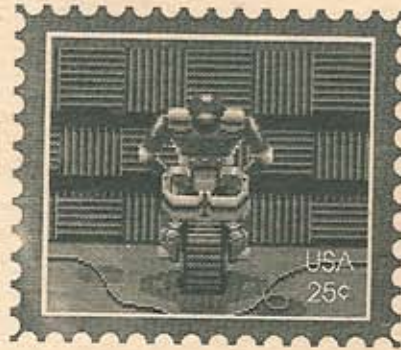
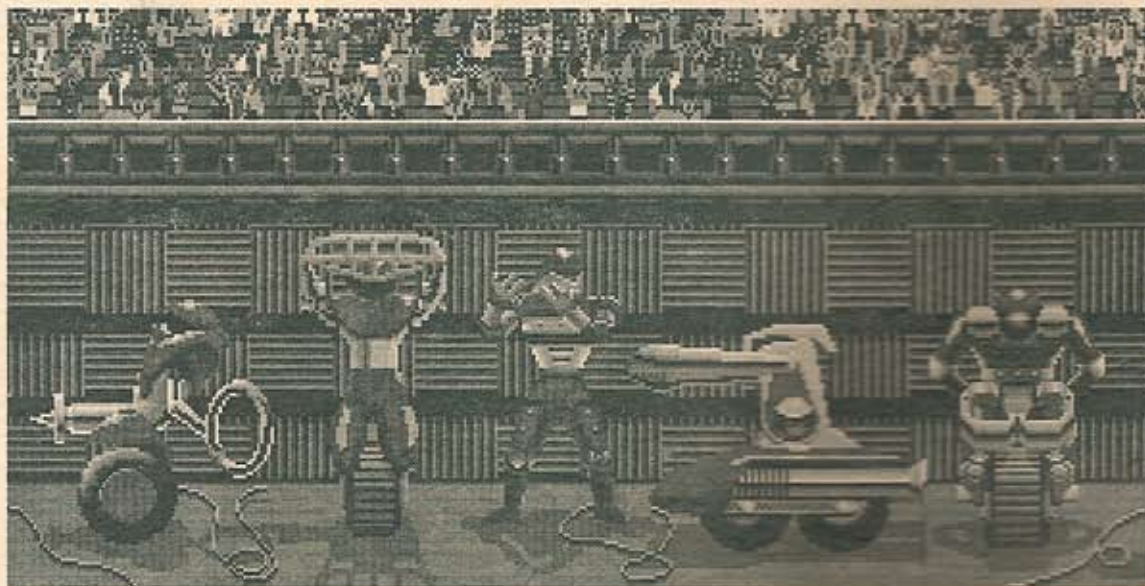




TOURNAMENT CYBERBALL™ 2077

Kit Installation Instructions





Atari Games Corporation

675 Sycamore Drive

P.O. Box 361110

Milpitas, CA 95035



For technical assistance:

If reading through this manual does not lead to solving your game maintenance or repair problem, call TELE-HELP® at one of these Atari Games Customer Service offices:

UNITED STATES

Atari Games Corporation
California Customer Service Office
737 Sycamore Drive
P.O. Box 361110
Milpitas, CA 95035

Fax (408) 434-3945

Telex 5101007850

☎ (408) 434-3950

(Monday-Friday, 7:30 a.m.-4:00 p.m. Pacific time)

EUROPE

Atari Games Ireland Limited
European Customer Service Office
Tipperary Town, Ireland

Fax 062-51702

Telex 70665

☎ 062-52155

(Monday-Friday, 9:00 a.m.-5:30 p.m. GMT)

Warranty

Seller warrants that its printed-circuit boards and parts thereon are free from defects in material and workmanship under normal use and service for a period of ninety (90) days from date of shipment. Seller warrants that its video displays and laser-video disc players (in games supplied with displays and video-disc players) are free from defects in material and workmanship under normal use and service for a period of thirty (30) days from date of shipment. None of the Seller's other products or parts thereof are warranted.

If the products described in this manual fail to conform to this warranty, Seller's sole liability shall be, at its option, to repair, replace, or credit Buyer's account for such products which are returned to Seller during said warranty period, provided:

- (a) Seller is promptly notified in writing upon discovery by Buyer that said products are defective;
- (b) Such products are returned prepaid to Seller's plant; and
- (c) Seller's examination of said products discloses to Seller's satisfaction that such alleged defects existed and were not caused by accident, misuse, neglect, alteration, improper repair, installation, or improper testing.

In no event shall Seller be liable for loss of profits, loss of use, incidental or consequential damages.

Except for any express warranty set forth in a written contract between Seller and Buyer which contract supersedes the terms herein, this warranty is expressed in lieu of all other warranties expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose, and of all other obligations or liabilities on the Seller's part, and it neither assumes nor authorizes any other person to assume for the Seller any other liabilities in connection with the sale of products by Seller.

The use of any non-Atari parts may void your warranty, according to the terms of the warranty. The use of any non-Atari parts may also adversely affect the safety of your game and cause injury to you and others. Be very cautious in using non-Atari-supplied components with our games, in order to ensure your safety.

Atari distributors are independent, being privately owned and operated. In their judgment they may sell parts or accessories other than Atari parts or accessories. Atari Games Corporation cannot be responsible for the quality, suitability or safety of any non-Atari part or any modification including labor which is performed by such distributor.

Tournament Cyberball 2072™

Kit Installation Instructions



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 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:

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

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.

NOTE — A highlighted piece of information.



How to Use This Manual

This manual describes the procedure for converting an existing Cyberball game into a Tournament Cyberball 2072 game. The manual includes the following information:

- Inspecting the Tournament Cyberball 2072 kit parts
- Preparing the Cyberball cabinet for conversion
- Installing the Tournament Cyberball 2072 kit parts

This manual provides only the conversion procedures. To perform the conversion successfully, you will also need to refer to the *Cyberball Operators Manual*, part no. TM-326, included with the existing game.

CAUTION

This conversion entails lengthy modification of the Game PCB. Only qualified technicians should attempt to perform this modification. If you do not have the necessary skills and tools needed for this job, seek qualified assistance from your Atari Games distributor. Atari Games is not responsible for any damage resulting from installation of this kit.

First check all the parts in your kit against the parts list in Table 1-1. The following instructions will take you through a step-by-step procedure to convert the game PCB.

WARNING

To avoid electrical shock, unplug the video game cabinet during the conversion. After inspection, plug it only into a grounded 3-wire outlet.

Tools Required

- Chip extractor tool
- Phillips screwdriver
- 1/8-inch hex driver
- X-ACTO[®] knife
- Isopropyl alcohol
- Squeegee
- Soldering iron
- Wire stripper
- Diagonal cutters
- IC extracting tool
- Solder sucker

Table 1-1 Kit Contents

Received?	Item
<input type="checkbox"/>	MOROM (Motion Object ROM) PCB Assy
<input type="checkbox"/>	Cyberball 2072 EPROM Kit Assy
<input type="checkbox"/>	Score Board Attraction Plex
<input type="checkbox"/>	Attraction Shield Decal
<input type="checkbox"/>	Instruction Panel Decal
<input type="checkbox"/>	Two Control Panel Decals
<input type="checkbox"/>	Two Side Panel Decals
<input type="checkbox"/>	Two Left Coinage Decals
<input type="checkbox"/>	Two Right Coinage Decals

Inspecting the Kit

The parts listed in Table 1-1 are included in the Tournament Cyberball 2072 conversion kit. Verify that you have received all the parts. If any part is missing or damaged, please contact your distributor and provide the following information:

1. Tournament Cyberball 2072 kit serial number.
2. Part number and description of any missing or damaged parts.
3. Date received.

Preparing the Existing Game for Conversion

1. Turn off power to the game and unplug it.
2. Remove the existing control panel and detach the control panel harnesses connected to the printed-circuit board (PCB). Refer to *Removing the Control Panel* in Chapter 4 of the *Cyberball Operators Manual* for additional instructions.
2. Remove any side panel decals from the cabinet.
3. Remove the coin door graphic, and carefully remove any adhesive from the area.
4. Wipe down the cabinet as necessary.

Conversion Instructions

The following sections describe the procedures in the sequence recommended for performing the game conversion.

NOTE

The following conversion should be performed only by qualified service personnel.

Remove the Game PCB

- Remove the game PCB as described in the *Cyberball Operators Manual* in the section *Removing the Game PCB* in Chapter 4. You will be adding and replacing chips on the game board. See Figure 1-1.

CAUTION

Do not unplug or plug in the Cyberball game PCB while the power is on. You could seriously damage the PCB.

SLAPSTIC Modification

1. Remove the PAL at location 1N.
2. De-solder the following locations: 1N, 2N, 3M, and 3K/L. Inspect all the traces and repair any broken traces before you continue.
3. Add 20-pin sockets at 1N and 2N.
4. Add 28-pin sockets at 3M and 3K/L. Note that this kit contains two extra sockets for spare use. Twelve 28-pin sockets are provided, but you should only need to use 10 of them for the conversion.
5. Remove the ROMs in these socket locations: 1M, 1K/L, 1C/D, 3C/D, 1B, 3B, 8L/M, 9L/M, 10L/M, 11L/M, 15N, 16N, and 3/4J.

ROM Update

6. Install the new parts listed in Table 1-2.

Motion Object Modification

7. Lift pin 8 of both LS374s at locations 9/10A and 10A.
8. A 15-inch strip of wire is attached to the MOROM PCB. Ten inches of this wire should be cut off to

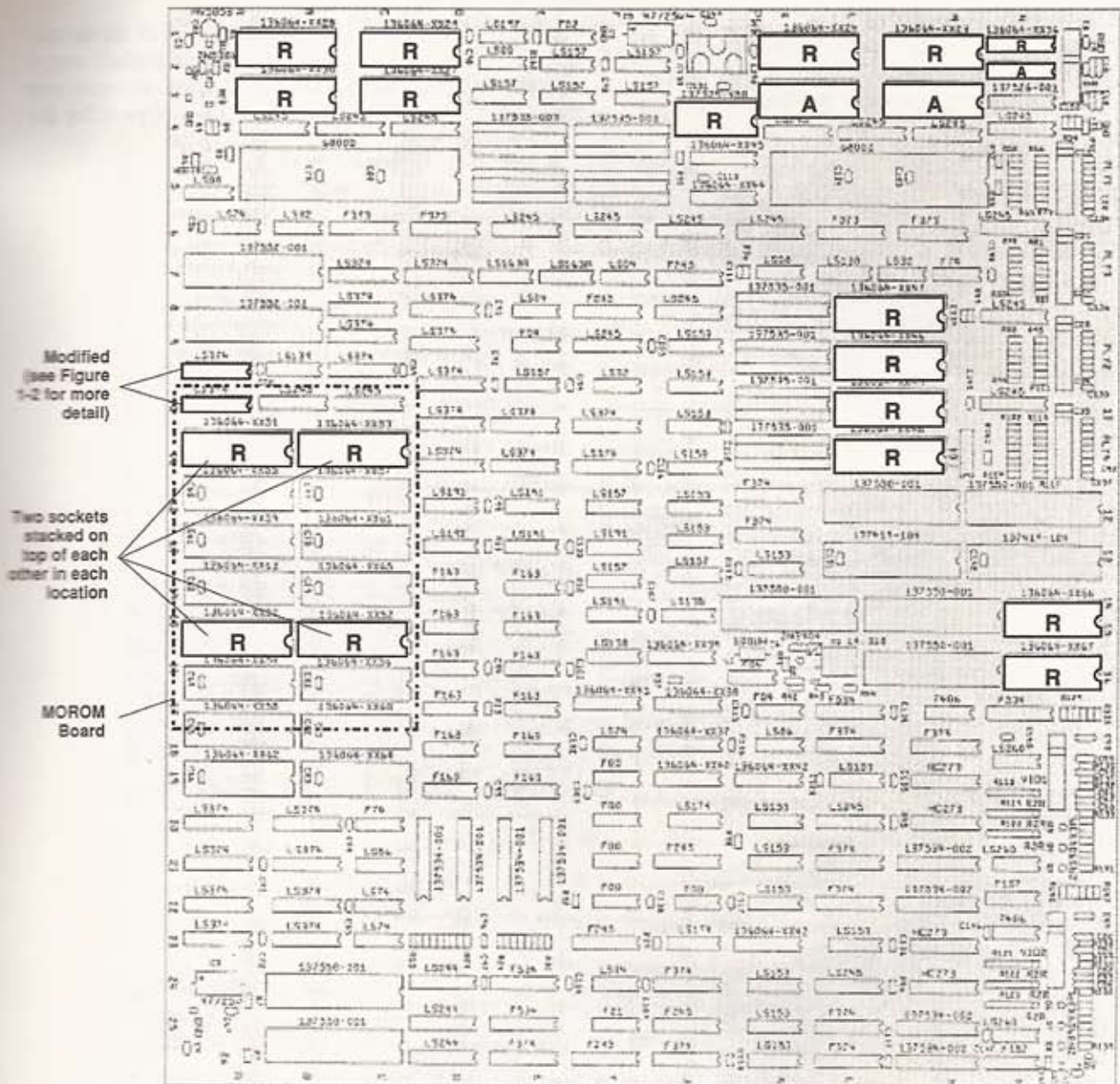
be used in modifying the game PCB. Using modification wire, connect pin 10 of 8/9A to pin 8 of both 9/10A and 10A.

9. Connect pin 9 on 9/10A to pin 9 on 10A.
10. Remove and save the ROMs at 11A, 11C, 15/16A, and 15/16C. These ROMs will be installed in the MOROM board later.
11. Using 28-pin sockets in your kit, install two sockets in each of the following locations: 11A, 11C, 15/16A, and 15/16C.
12. Install the ROMs listed in Table 1-2 on the game board.
13. Connect the wire from the MOROM PCB to pin 9 of 10A to TP1 on the game board.

Table 1-2 ROMs To Be Installed

Installed?	New Part No.	Location	Checksum
<i>Main Program:</i>			
<input type="checkbox"/>	136073-1031	1N	5CBB
<input type="checkbox"/>	137412-116	2N	—
<input type="checkbox"/>	136073-1007	1M	00FF
<input type="checkbox"/>	136073-1008	1K/L	25FE
<input type="checkbox"/>	136073-1009	3M	2CDF
<input type="checkbox"/>	136073-1010	3K/L	C4DE
<input type="checkbox"/>	136073-1011	3C/D	8EFF
<input type="checkbox"/>	136073-1012	1B	73FE
<input type="checkbox"/>	136073-1013	1C/D	E4DF
<input type="checkbox"/>	136073-1014	3B	6BDE
<input type="checkbox"/>	137399-300	3/4J	—
			(2816 EEPROM)
<i>Playfield:</i>			
<input type="checkbox"/>	136073-1015	9L/M	9E41
<input type="checkbox"/>	136073-1016	8L/M	2D98
<input type="checkbox"/>	136073-1017	11L/M	CEE9
<input type="checkbox"/>	136073-1018	10L/M	55DC
<i>Alphanumeric:</i>			
<input type="checkbox"/>	136073-1019	15N	526A
<input type="checkbox"/>	136073-1020	16N	69F2
<i>Chips on MOROM Board:</i>			
	136071-1032	AH0	B120
	136071-1033	AH1	69BE
	136071-1034	AH2	0747
	136071-1035	AH3	C7F2
<input type="checkbox"/>	136064-1150*	AL0	1080
<input type="checkbox"/>	136064-1151*	AL1	C8C4
<input type="checkbox"/>	136064-1152*	AL2	EF1C
<input type="checkbox"/>	136064-1153*	AL3	2E17
<i>Chip on SAC Audio Board:</i>			
<input type="checkbox"/>	136073-1030	2F	E7FF

**These are the old ROMs that you saved after removing them in step 10.*



A = Add new part into previously-empty location
 R = Replace old part with a new one in this socket

Figure 1-1 Installing the ICs into the Cyberball Game PCB

14. Install the MOROM board on the main board in the empty locations where you previously installed double sockets.
15. Install the audio ROM at 2F on the SAC Audio board.

You have completed the conversion. You should now re-install the main and SAC Audio boards in your game. Check the controls and graphics in the self-test procedure.

Reinstall the Game PCB

- Reinstall the game PCB in the cabinet.

Install the Kit Decals

See Figures 1-3 and 1-4 for placement of all kit decals. Wet one side panel of the cabinet with slightly soapy water. Then position the decal as desired. Remove any wrinkles in the decal using a squeegee. Repeat for the other decals.

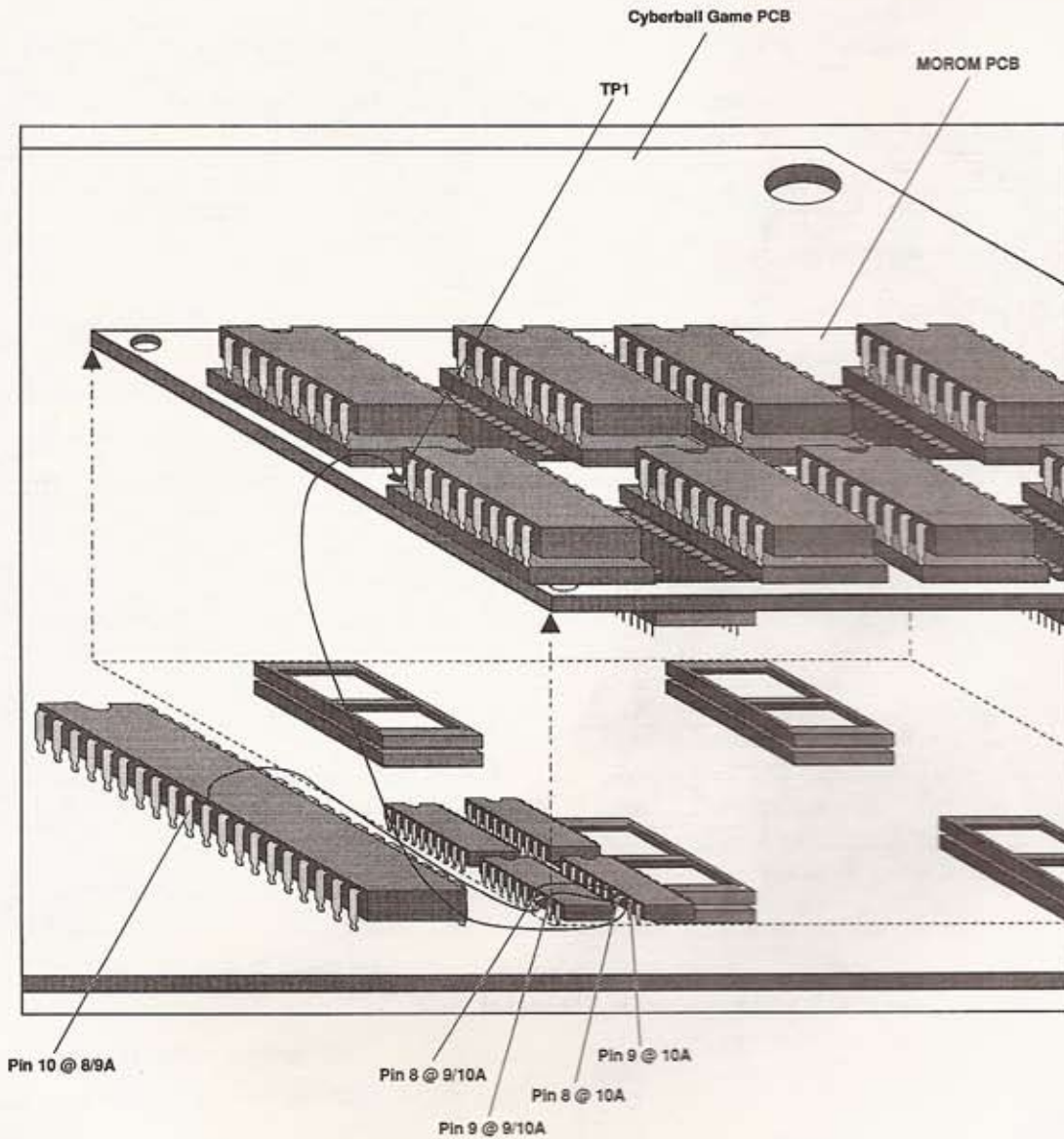


Figure 1-2 Detail of Game PCB Modifications

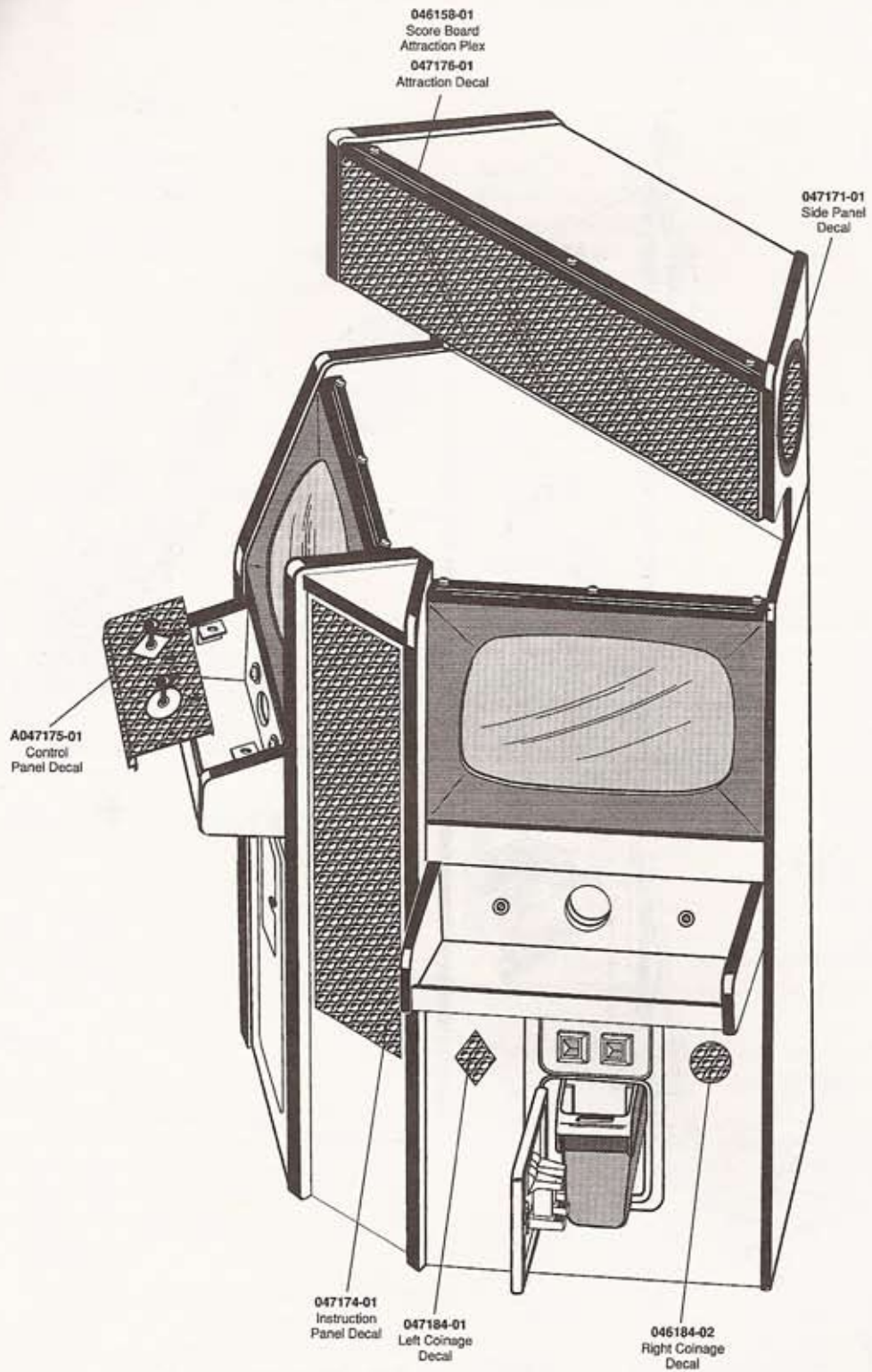


Figure 1-3 Applying the Kit Decals—Front View

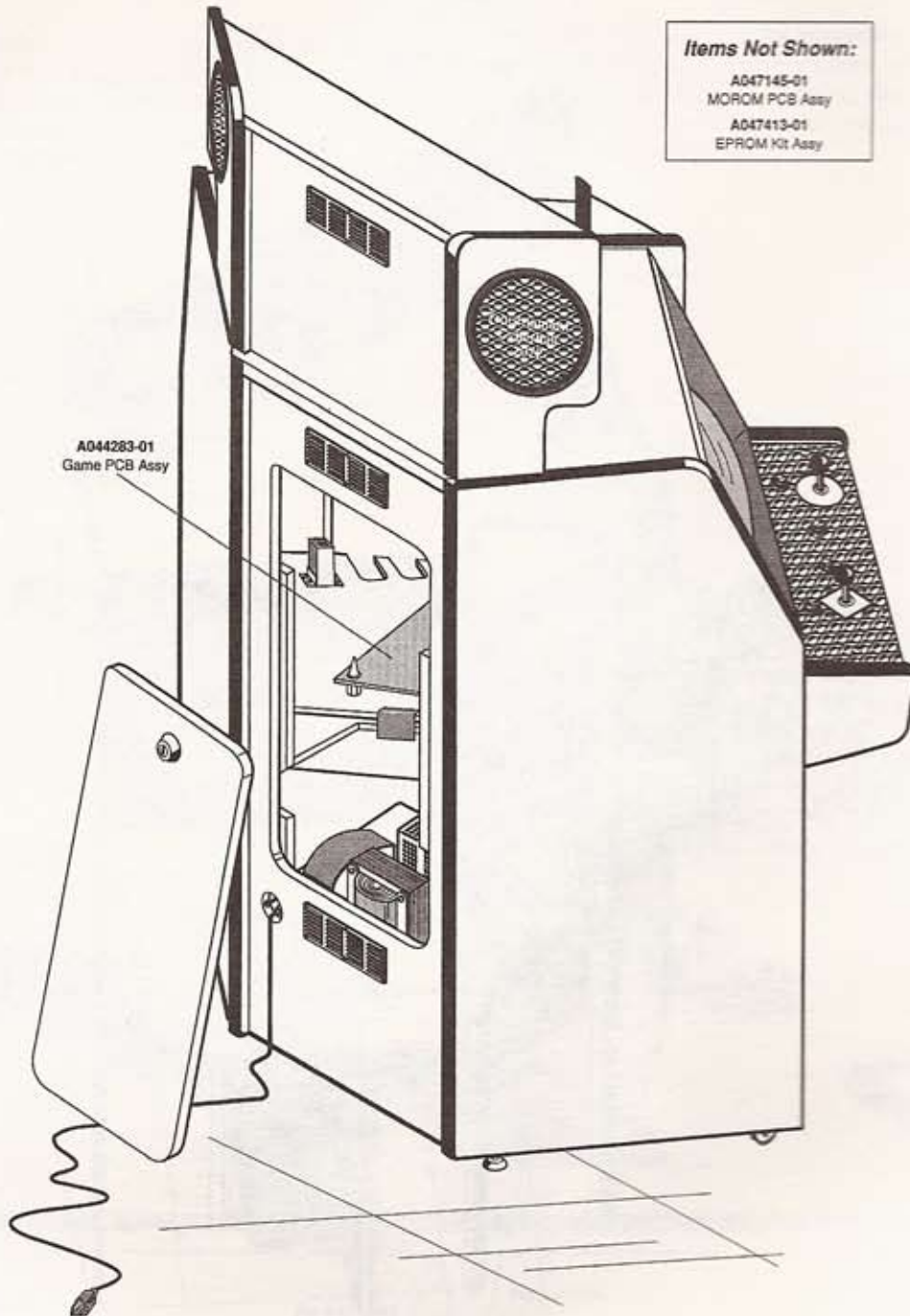


Figure 1-4 Applying the Kit Decals—Rear View

Testing After Power-Up

The Tournament Cyberball 2072 kit tests itself and provides visual and audible indications of the condition of the game circuitry and controls. Self-test information is displayed on the screen and through the sound system. No additional equipment is required.

We suggest that you perform the self-test when you first set up the game, each time you collect the money, or when you suspect game failure.

The self-test screens provide information about the game circuits and controls. Refer to Chapter 2 for information on all of the available self-tests. Note that the contest option on the Game Options screen is no longer available.

Adjusting the Video Display

You can make the following adjustments to the video display:

- Adjust horizontal and vertical hold until the picture does not flip or tear.
- Adjust horizontal and vertical centering until the picture is centered on the screen.
- Adjust horizontal and vertical size until all four corners are just visible on the screen.
- Adjust brightness so that all color bars are visible but the background is not.

Refer to the *Cyberball Operators Manual* for more information about the video display.

Setting the Coin and Game Options

The Tournament Cyberball 2072 coin and game options are set in the Self-Test. Refer to Chapter 2 for the recommended option settings and how to set the options.

Game Play

Tournament Cyberball 2072 rules are similar to football rules, but players must keep the ball from exploding. If the ball explodes, possession turns over. The ball status display shows whether the ball is cool, warm, hot, or critical. A critical ball will explode if it is not defused. The player can defuse the ball by moving it over the 50-yard line or the goal line.

On the line of scrimmage, the robot that the player controls is a slightly different color from the others. Each player controls one robot on his team. By pressing a player button before the ball is hiked, the player can control a different robot.

New Players: For even more fun, two new players

have been added to the game. The Power Back has the option to pass or hand off the ball again if so desired. This player will keep the defense on its toes. The other new player is the Outside Linebacker. With the ability for great pass coverage, look out for interceptions!

Beat-the-Coach: To simulate the excitement of playing against a live opponent, a beat-the-coach feature has been added. In advanced level games (vs. computer only), players are asked which coach they want to compete against. Each coach has a win/loss record displayed. This record is updated as actual players win and lose against these coaches.



Game Breakers: An alternative to playing against a computer team is the new special challenge game. Players are presented with a list of situations to execute. In reward, players win big bucks and advance to higher levels. Like a "two-minute" drill, this mode tests the skill of players under pressure situations.



A complete Tournament Cyberball 2072 game has six three-minute periods. Every player buying into the game adds more time for everyone. The more people that play, the more time everyone gets per period. If a game ends in a tie, there's a sudden-death period to settle the score. The first team to score is declared the winner.

Auto-Challenge: If one or two players are playing against the computer on one monitor and a new player starts a game on the other monitor, the first players are automatically challenged by the newcomer. The original players can choose to accept or decline the challenge. With the Atari buy-in-anytime feature, new players and teammates can enter the action anytime during the game.

Player Choices: Players can select offensive and defensive plays, time-outs, and replace weak or demolished players.

The new Tournament Cyberball 2072 has approximately 250 offensive and defensive plays to choose from. The offensive player can choose a running play, option play, pass play, or a time-out. After the player selects the type of play, a choice of four patterns appears. The computer chooses these four patterns based on the current ball status and yards to the defuse line or to the goal line.



Meanwhile, the defensive player can choose a short,

medium, or long defense. The computer also presents four patterns for the player to choose from.

If a Tournament Cyberball 2072 robot is damaged during the action by tackles or exploding shrapnel, the player can replace it with a better robot bought with team "funds," which are awarded for good performance. Two stages of breakdown identify damage to a robot. A smoking robot is the first warning that a robot is fatigued. A robot with smoke and fire means that a fumble will occur if tackled.

Special offers for player purchases and upgrades:

In "advanced" skill level games, new features have been added to allow for multiple upgrades and purchases during the game. At halftime, players may spend any portion of their team funds to upgrade their players. Even multiple upgrades of any one player are possible. Also, at the end of the first, second, fourth, and fifth periods, the trailing team will have the option to use game credits (or deposit a credit at that time) to purchase top-level offensive players or stronger defensive lineups. This is intended to give the trailing team the chance to be more competitive.

High Score Tables: Three unique high score tables are used in Tournament Cyberball 2072. In head-to-head games, scores of the "Biggest Blow-Outs" show the most lopsided victories to date. For games versus the computer, top scores versus each of the four coaches are posted. And in "Game Breakers," top money winners are recorded within this special challenge format.

End-of-Game Statistics: Upon completing a game and display of the High Score Table, a game "Stat Summary" is shown. It posts the statistical performance commonly evaluated in today's football, such as total yards, passing yards, running yards, completion percentage, and interceptions.


These new features last only for one game level each.

Maintenance

Chapter 3 of the *Cyberball Operators Manual (TM-326)* provides detailed preventive and corrective maintenance procedures. Refer to that manual for recommended maintenance procedures.



SELF-TEST



The Tournament Cyberball 2072™ game tests itself and provides visual and audible indications of the condition of the game circuitry and controls. Self-test information is displayed on the screen and through the sound system. No additional equipment is required.

We suggest that you perform a self-test when you first set up the game, each time you collect the money, or when you suspect game failure.

The self-test screens provide information about the game circuits and controls. To go into self-test, turn on the self-test switch located on the SAC audio board behind the right coin door. If you turn on the self-test switch, and then turn on the game power, the game performs the RAM, ROM, and communications tests and then the switch test screen appears. If you turn on the self-test switch after the game power has been turned on, the self-test begins with the switch test.

To leave the self-test, turn off the self-test switch, and then exit the screen by pressing any right player button. To exit the switch test screen, press any left and any right player button together.

NOTE

You can perform the self-test two ways. If you turn on the self-test switch first, and then the power switch, the self-test starts with the RAM, ROM, and Communications tests.

If you turn on the power first, then the self-test switch, the self-test begins with the switch test.

RAM, ROM, and Communications Tests

In addition to the usual RAM and ROM tests, a communications test has been added for Tournament Cyberball 2072's dual microprocessor which checks the communications between the dual microprocessors, P1 and P2. If the game has an error in RAM, program ROM, or communications you will see information about the error displayed on the screen as shown in Figure 2-1 and 2-2.

If the test finds no RAM or communications errors, then after a 30-second delay, the self-test goes to the ROM test without displaying a message. If the game has no ROM errors, then you will not see any message either.

If you have an error in any of these tests and you see a message, you can move to the next test by pressing the right player button.

If you have a RAM or communications error, check Table 2-1 for the location of the problem. If you have a ROM error, see Table 2-2 for information about the location of the error. If you think you have a ROM er-



Figure 2-1 RAM or Communications Error Message

Table 2-2 ROM Error Locations

Micro-processor	Error Address	Location on Game PCB*	
P1	000000	U=1M	L=1K/L
P1	020000	U=3M	L=3K/L
P2	000000	U=3C/D	L=1B
P2	020000	U=1C/D	L=3B

* The error is identified as an upper or lower error (U or L) on the screen, after the word error.

ror, but the screens show no messages, look at Table 3-2 for information about the locations of various ROM functions.

Table 2-1 RAM and Communication Error Locations

Error Message ¹	Display Background	Location
P2 ² —Working RAM Bad	Red	4E, 4F
Video—Left RAM Bad	Green	9K, 11K
Video—Right RAM Bad	Green	8K, 10K
Color RAM—Left Bad	Black	21M, 22M
Color RAM—Right Bad	Black	25M, 26M
P2 ² —Common RAM Bad	Blue	4E, 4F
P2 ² —Detects Communications Error ³	Purple	
P1 ² —Working RAM Bad	Red	4E, 4F
P1 ² —Common RAM Bad	Blue	4E, 4F
P1 ² —Detects Communications Error ³	Purple	

¹ If two errors are detected, for instance, P2 finds the common RAM bad and P1 finds a communications error, then the screen may be split or may have only one color. However, both messages will appear, no matter what the display background is.

² P1 and P2 are the dual microprocessors.

³ "Detects Communications Error" applies to communications problems other than the common RAM being bad.

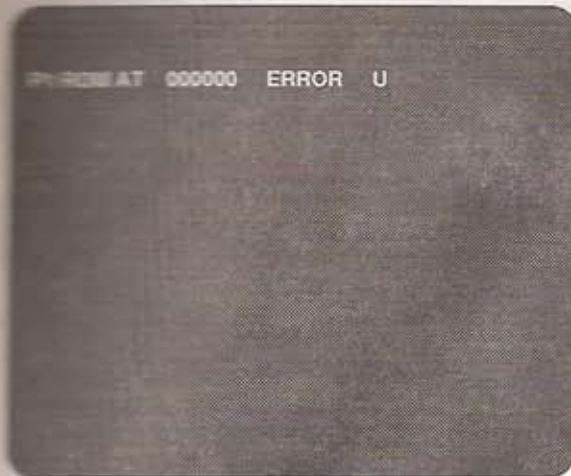


Figure 2-2 ROM Error Message

Switch Test

The switch test is shown in Figure 2-3. Use this test to check the controls. As you press the buttons and move the joysticks, the zeros on the screen should change to ones. If they do not, follow the maintenance and repair procedures for the controls in Chapter 3 of this manual. Press any right and any left player button together to move to the next screen.

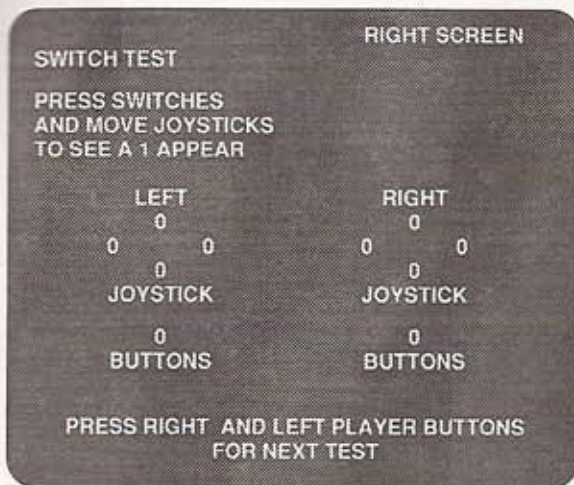


Figure 2-3 Switch Test Screen

Coin Options

Check and select the coin options on this screen. The screen is shown in Figure 2-4.

To move through the coin options, push the left joystick up or down. You can change the coin option shown in green. The factory default settings are shown in blue. To change an option setting, move the left joystick right or left.

If you change an option, but then want to change it back to the previous setting, press either left player

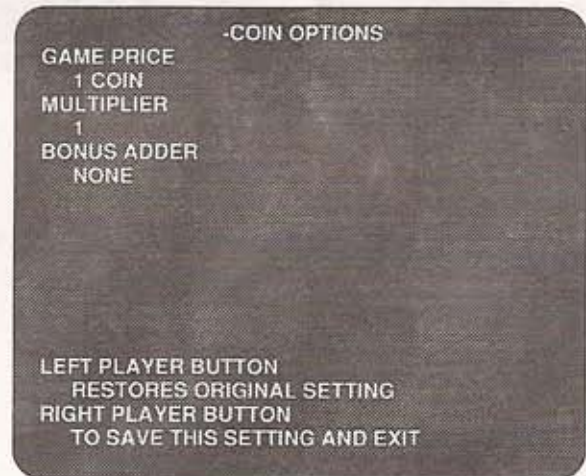


Figure 2-4 Coin Options Screen

button. To save the new settings and exit from the screen, press either right player button.

If you want to exit the self-test, turn off the self-test switch, and press any right player button to exit the screen. All your changes are saved and you return to the attract mode.

The coin options are explained below. The settings, with defaults, are shown in Table 2-3.

- *Game Price* is the number of coins required for one credit.
- *Multiplier* is the number of coins each coin counts as in the coin mechanisms. For example, if you select 2, then each coin counts as two coins.
- *Bonus Adder* lets you choose bonus coins, no bonus, or free play.

Table 2-3 Coin Option Settings

Option	Settings
Game Price	One coin ♦ Two coins Three coins Four coins
Multiplier	1 ♦ 2 3 4 5 6 7 8
Bonus Adder	None ♦ 2 coins give 1 extra coin 4 coins give 1 extra coin 4 coins give 2 extra coins 5 coins give 1 extra coin 3 coins give 1 extra coin Free Play (for demonstration mode)

♦ *Manufacturer's recommended settings*

Game Options

Check and select the game options on these screens. The screens are shown in Figures 2-5, 2-6, and 2-7.

To move through the game options, push the left joystick up or down. You can change the coin option shown in green. The factory default settings are shown



Figure 2-5 Game Options Screen

Table 2-4 Regions

ICBL WEST	
San Francisco Crush	
Phoenix Flash	
Seattle Thunder	
San Diego Machine	
Honolulu Invasion	
Los Angeles Lightning	
ICBL CENTRAL	
Kansas City Crush	
Denver Flash	
Chicago Thunder	
Dallas Machine	
Pittsburgh Invasion	
New Orleans Lightning	
ICBL EAST	
Washington Crush	
Philadelphia Flash	
New York Thunder	
Miami Machine	
New England Invasion	
Atlanta Lightning	
ICBL INTERNATIONAL	
California Crush	
Tokyo Flash	
New York Thunder	
Moscow Machine	
Berlin Invasion	
London Lightning	

in blue. To change an option setting, move the left joystick right or left.

If you change an option setting, but then want to change it back to the previous setting, press either left player button. To save the new settings and exit from the screen, press any right player button.

If you want to exit the self-test, turn off the self-test switch, and press any right player button to exit the screen. All your changes are saved and you return to the attract mode.

NOTE

Not all of the options are shown when you enter this screen. The word *More* shows at the top or bottom of the screen to indicate more options. Use the left joystick to scroll through the options.

The game options are explained below. The settings, with defaults, are shown in Table 2-5.

Table 2-5 Game Option Settings

Option	Settings	
Clear High Score Table	No ♦	Yes
Restore Factory Options	Yes	No ♦
Clock Speed	Very slow	Slow
	Fast ♦	Very Fast
Timer Bar Speeds	Very Slow	Slow
	Fast ♦	Very Fast
Time-Outs Per Period	1 ♦	2
Drone Players' Intelligence	Average	Smart ♦
	Very Smart	
Game Breakers Difficulty	Easy	Medium ♦
	Hard	
Region	International ♦	West
	Central	East
Tournament Mode	No ♦	Yes
Auto High-Score-Table Reset	No	Yes ♦

♦ Manufacturer's recommended settings

- *Clear High Score Table* clears the high score table, if it is set to yes.
- *Restore Factory Options* allows you to set all the game options to the factory options by choosing yes. If you want to use your own settings, be sure to set this to no.
- *Clock Speed* sets the amount of time the players receive per play period.
- *Timer Bar Speeds* controls the amount of time given on the timer bar shown on the play selection screen.

- *Time-Outs Per Period* is the number of time-outs a player is permitted per play period.
- *Offense Players' Intelligence* controls the responsiveness of the defensive players on the field. You can choose average, smart, or very smart. The higher the intelligence level, the faster the defense reacts. This setting does not affect the length of play time.
- *Game Breakers Difficulty* controls the difficulty of play in this game type.
- *Region* selects region of teams.
- *Tournament Mode* allows you to turn on or off special game offers for tournament play.
- *Auto High-Score-Table Reset* automatically clears the high score table if 2,000 games have been played, and if at least 200 games have been played since the last player entered the high score table.

Statistics Screens

Use the information shown on the two statistics screens and on the histogram screen to keep track of your game use. Record the information on the Tournament Cyberball 2072 statistics page in the back of this manual.

The information shown on the two statistics screens (see Figures 2-6 and 2-7) is accumulated from the last time the statistics were reset.

At the bottom of the first statistics screen are several times and dates. These are the program version dates. If you are having problems with your game, you may need to give Atari Games Customer Service this information.

You can reset the statistics when you are on the second statistics screen by moving the left joystick and pressing any left player button.

STATISTICS 1	
LEFT SCREEN, LEFT MECH COINS	:
LEFT SCREEN, RT MECH COINS	:
RT SCREEN, LEFT MECH COINS	:
RT SCREEN, RT MECH COINS	:
TOTAL GAMES	:
0 PLYR MIN	:
1 PLYR MIN	:
2 PLYR MIN	:
3 PLYR MIN	:
4 PLYR MIN	:
ERROR COUNT	:
TOTAL CREDITS	:
AVG TIME PER CREDIT:	:
OP SYS	MAIN
27 AUG 1988 12:45:16	27 AUG 1988 12:45:16
27 AUG 1988 12:45:16	27 AUG 1988 12:45:16
PRESS RIGHT PLAYER BUTTON FOR NEXT SCREEN	

Figure 2-6 First Statistics Screen

First Statistics Screen

The first statistics screen shows the following information:

- *Left/Right Screen, Left/Right Mech Coins* show the number of coins counted in each of the game's four coin mechanisms.
- *Total Games* shows the number of unique games played. A unique game is counted from the first player starting to the last player quitting, regardless of how many times the game was continued, or how many people played.
- *0 Plyr Min* is the number of minutes the game was idle.
- *1/2/3/4 Plyr Min* are the number of minutes the game was played by one, two, three, or four players, respectively.
- *Error Count* shows the number of errors counted in the erasable memory. If you have a count of more than 75, you should have your game serviced by a qualified service technician.
- *Total Credits* is calculated by multiplying the coins by the credit setting you chose in *Game Price*.
- *Avg Time Per Credit* is the average amount of time in seconds that each credit gave.

Second Statistics Screen

The second statistics screen shows the following statistics both as the amount and as a percentage of the total games played.

- *Comp Coach Games* is the number of games played under the beat-the-coach format.
- *Game Breakers* is the number of games played under this unique format.

STATISTICS 2		PERCENT
COMP COACH GAMES	: 13	15
HUMAN-HUMAN GAMES	: 25	28
GAMEBREAKERS		
1 PERIOD GAMES	: 30	34
2 PERIOD GAMES	: 15	17
3 PERIOD GAMES	: 5	6
4 PERIOD GAMES	: 0	0
5 PERIOD GAMES	: 0	0
6 PERIOD GAMES	: 0	0
7 PLUS PERIOD GAMES	: 0	0
MOVE LEFT JOYSTICK AND PRESS LEFT PLAYER BUTTON TO CLEAR STATISTICS PRESS RIGHT PLAYER BUTTON FOR HISTOGRAMS		

Figure 2-7 Second Statistics Screen

The rest of the statistics on this screen are for games played by players against each other.

- *1 Period Games* is the number of games in which all the players played for only one period of the complete six-period Tournament Cyberball 2072 game.
- *2/3/4/5/6 Period Games* show the number of games in which all the players played for two to six periods.
- *7 Plus Period Games* shows the number of games in which all the players played for seven or more periods. This means that the players completed at least one Tournament Cyberball 2072 game and started another.

Histogram Screen

The histogram screen shows the length of game play and the number of games played. The screen is shown in Figure 2-8. Write these numbers on the Tournament Cyberball 2072 statistics sheet in the back of this manual to assist in maximizing your profit.

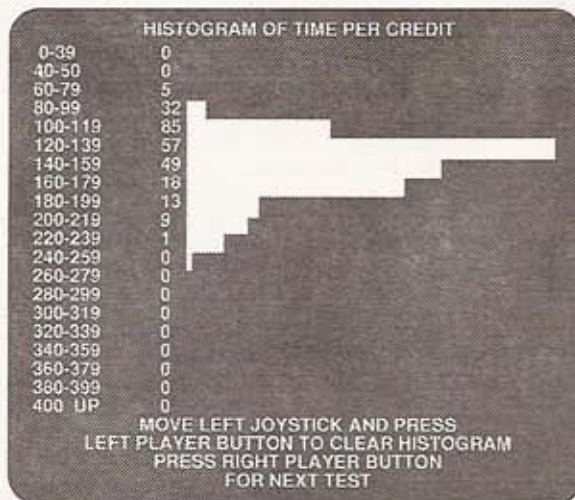


Figure 2-8 Histogram Screen

Playfield Scrolling Test

You can test the playfield scrolling circuitry in this screen. Use the left joystick to move left, right, up, and down. The screen is shown in Figure 2-9.

Exit the screen by pressing any right player button.

Motion Object Test

The motion object test screen is shown in Figure 2-10. This tests the movement and color of various game objects.

Choose a stack with the left player button. Use the left joystick to move the stack. Press the left player button



Figure 2-9 Playfield Scrolling Test

to move to the next stack.

Exit the screen by pressing any right player button.

Alphanumeric Test

The alphanumeric test checks the condition of the alphanumeric in the game. The screen is shown in Figure 2-11.

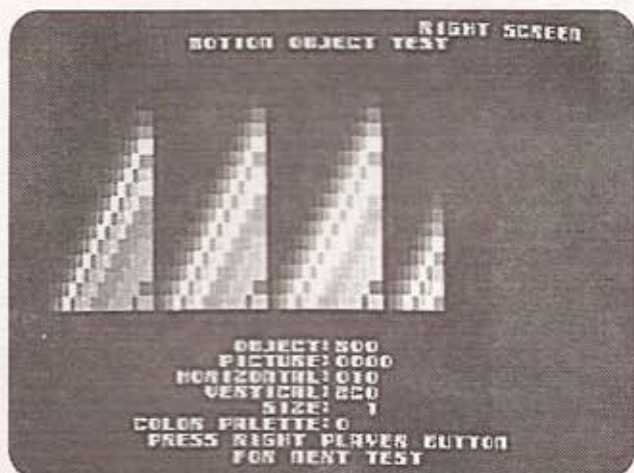


Figure 2-10 Motion Object Test

If you see an error on the screen, check the EPROMS at 15N and 16N.

Press any right player button to go to the next test.

Color Test

This test indicates the condition of the left and right video display color circuits. The screen is shown in Figure 2-12.

The left side of both screens should be black and change to grey in the middle. To the right of the grey

The screen should appear red, green, blue, and white from top to bottom.

If the screen does not fit this description, see the video



Figure 2-11 Alphanumerics Test

display manual included with the game for adjustments.

Exit the screen by pressing any right player button.

Color Purity Test

The color purity test has five screens. The first screen is shown in Figure 2-13.

These screens show the condition of the color purity circuit in the video display. Each screen should display a rectangle of color, with no curving at the corners and no lines in the display. The screens are red, green, blue, white, and gray.

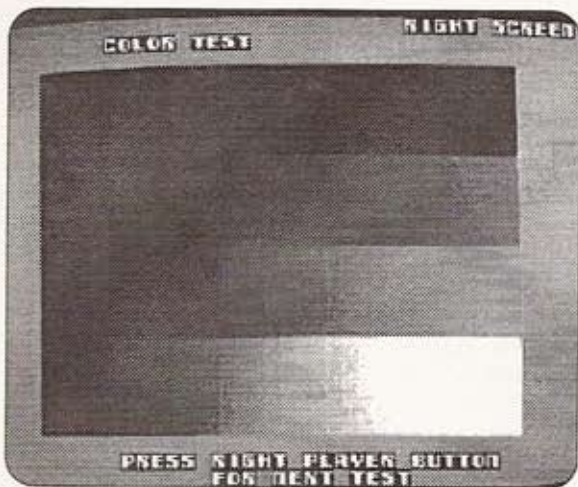


Figure 2-12 Color Test

If the screens are not correct, see the video display manual included with the game for adjustments.

Exit each screen by pressing any right player button.

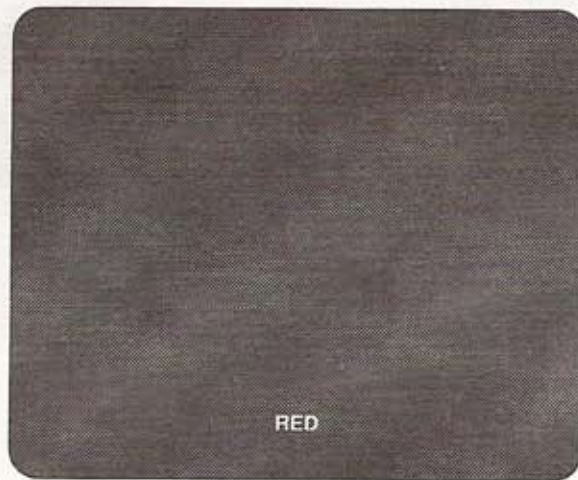


Figure 2-13 Color Purity Test

Convergence Test

The convergence test is shown in Figure 2-14. This test has three screens. The first is white, the second is purple, and the last is green.

Check the following on the screens:

- The grid lines should be straight within 3.0 mm and the lines should not pincushion or barrel.
- The convergence of the lines on the violet and white screens should be within 2.0 mm.

If these screens do not meet these criteria, see the video display manual for suggested adjustments.

Exit the screen by pressing any right player button.

Sound Test

The sound test indicates the condition of the music and sound effects circuits on the SAC PCB. (This board replaces the Stand-Alone Audio Board used in previous games.) The sound test screen is shown in Figure 2-15. The sound microprocessor resets at the beginning of the test. You will hear the first sound three seconds after the test starts.

After the microprocessor is reset and you hear the first sound, the number of game sounds and the sound CPU status information appear. If the CPU is good, the word "Good" appears. If you get an error message at any point in the sound test, see Table 2-6 for more information.

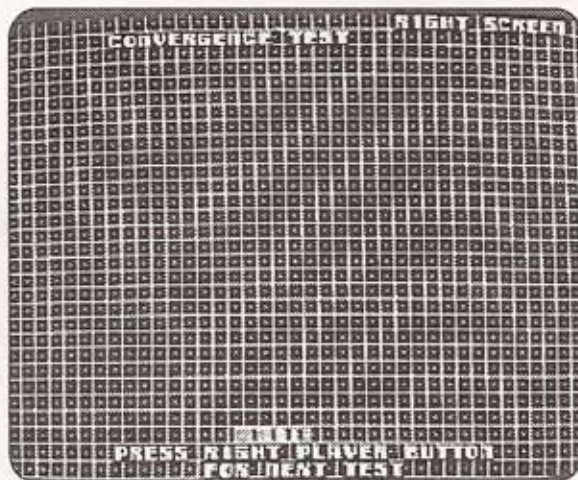


Figure 2-14 Convergence Test



Figure 2-15 Sound Test

The test cycles through the following tests:

- Music Chip Test
- Sampled Audio Test
- SCOM Reset Test

Use the left joystick and the left player buttons to select sounds and listen to them. To leave the self-test, switch off the self-test switch, and then press any right player button to return to the attract mode.

Table 2-6 Faulty Sound RAM and ROM Locations

Error Message	Location on SAC PCB	Cause or Comment
Music Chip Time Out	4H	
Sound CPU Interrupt Error	2D, 1E, 6K	
Sound CPU RAM 1 Error	2H	
Sound CPU ROM 1 Error	2F	If you see this when you enter the sound test, the sound processor cannot proceed any further. Press any right player button to exit the test.
Communications Error #1	1D	Counts the number of errors caused by the SAC PCB or Game PCB. This means that the SCOM chip (part no. 137526-001) on one of these boards is bad.
CAUTION		
The SCOM chip is a CMOS IC and is static-sensitive. If you do not handle it properly, you can permanently damage this chip. See the section <i>Replacing Static-Sensitive Devices</i> , in Chapter 3 of this manual, for more information.		
Communications Error #2		Probably the SAC PCB is disconnected from the Game PCB, or the chip at 1D is not inserted into its socket.
Sound Processor Not Responding		A major problem with the SAC PCB. If you cannot enter the self-test, the harness may be disconnected between the SAC PCB and the Game PCB.

CHAPTER 3

PARTS LISTS AND SCHEMATIC

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

The parts lists (except for the PCB parts list) are arranged alphanumerically by Atari part number. All "A-" prefix numbers, which are assemblies, come first. Next are part numbers with six numbers followed by a hyphen (000598- through 201000-). Ending the list are part numbers with a two-number designation followed by a hyphen (00- through 99-).

The PCB parts list is arranged in alphabetical order by

component. Within each section the parts are arranged numerically by part number.

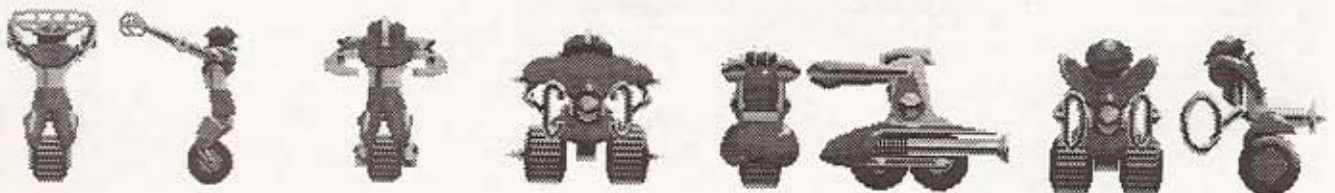
When you order parts, give the part number, part name, the number of this manual, and the serial number of your kit. With this information, we can fill your order rapidly and correctly. We hope this will create less downtime and more profit from your kit.

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

**Figure 3-1 Tournament Cyberball 2072 Kit
A047410-01 A**

Parts List

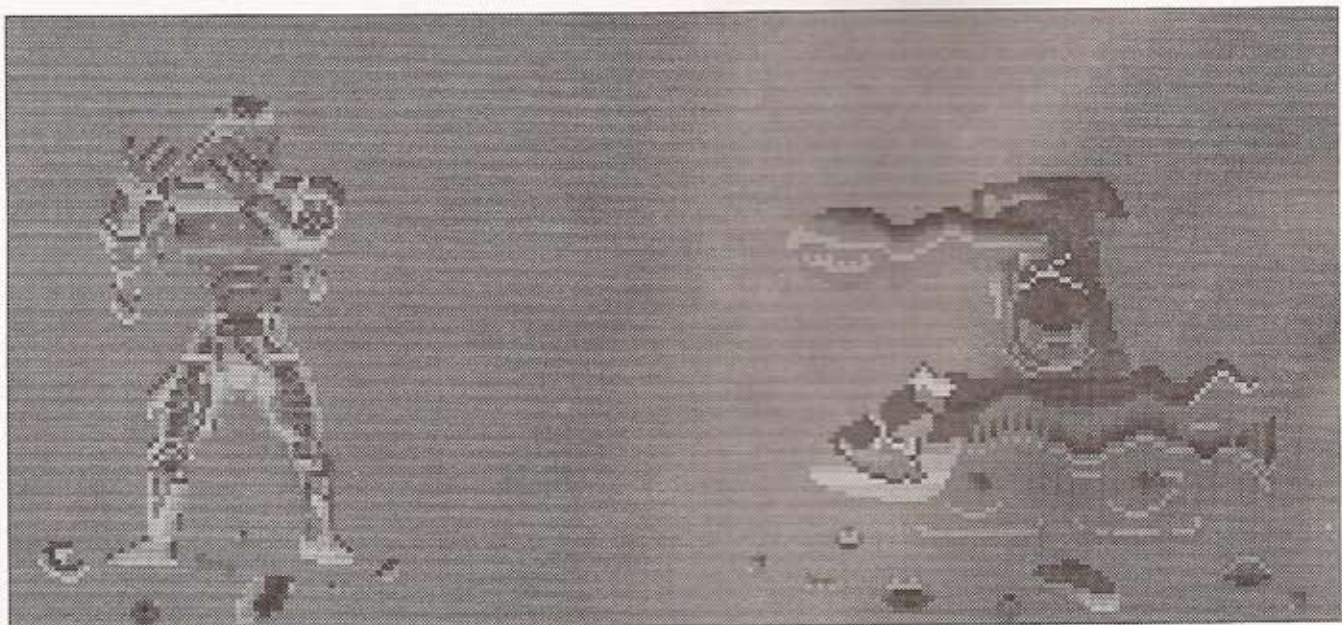
Part No.	Description	Part No.	Description
A047144-01	MOROM PCB Assy, consisting of the following parts:	A047413-01	Cyberball 2072 EPROM Kit Assy (See Figure 3-2)
136071-1009	IC, EPROM, OPT, 250 ns AH0	046158-01	Score Board Attraction Plex
136071-1010	IC, EPROM, OPT, 250 ns AH1	047176-01	Attraction Shield Decal
136071-1011	IC, EPROM, OPT, 250 ns AH2	047174-01	Instruction Panel Decal
136071-1012	IC, EPROM, OPT, 250 ns AH3	047175-01	Control Panel Decal (Two)
137327-001	IC, 74F00 U1	047171-01	Side Panel Decal (Two)
179175-028	Socket Term. Carrier Assy A0, A1, A2, A3	047184-01	Left Coinage Decal (Two)
122002-104	Capacitor, .1 μ F, 50V, Ceramic C1-8	047184-02	Right Coinage Decal (Two)
110027-102	Resistor, 1 K Ω , 5%, 1/8W R1	TM-340	Tournament Cyberball 2072 Kit Installation Instructions
110027-221	Resistor, 220 Ω , 5%, 1/8W R2		
179257-028	Socket, 28 pin, .600" AH0-3, A10-3		
150028-028	Wire Wrap Wire - 15-inch strip TP1		



**Figure 3-2 Tournament Cyberball 2072 EPROM Kit Assy
A047413-01 A**

Parts List

Designator	Description	Part No.
1B	IC, EPROM, 300 ns	136073-1012
1C/D	IC, EPROM, 300 ns	136073-1013
1K/L	IC, EPROM, 300 ns	136073-1008
1M	IC, EPROM, 300 ns	136073-1007
1N	IC, GAL, 250 ns	136073-1031
2F	IC, EPROM, 300 ns (used on the Audio Board)	136073-1029
2/N	IC, SLAPSTIC	137412-116
3/4J	IC, EPROM, 28C16-45PC. 450 ns	137648-450
3B	IC, EPROM, 300 ns	136073-1014
3C/D	IC, EPROM, 300 ns	136073-1011
3K/L	IC, EPROM, 300 ns	136073-1010
3M	IC, EPROM, 300 ns	136073-1009
8L/M	IC, EPROM, OPT, 250 ns	136073-1016
9L/M	IC, EPROM, OPT, 250 ns	136073-1015
10L/M	IC, EPROM, OPT, 250 ns	136073-1018
11L/M	IC, EPROM, OPT, 250 ns	136073-1017
15N	IC, EPROM, OPT, 250 ns	136073-1019
16N	IC, EPROM, OPT, 250 ns	136073-1020
11A (two), 11C (two), 15/16A (two), 15/16C (two), 3M, 3K/L, 2 spares	28-pin, .600" Socket	179257-028
1N, 2N, spare	20-pin, .300" Socket	179259-020



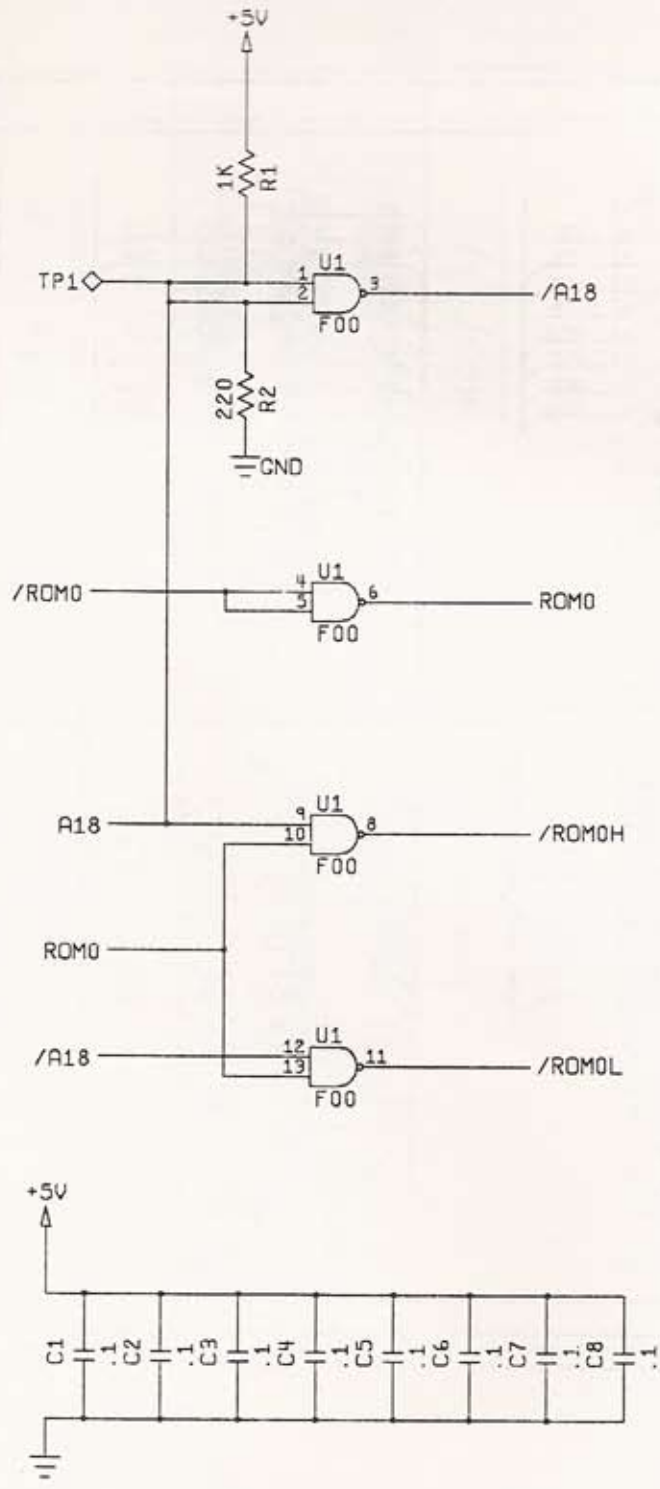
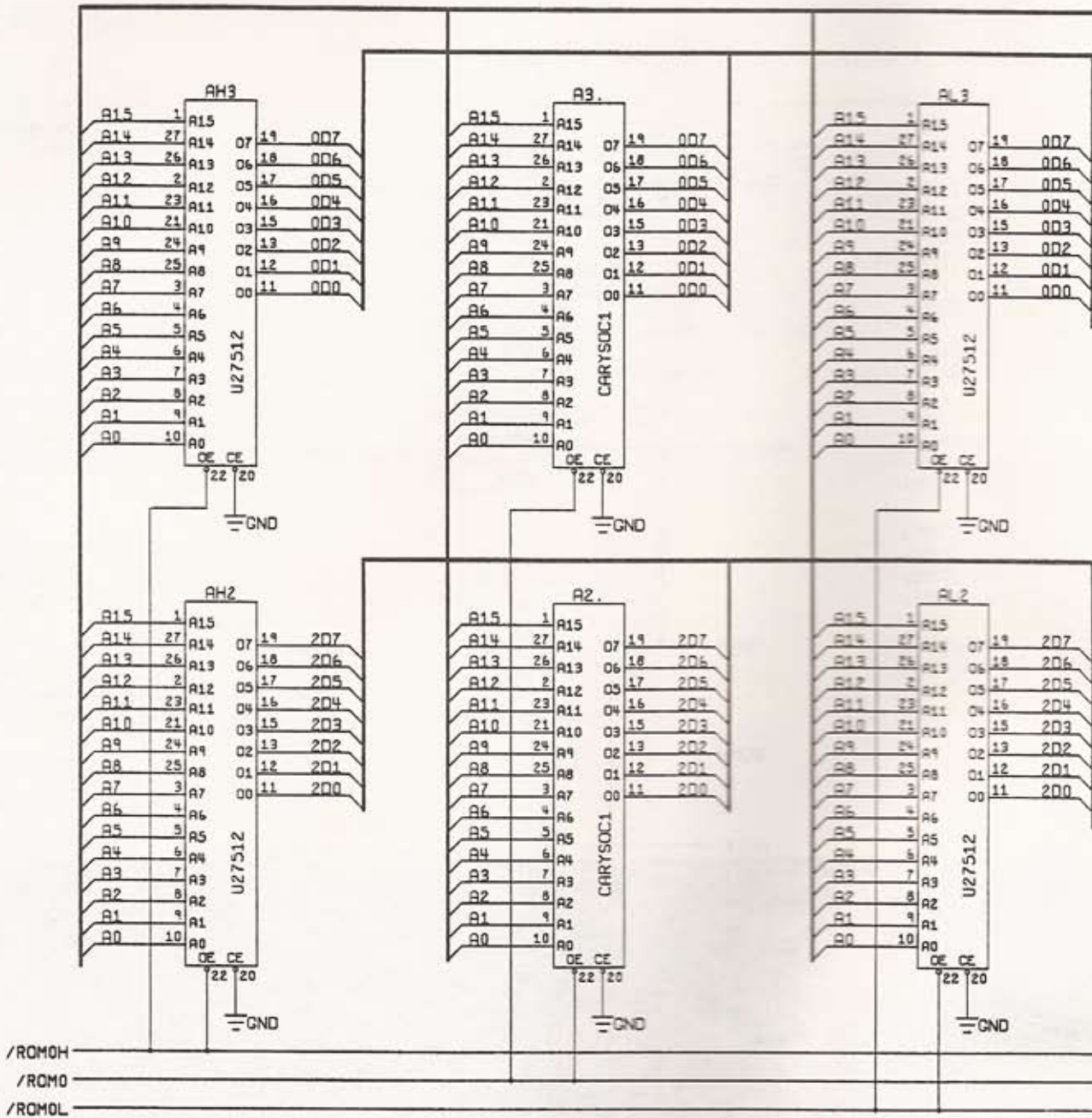
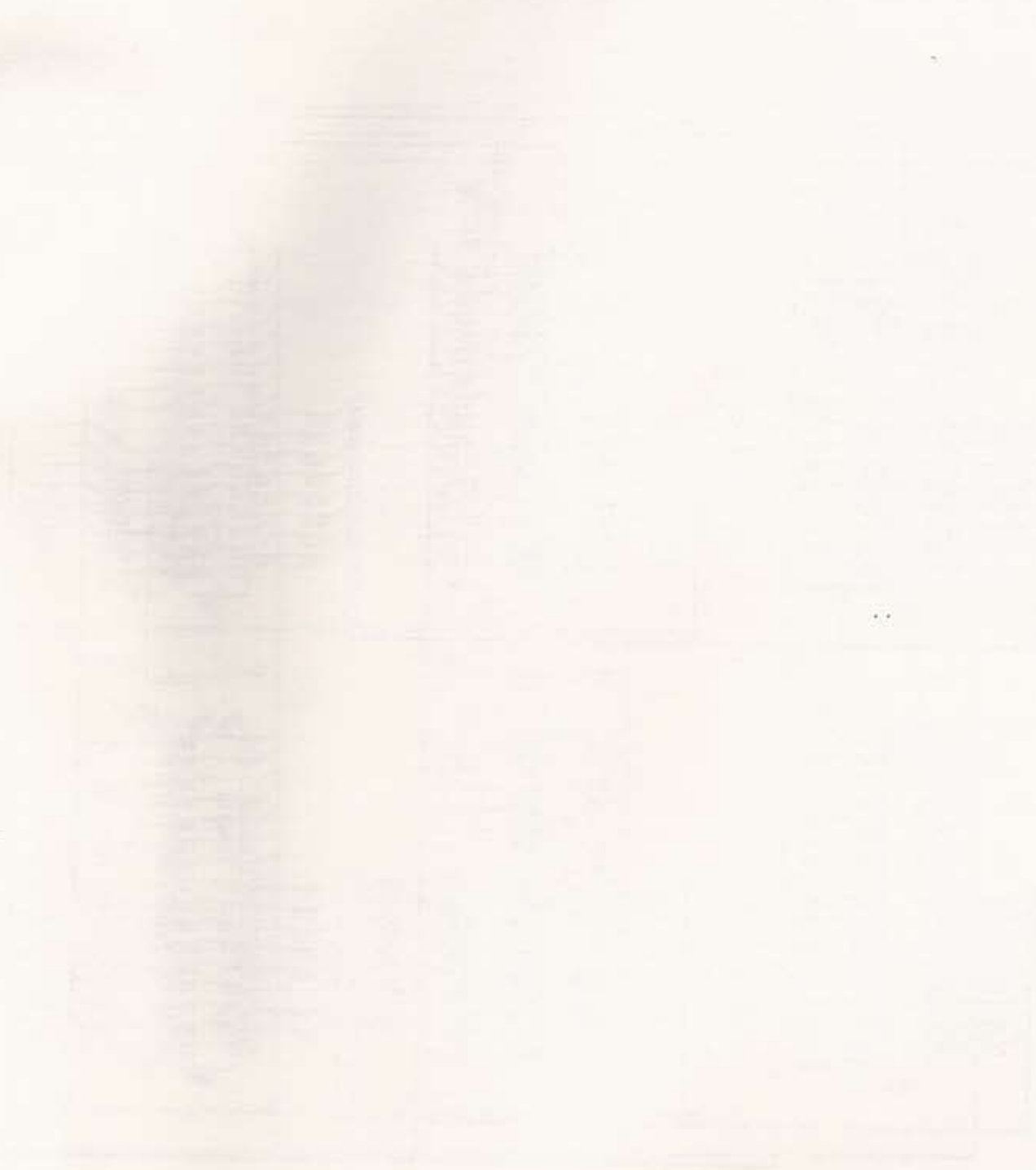


Figure 3-3 MOROM PCB Schematic Diagram





Tournament Cyberball™ 2072 Statistics Sheet

Statistics Screens

First Statistics Screen

Left Screen, Left Mech Coins _____
 Left Screen, Right Mech Coins _____
 Right Screen, Left Mech Coins _____
 Right Screen, Right Mech Coins _____

 Total Games _____
 0 Player Minutes _____
 1 Player Minutes _____
 2 Player Minutes _____
 3 Player Minutes _____
 4 Player Minutes _____
 Error Count _____

 Total Credits _____
 Average Time per Credit _____

Second Statistics Screen

	Percent
Computer Coach Games _____	_____
Human-Human Games _____	_____
Game Breakers _____	_____
1 Period Games _____	_____
2 Period Games _____	_____
3 Period Games _____	_____
4 Period Games _____	_____
5 Period Games _____	_____
6 Period Games _____	_____
7 Plus Period Games _____	_____

Histogram Screen

Seconds	Number of Credits	Seconds	Number of Credits
0-39	_____	220-239	_____
40-50	_____	240-259	_____
60-79	_____		
80-99	_____	260-279	_____
		280-299	_____
100-119	_____	300-319	_____
120-139	_____	320-339	_____
140-159	_____		
160-179	_____	340-359	_____
		360-379	_____
180-199	_____	380-399	_____
200-219	_____	400 & Up	_____





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