfasten the 2 screws that secure the power supply assembly to the cabinet, and remove the power supply assembly.
4. Re-install the power supply assembly by following the previous steps in the reverse order.

CAUTION

Before handling static-sensitive components, properly ground yourself to remove any static charge buildup.

Video Display

The display used is a high-impedance Hantarex Polo 33" monitor. To repair, replace or make adjustments to this display, follow the removal and installation steps below.

WARNING**High Voltage**

The video display contains **lethal** high voltages. To avoid injury, do not service this display until you observe all precautions necessary for working on high-voltage equipment.

X-Radiation

This video display is designed to minimize X-radiation. To avoid possible exposure to soft X-radiation, never modify the high-voltage circuitry.

Implosion Hazard

The cathode-ray tube (CRT) may implode if struck or dropped. The shattered glass from the tube may cause injury up to six feet away. Use care when handling the tube and when removing it from the game cabinet. Also, wear gloves to protect your hands from the sheet-metal edges.

1. Unfasten the 8 square-drive screws that secure the display shield frame to the cabinet and remove them. Remove the frame.
2. Discharge the high-voltage from the cathode-ray tube (CRT).

NOTE

A label adhered to the video display assembly shows a circuit diagram. When the power is OFF, this circuit can be used to discharge the high voltage contained in the CRT to ground.

- a. Secure one end of a solid, 18-gauge wire to a screwdriver with a well-insulated handle.
- b. Secure the other end of the wire to an earth ground.
- c. Briefly touch the blade end of the screwdriver to the CRT anode by sliding it under the anode cap.
- d. Wait 2 minutes and repeat step 2c.

3. Disconnect all of the wire harnesses from the video display.
4. Unfasten the square-drive screws that secure the light housing assembly and remove it.
5. Unfasten the square-drive screws that secure the lower glass retainer. Remove the display shield and cardboard bezels.
6. Unfasten the 4 flat-washers and nuts that secure the video display chassis to the cabinet monitor mounting brackets.
7. Remove the video display assembly from the cabinet. Due to the large size of the display, this procedure may require two people.

CAUTION

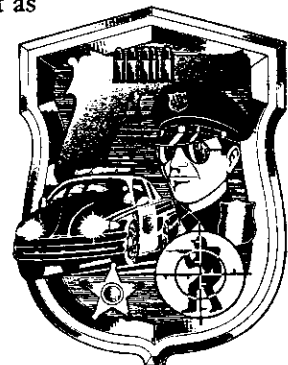
Do not attempt to remove the video display without its chassis.

8. Install the new video display by following the previous steps (excluding Step 2) in their reverse order.
9. If necessary, adjust the new video display's brightness, size, centering, purity, and convergence according to the video display service manual.

Laser Disc Player

If the laser disc player is replaced with a new one, you must be sure to check two items:

- The two RCA plugs must be plugged in as follows: The black cable plugs into the 2/R jack, and the red cable plugs into the 1/L jack.
- The small switches on the rear of the laser disc player must be set as follows: The 4-position (baud rate) DIP switch, toggle 4 must be on. Also the 6-position (operational function) DIP switch, toggle 1 must be on.



Parts Illustrations

PART ORDERING INFORMATION

THIS CHAPTER provides information you need to order parts for your game. 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 Games Customer Service phone numbers are listed on the inside front cover of this manual.



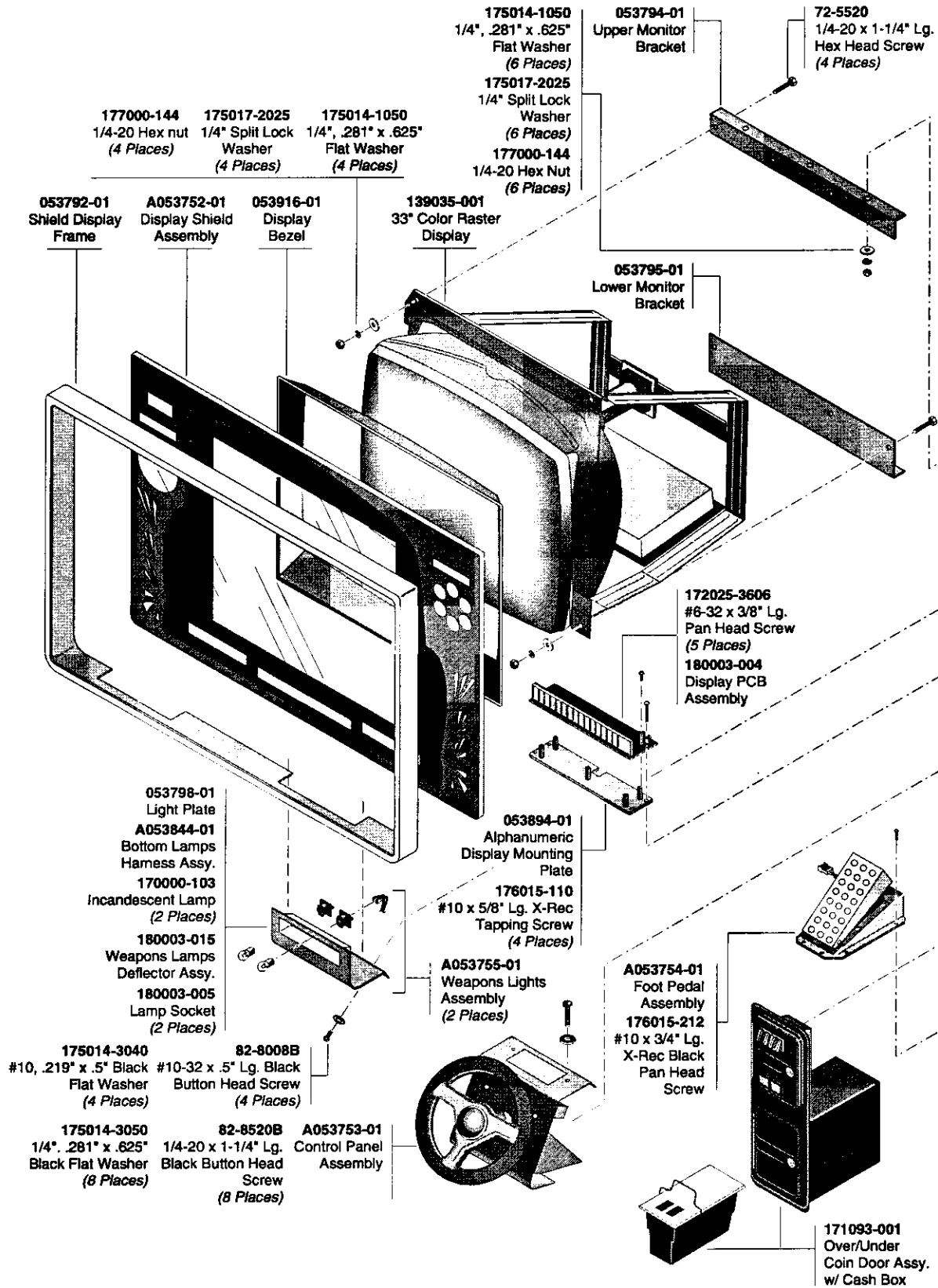


Figure 4-1 Cabinet-Mounted Assemblies, Front View

A053750-01 E

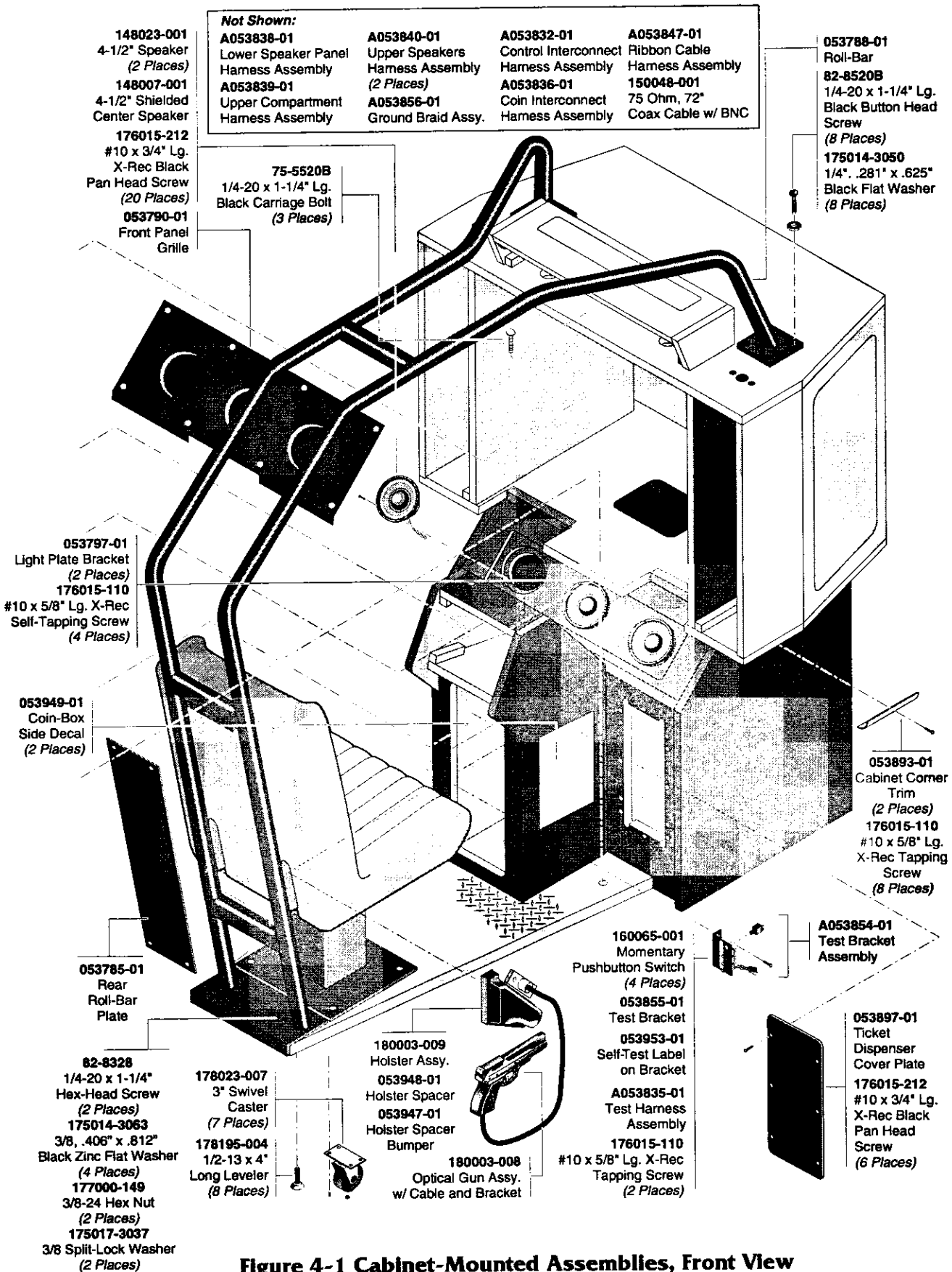


Figure 4-1 Cabinet-Mounted Assemblies, Front View

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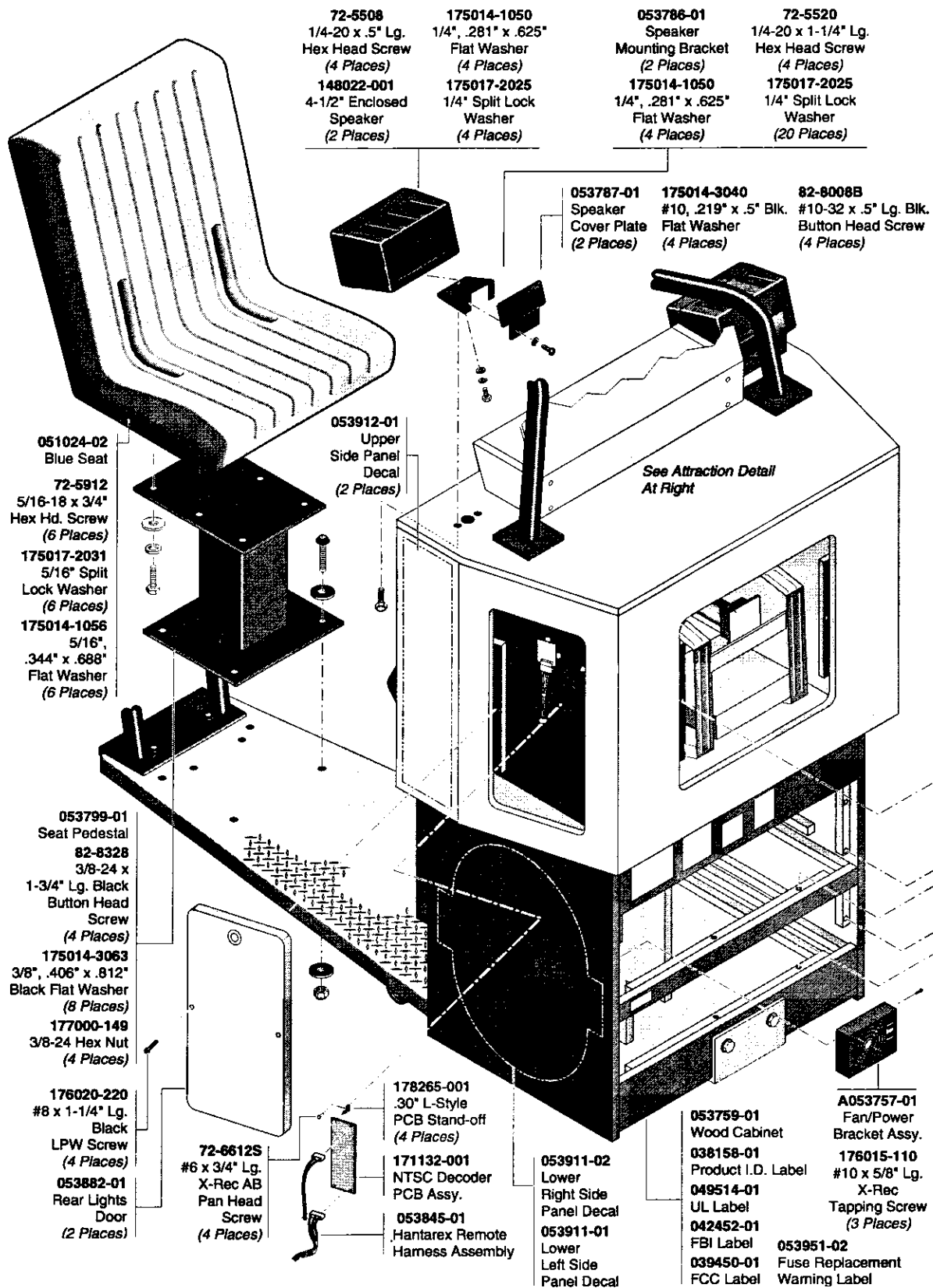


Figure 4-2 Cabinet-Mounted Assemblies, Rear View

A053750-01 E

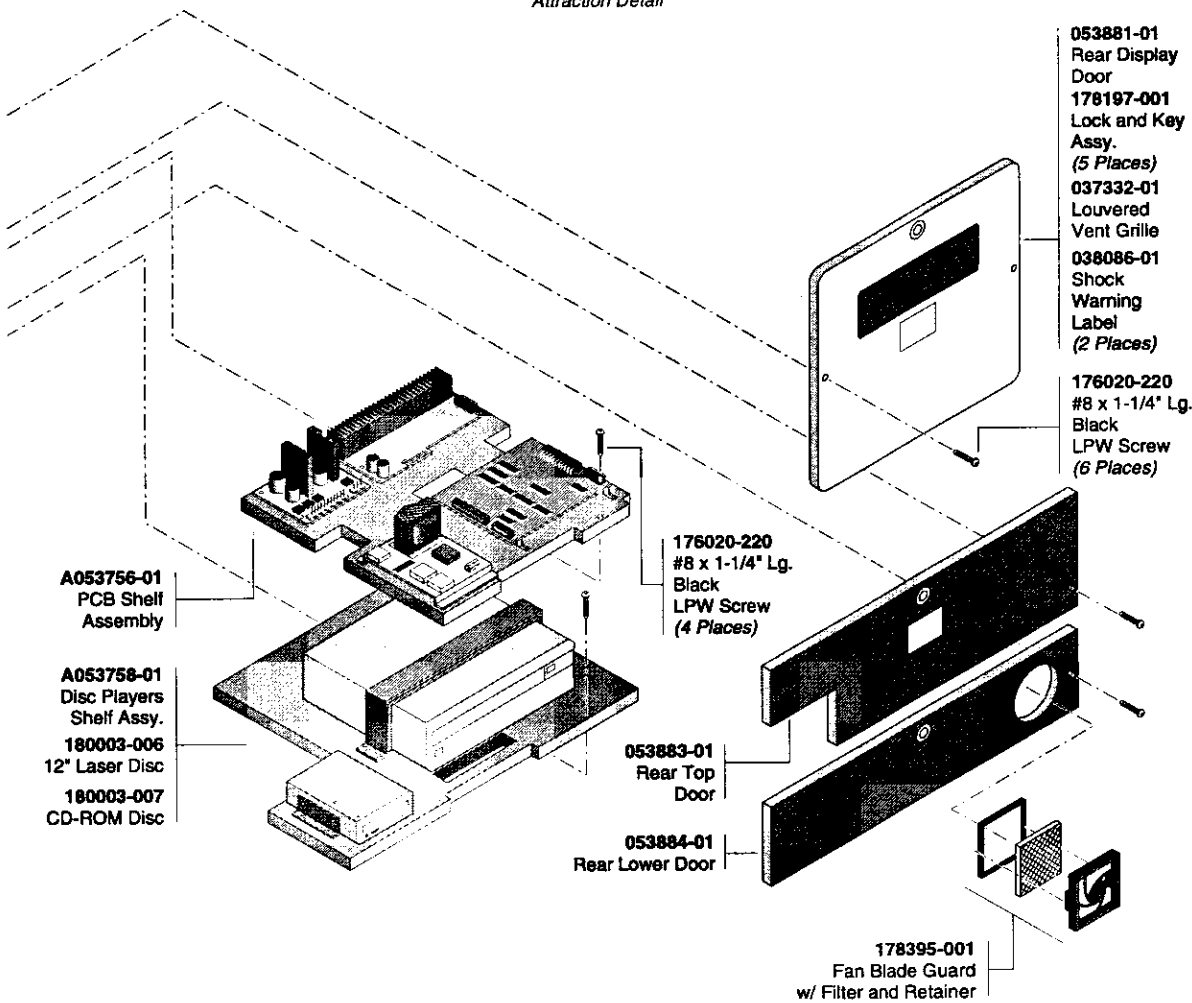
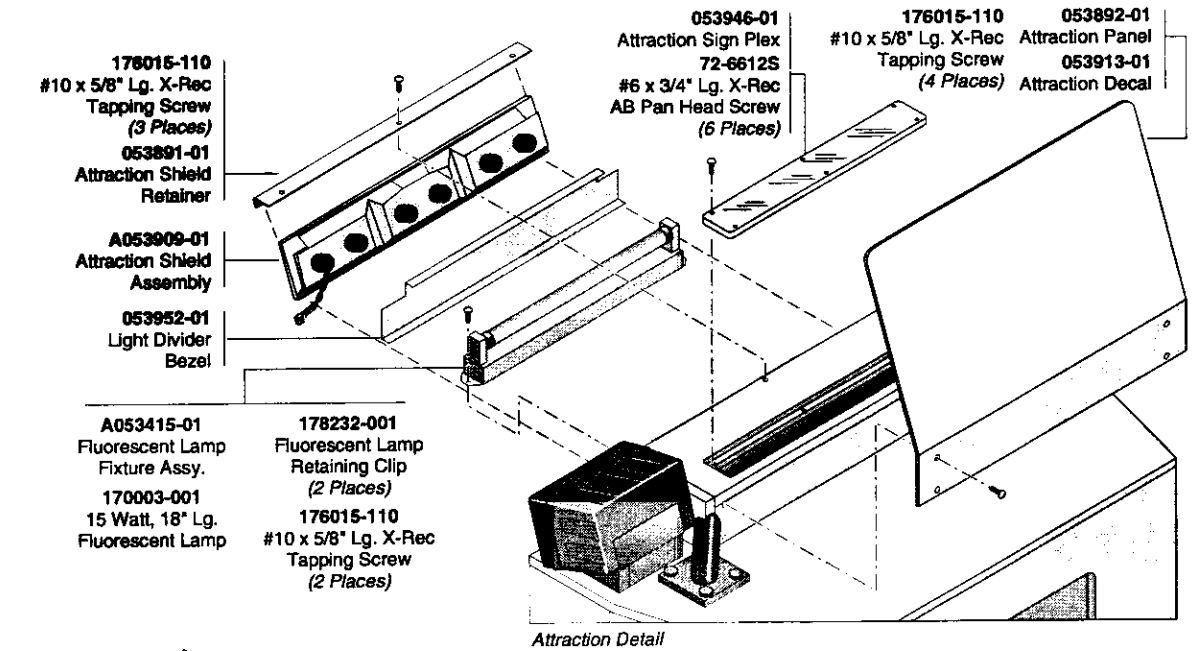


Figure 4-2 Cabinet-Mounted Assemblies, Rear View

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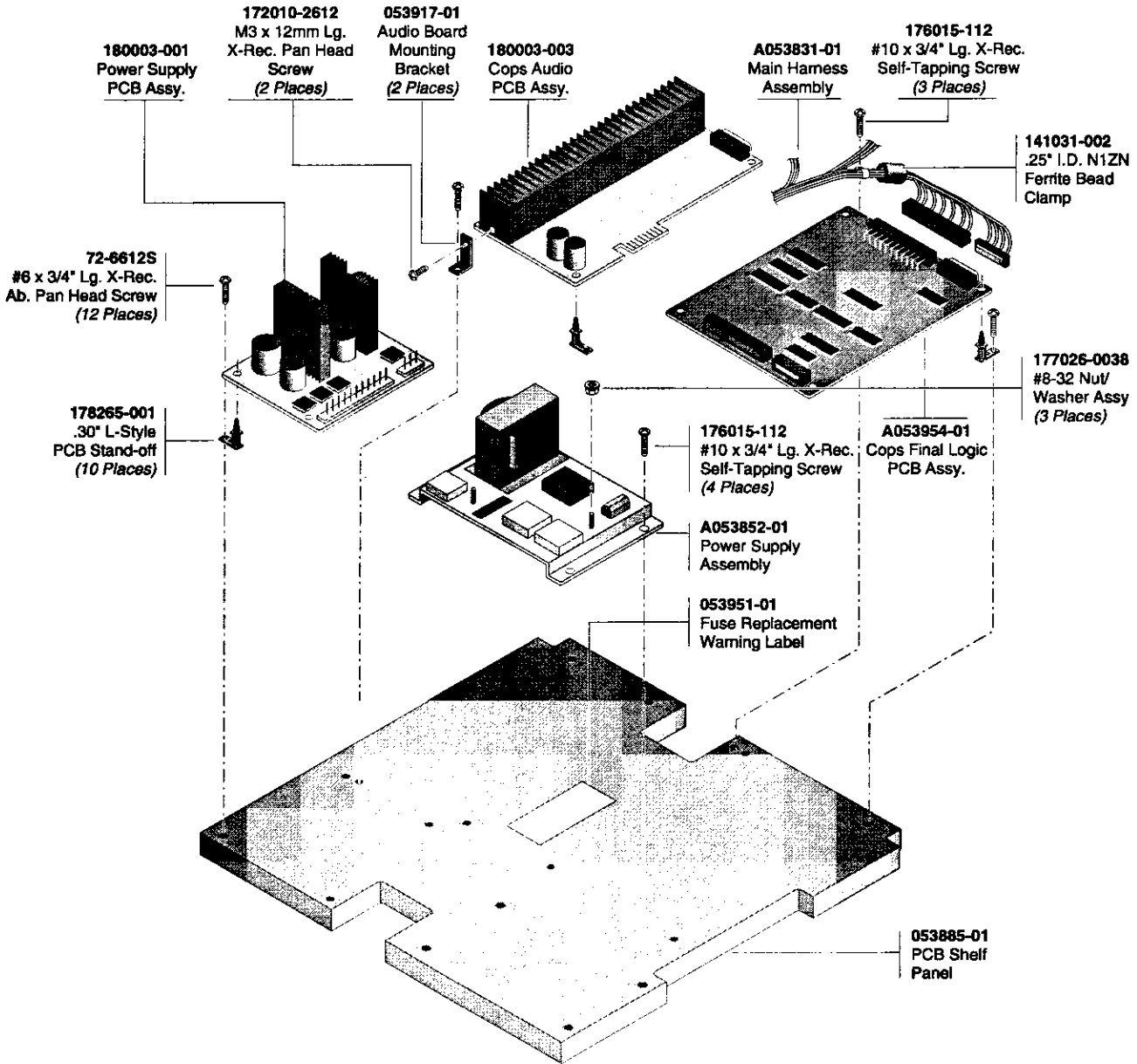


Figure 4-3 PCB Shelf Assembly

A053756-01 D

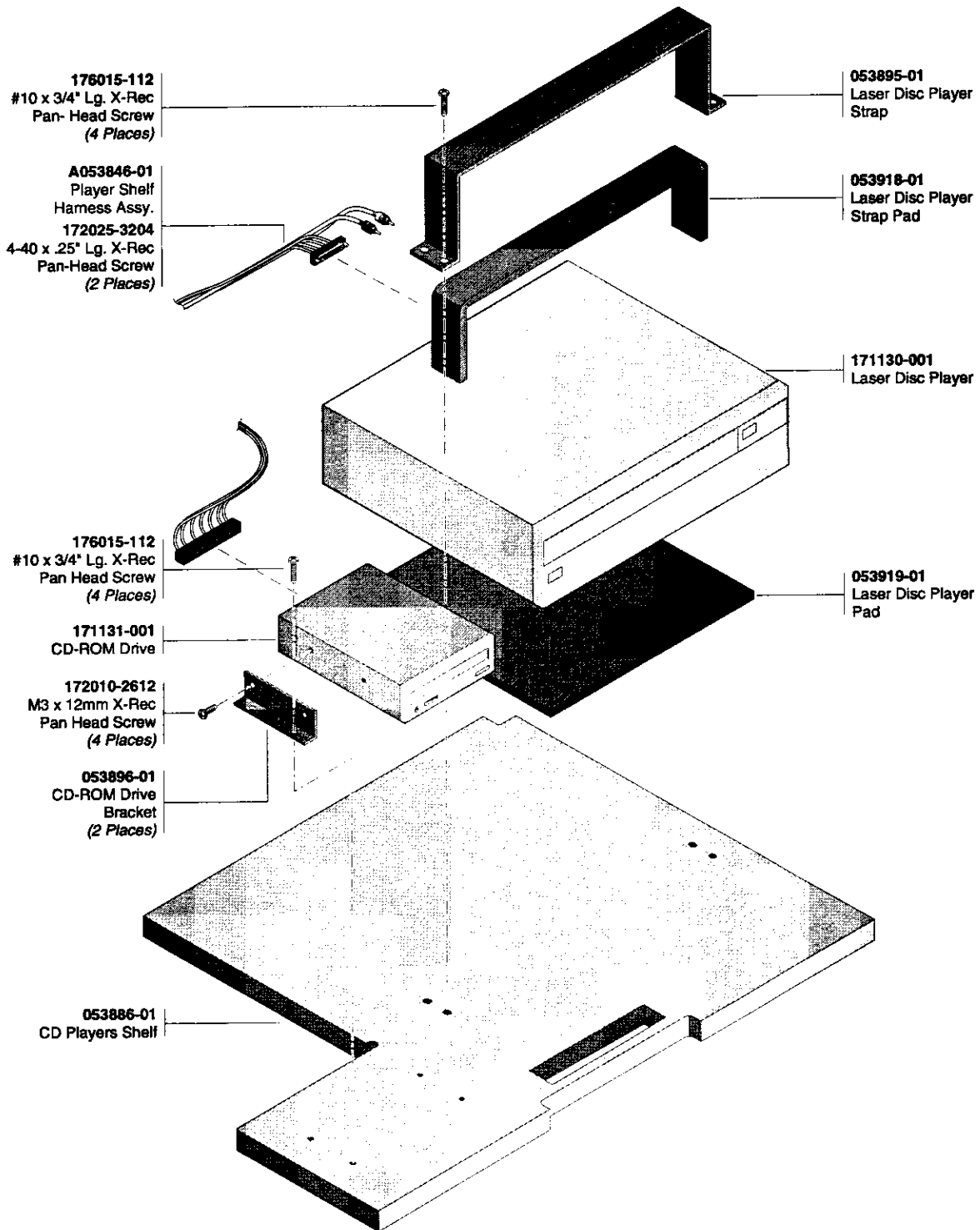


Figure 4-4 Disc Players Shelf Assembly

A053758-01 A

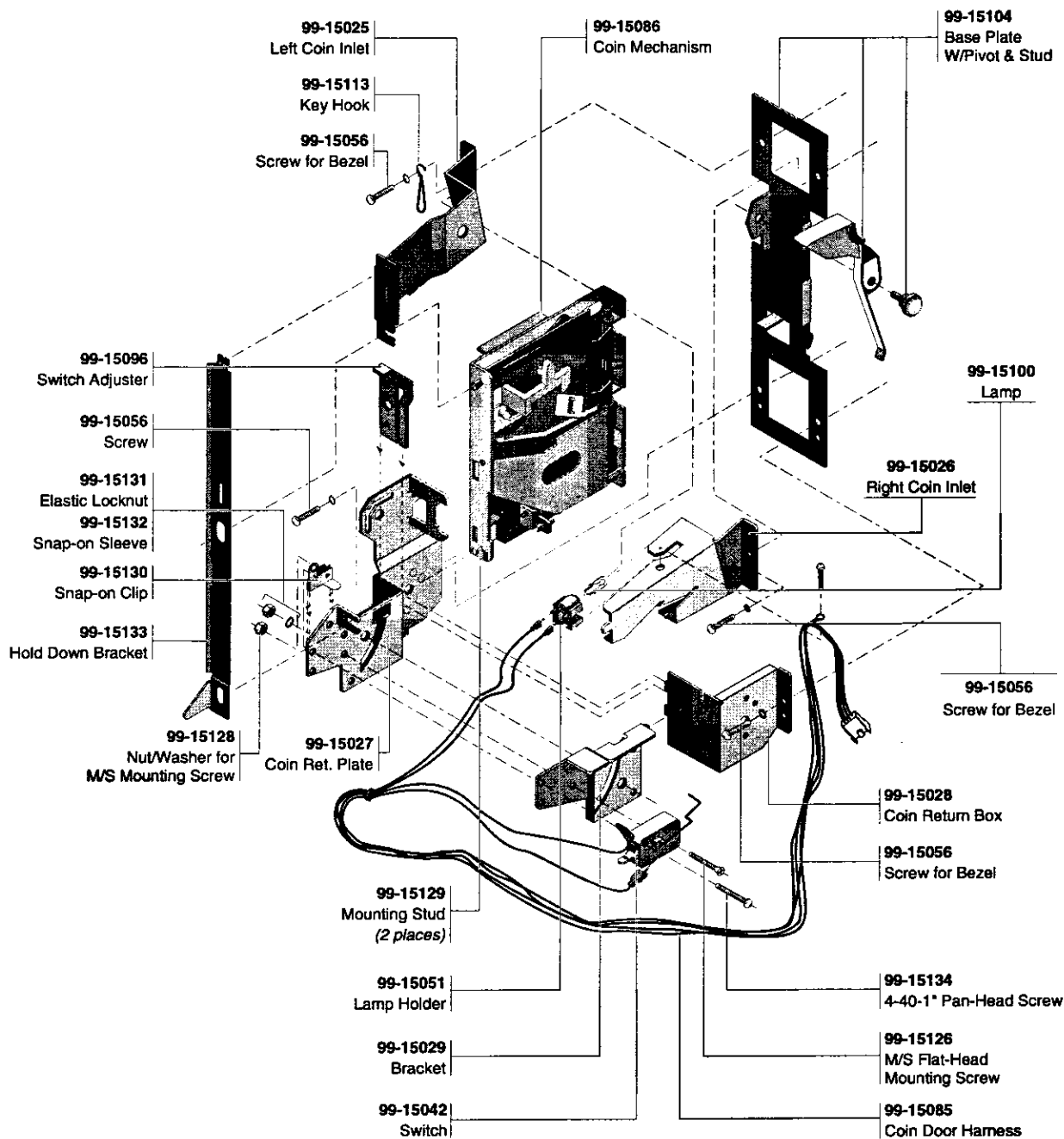


Figure 4-5 Over/Under Coin Door Assembly

171093-001

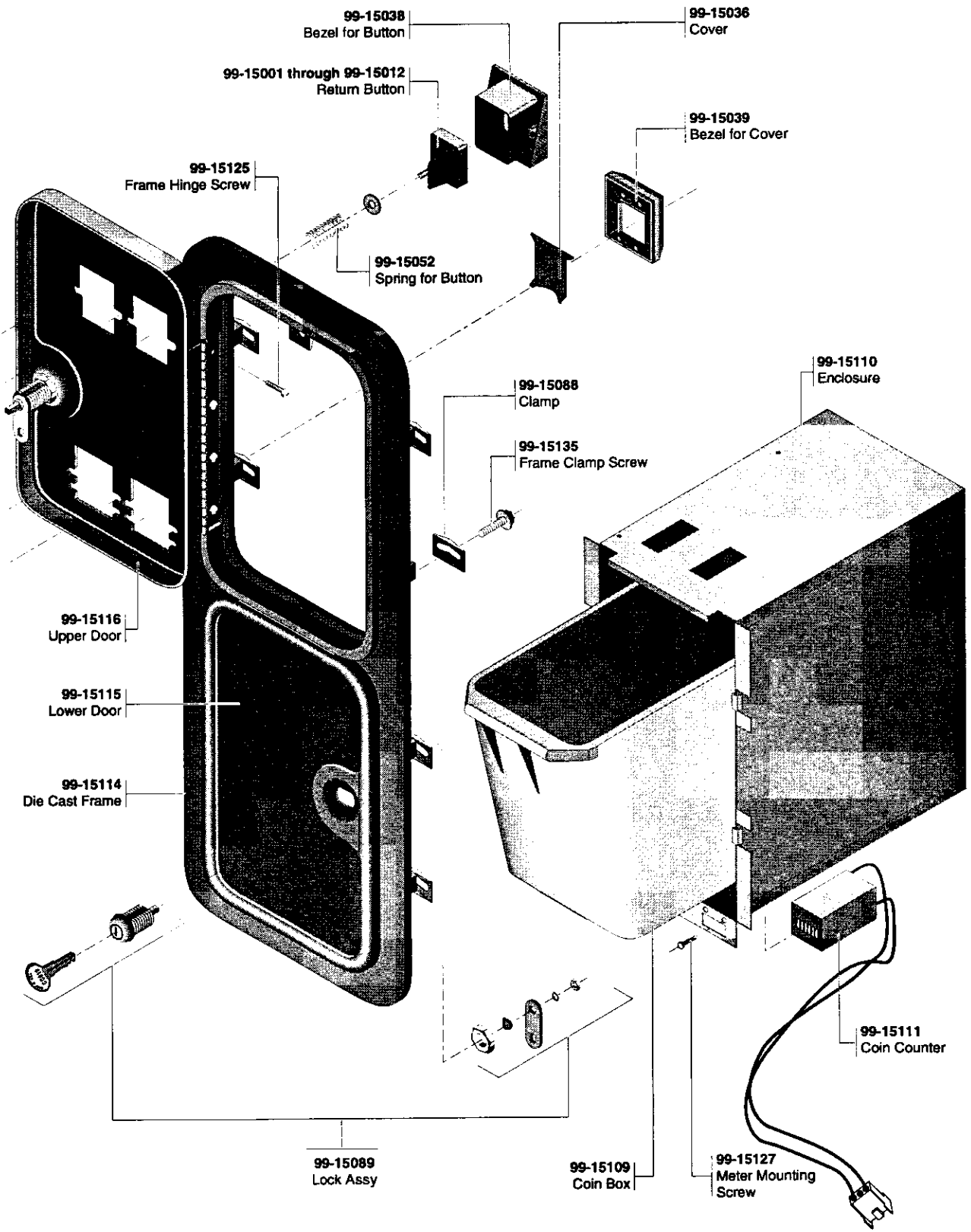


Figure 4-5 Over/Under Coin Door Assembly

171093-001

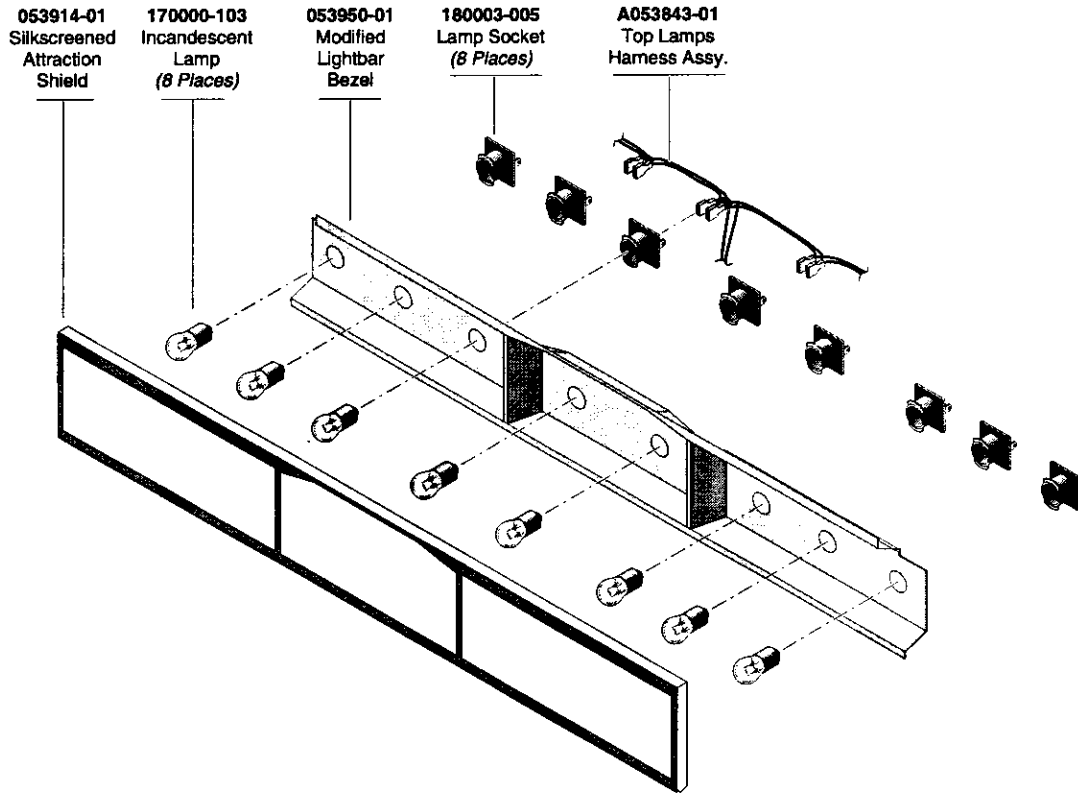


Figure 4-6 Attraction Shield Assembly

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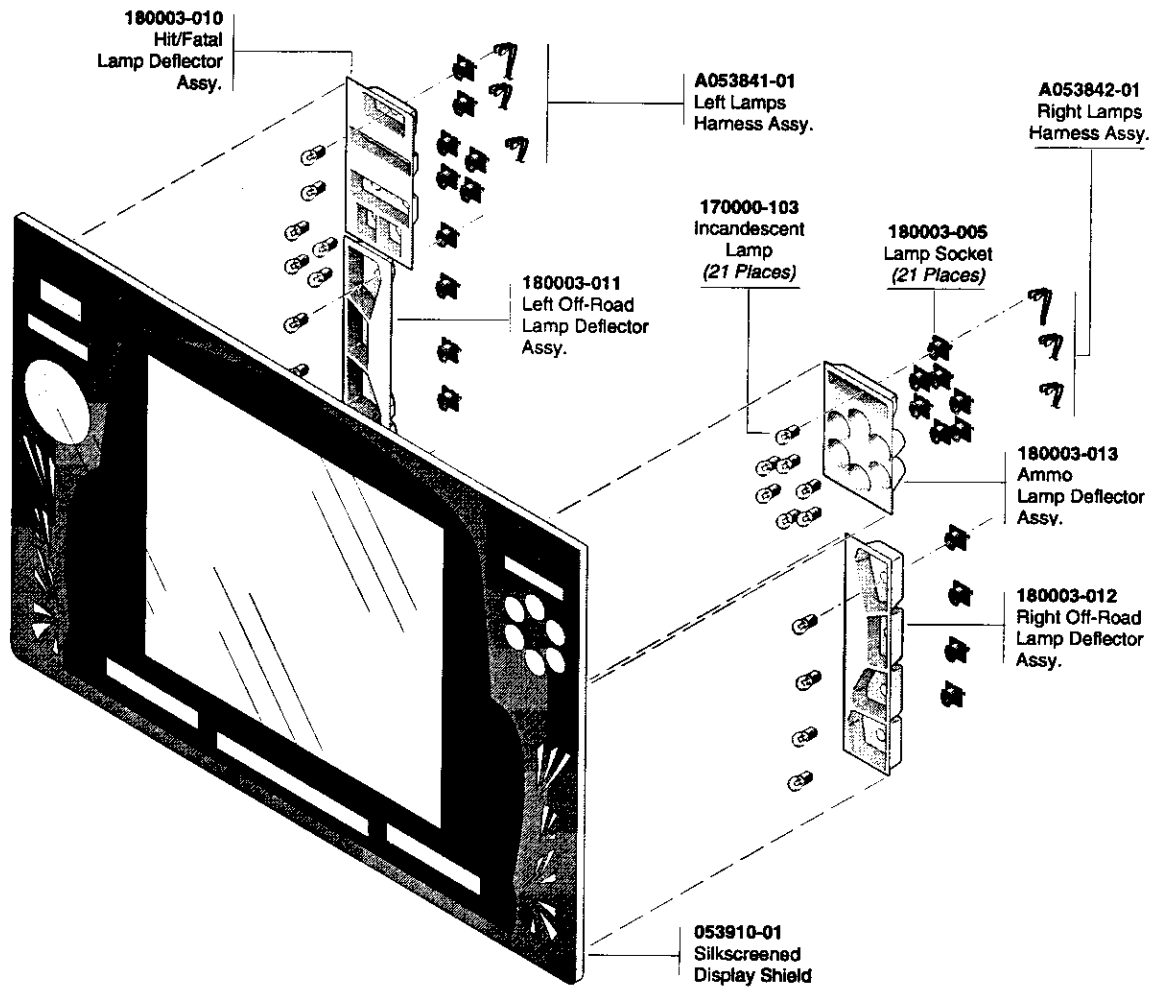


Figure 4-7 Display Shield Assembly

A053752-01 B

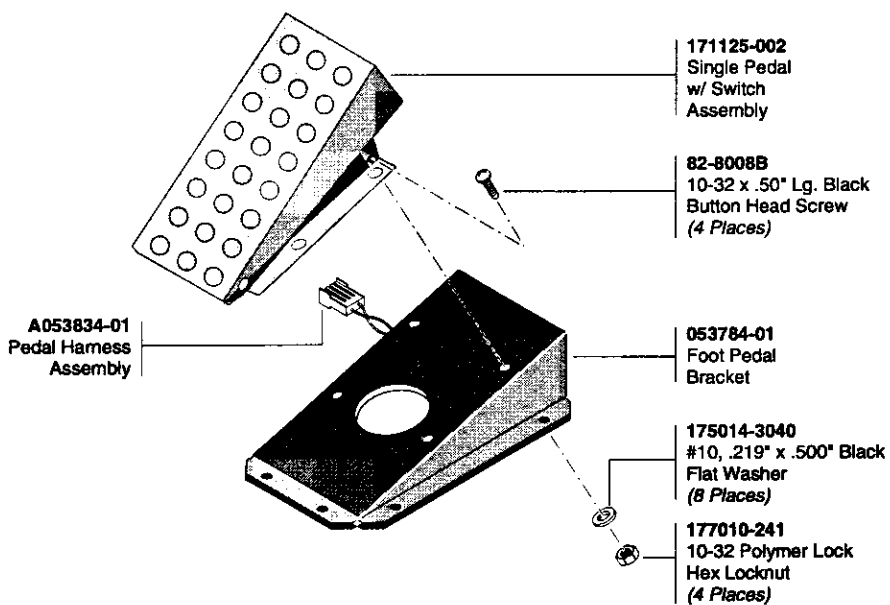


Figure 4-8 Foot Pedal Assembly

A053754-01 A

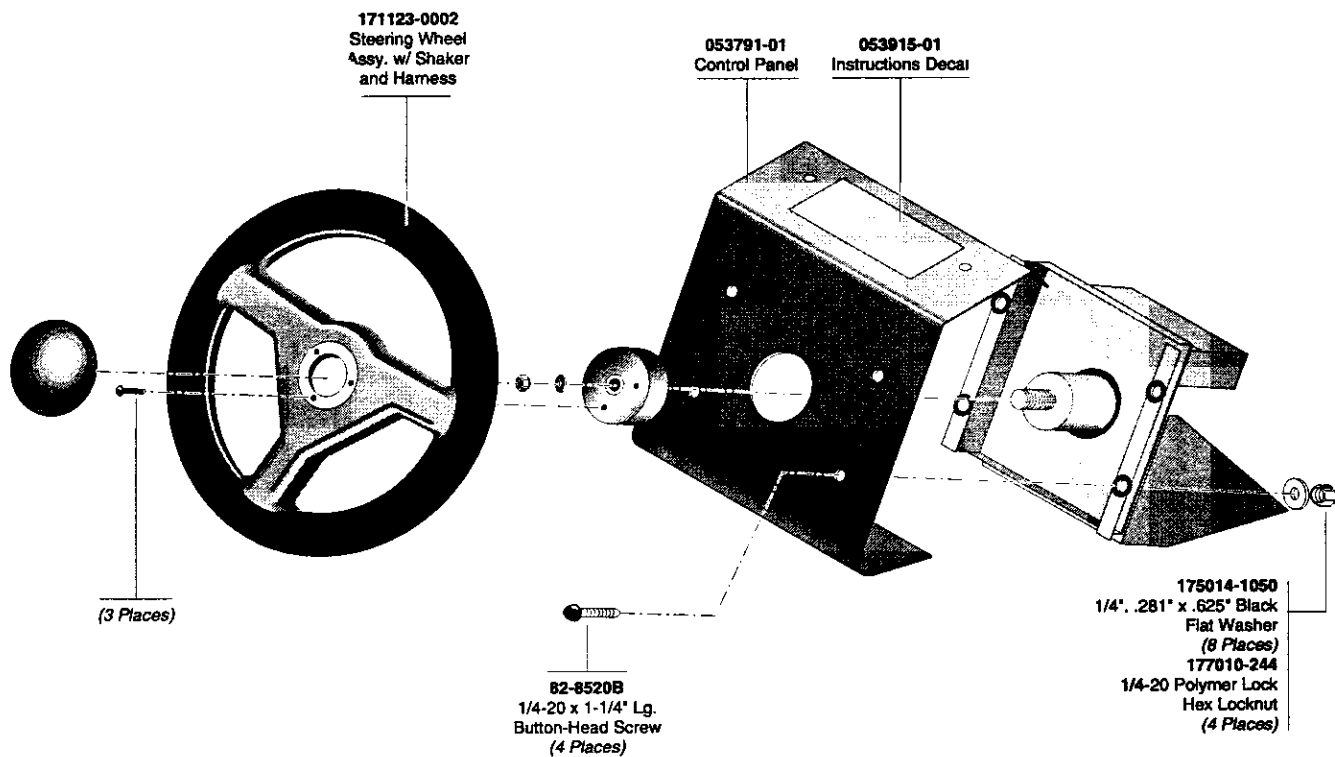


Figure 4-9 Control Panel Assembly

A053753-01 A

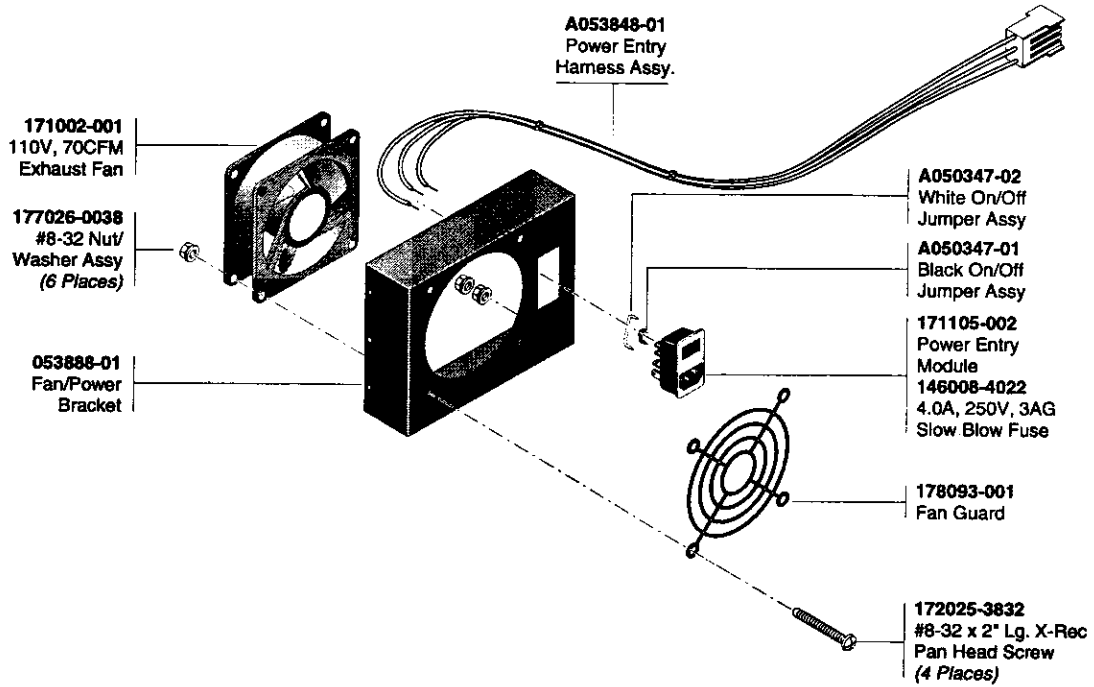


Figure 4-10 Fan/Power Bracket Assembly

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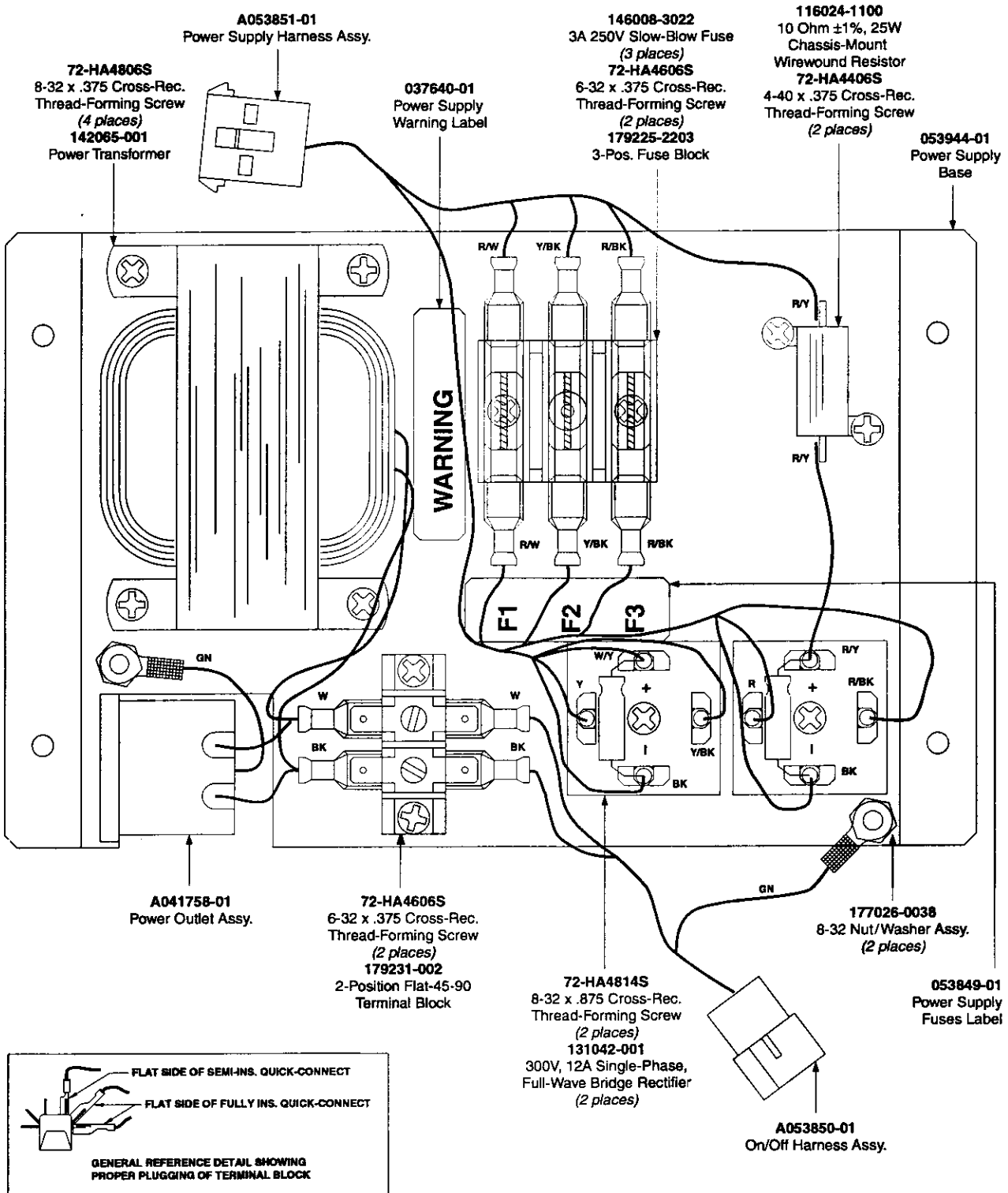


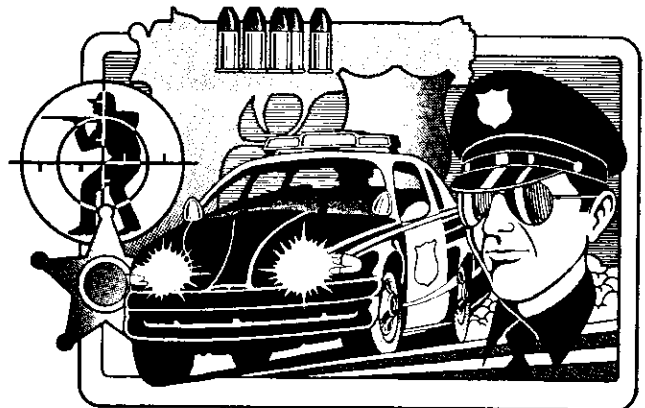
Figure 4-11 Power Supply Assembly

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Wiring Diagrams

INTRODUCTION

THIS CHAPTER contains the wiring diagrams for the entire Cops game and its power supply. The *assembly* drawings are illustrated in Chapter 4, Parts Illustrations.



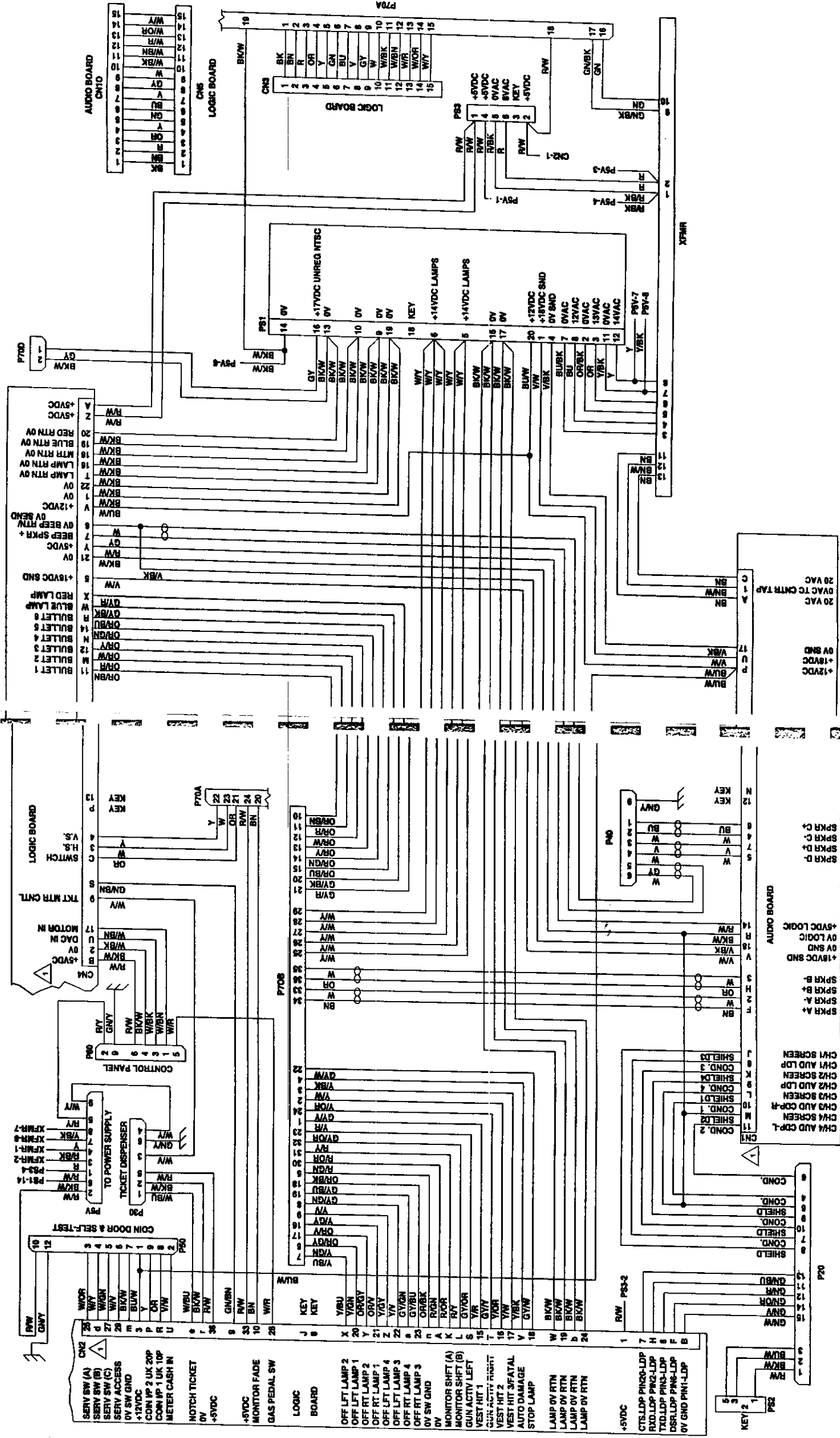


Figure 5-1 Game Wiring Diagram, Sheet 1

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Figure 5-1 Game Wiring Diagram, Sheet 1

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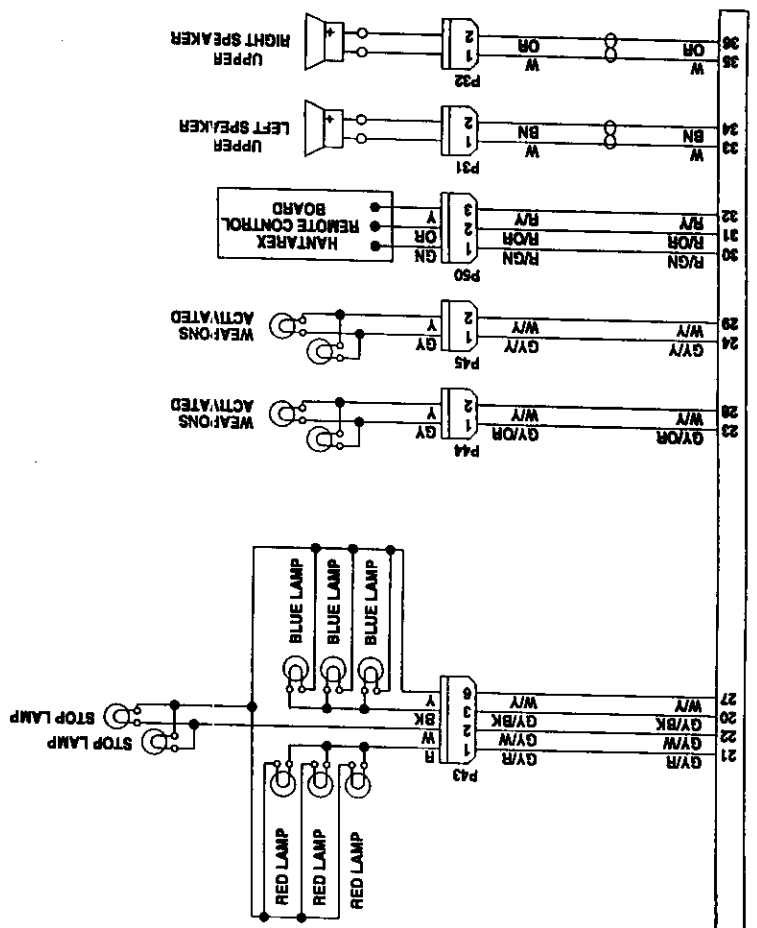
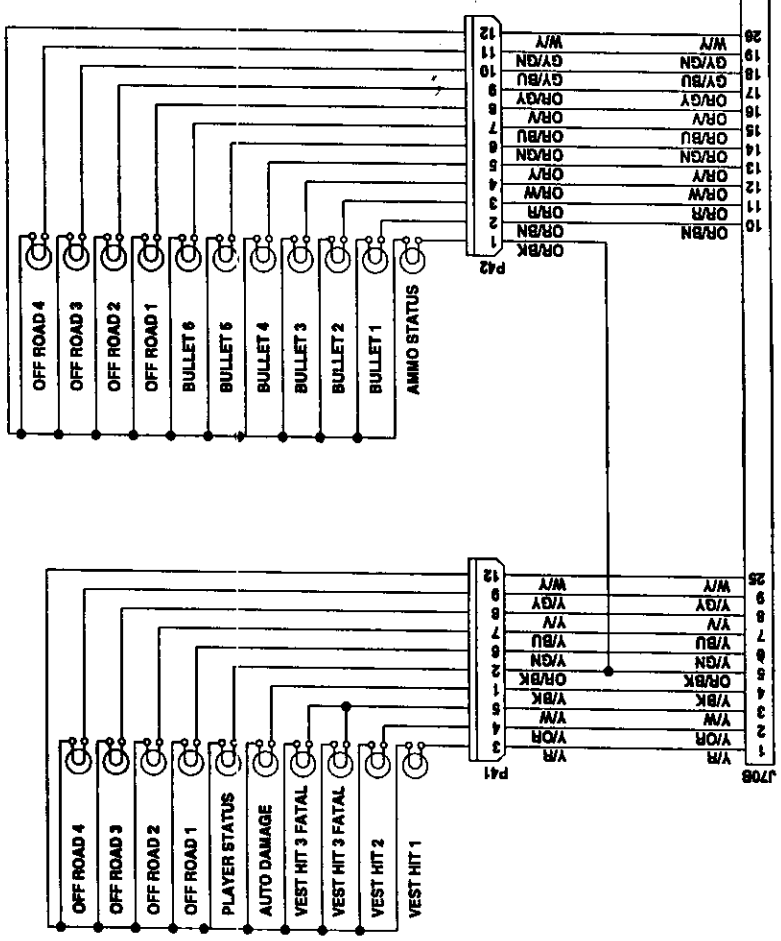
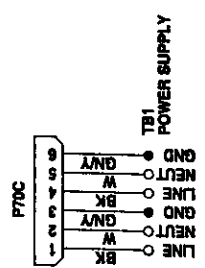
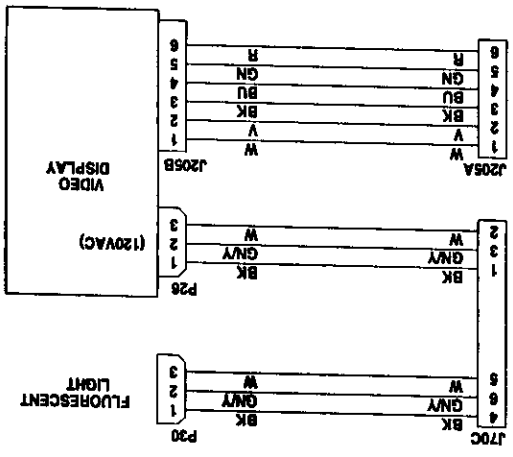
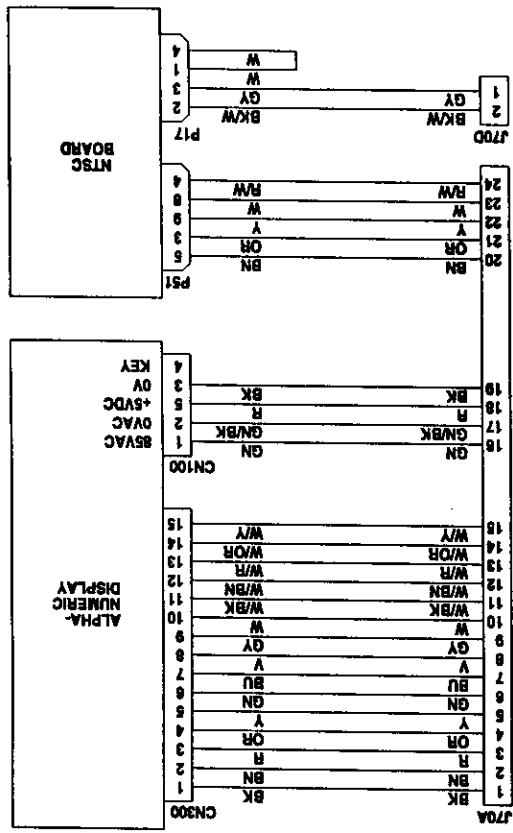


Figure 5-1 Game Wiring Diagram, Sheet 2

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Figure 5-1 Game Wiring Diagram, Sheet 2

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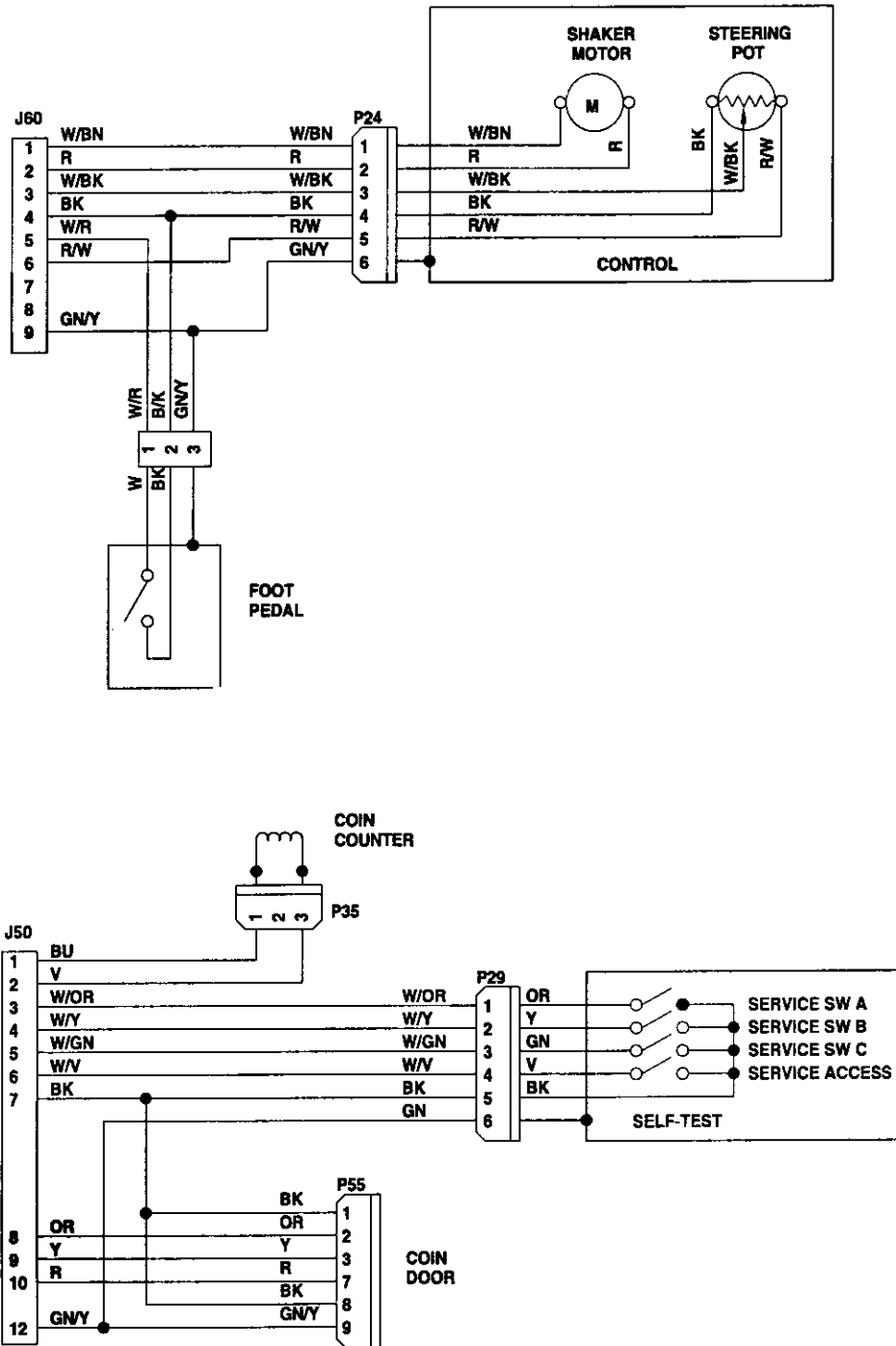
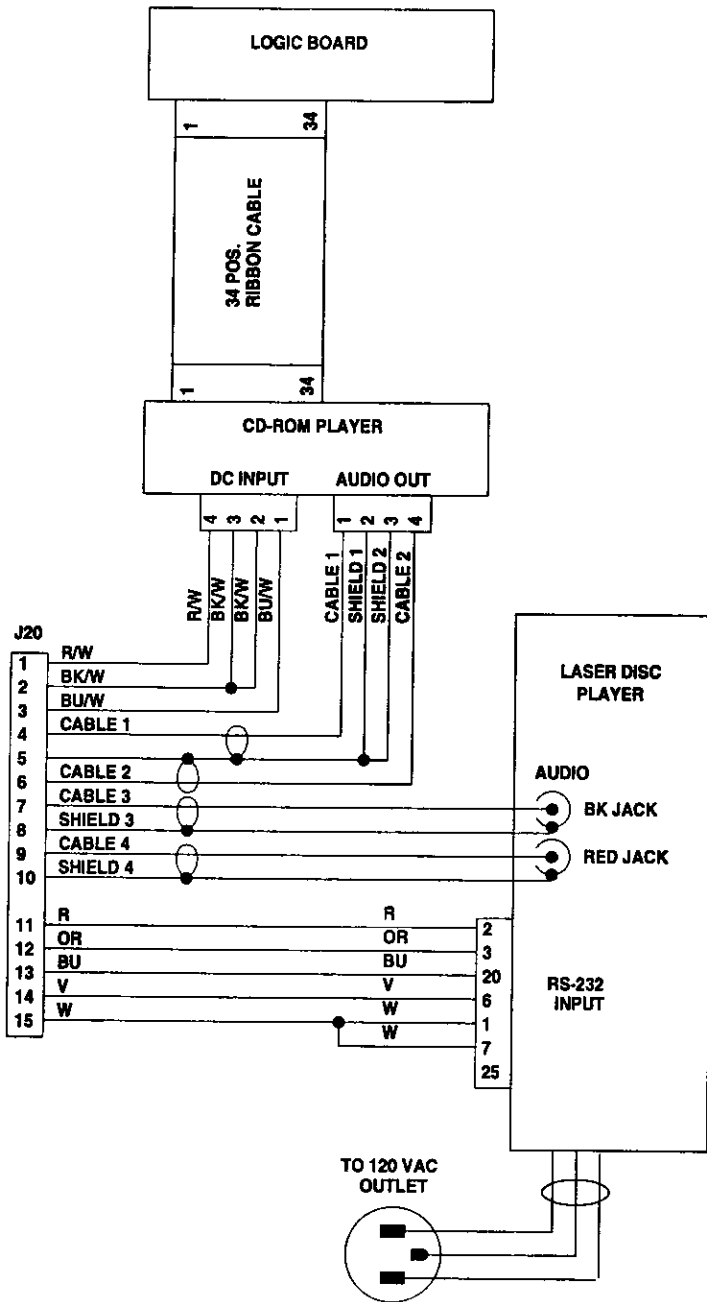


Figure 5-1 Game Wiring Diagram, Sheet 3

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NOTES:

1 ALTERNATE PIN-OUTS FOR EDGE CONNECTORS:

PIN#	ALTERNATE	PIN#	ALTERNATE
1	A 1	A	B 1
2	A 2	B	B 2
3	A 3	C	B 3
4	A 4	D	B 4
5	A 5	E	B 5
6	A 6	F	B 6
7	A 7	H	B 7
8	A 8	J	B 8
9	A 9	K	B 9
10	A 10	L	B 10
11	A 11	M	B 11
12	A 12	N	B 12
13	A 13	P	B 13
14	A 14	R	B 14
15	A 15	S	B 15
16	A 16	T	B 16
17	A 17	U	B 17
18	A 18	V	B 18
19	A 19	W	B 19
20	A 20	X	B 20
21	A 21	Y	B 21
22	A 22	Z	B 22
23	A 23	a	B 23
24	A 24	b	B 24
25	A 25	c	B 25
26	A 26	d	B 26
27	A 27	e	B 27
28	A 28	f	B 28
29	A 29	h	B 29
30	A 30	j	B 30
31	A 31	k	B 31
32	A 32	i	B 32
33	A 33	m	B 33
34	A 34	n	B 34
35	A 35	p	B 35
36	A 36	r	B 36

Figure 5-1 Game Wiring Diagram, Sheet 3

053830-01 Rev. A

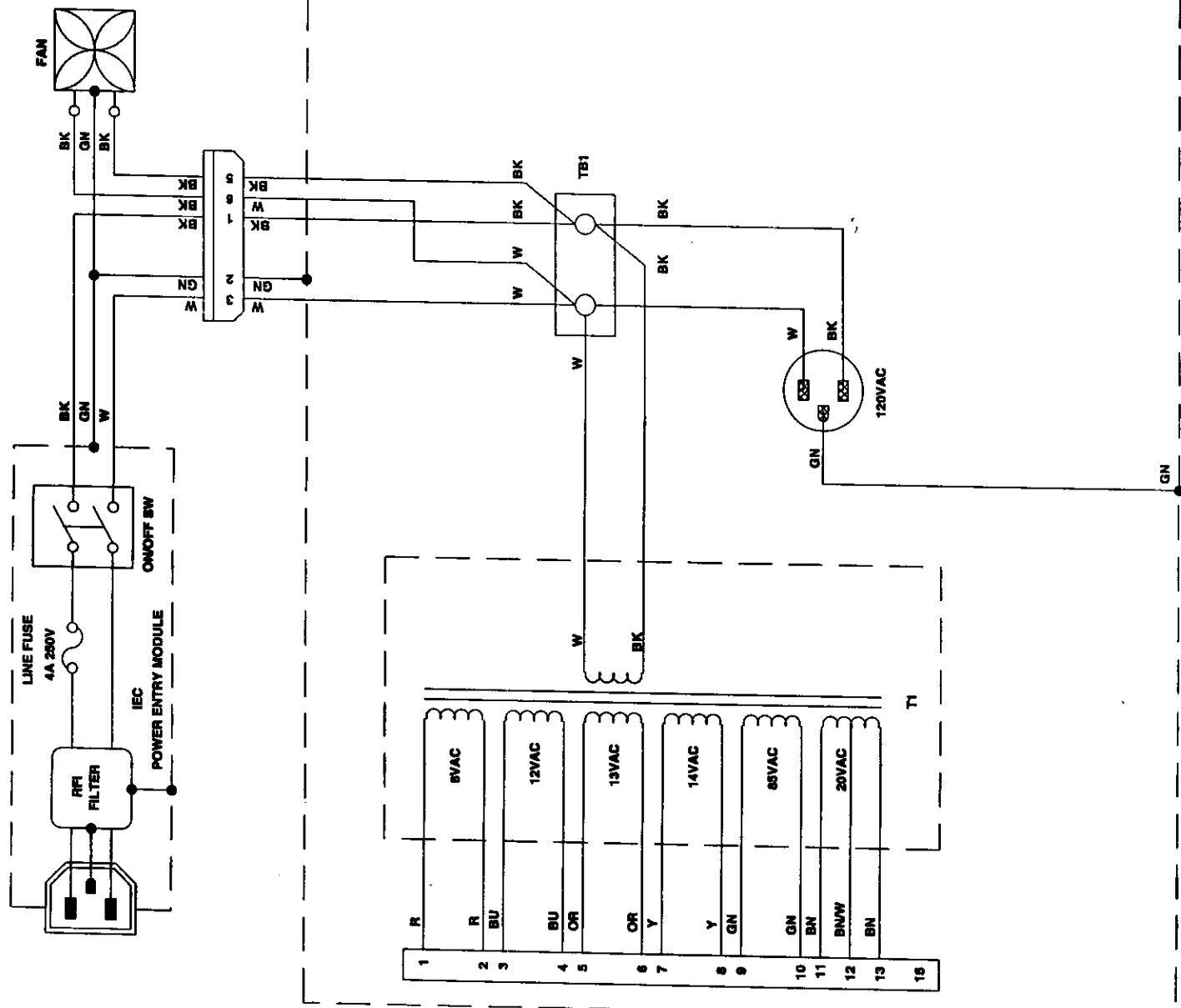


Figure 5-2 Power Supply Wiring Diagram

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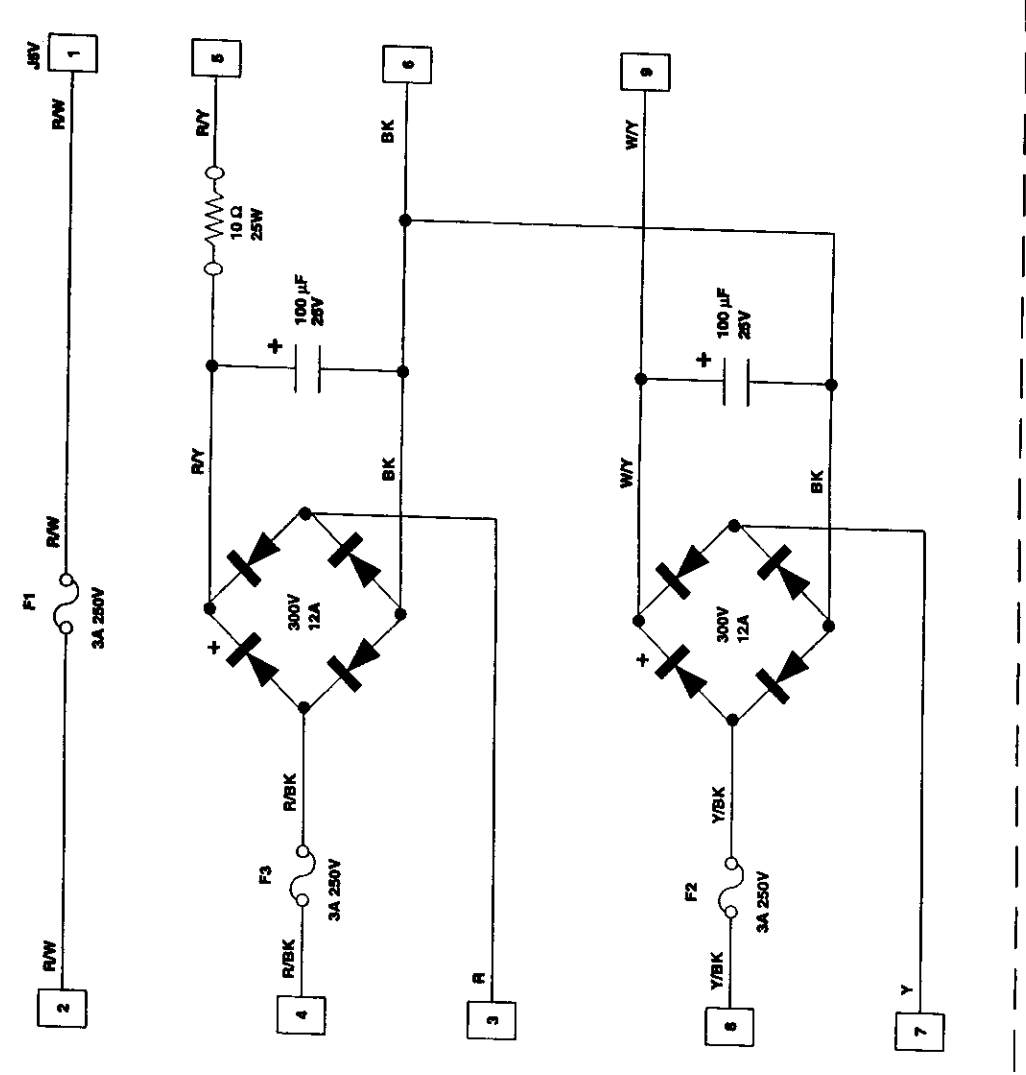


Figure 5-2 Power Supply Wiring Diagram

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