

**ARCADE GAME**

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**THUNDER**  
*Ball*  
**ER**



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**427 15<sup>th</sup> STREET • DAYTONA BEACH • FLORIDA • 32117**

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**PHONE 386-677-0761 FAX 386-677-0794**

**WWW.BOBSSPACERACERS.COM**



## **Federal Communications Commission (FCC) Statement**

Note: This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate frequency energy, and, if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

\* \* \*

## **WARNING:**

ALL OF BOB'S SPACE RACERS® GAMES ARE SHIPPED WITH THE SAME KEY AND LOCK SETS.

IT IS IN YOUR BEST INTEREST TO CHANGE THE KEYS AND LOCKS ON YOUR GAMES WHEN YOU RECEIVE THEM.

# **\*SERVICE POLICY\***

At BOB'S SPACE RACERS<sup>®</sup>, INC., our strength lies in the high quality, long lasting equipment we manufacture.

Should the need arise, we maintain both Technical Support and Customer Service staff.

Technical Support is available whenever you should need it. The direct technical 'hot line' is (386) 677-0761. This line is manned 8:30am - 5:00pm, EST, Monday through Friday, excluding holidays. During all other times an operator will be available to relay your problem to the technician on call. Technical Support will assist you in troubleshooting a service problem or setting equipment options.

Customer Service telephone lines are manned 8:30am - 5:00pm, EST, Monday through Friday, excluding holidays. Customer Service staff can be reached at (386) 677-0761 they will also take parts orders and research the status of previous orders.

As always, you can call (386) 677-0761 to reach all other departments, or you can FAX anyone at BOB'S SPACE RACERS<sup>®</sup> by calling (386) 677-0794, 24 hours a day.

## **BOB'S SPACE RACERS<sup>®</sup>, INC.'S ONE-YEAR NEW EQUIPMENT WARRANTY**

1. INCLUDED IN THIS WARRANTY Bob's Space Racers<sup>®</sup>, Inc. warrants to the original purchaser only that the equipment that is the subject of this sale conforms to its specifications, and is free from defects under normal service for a one-year period from the original date of delivery. This warranty does not include any damages resulting from occurrences listed in Paragraph 2 below. This Warranty is not transferable under any circumstance. Any claims under this warranty must be received in writing by Bob's Space Racers<sup>®</sup>, Inc. within 13 months from the date of delivery. Within a reasonable time of such written notification Bob's Space Racers<sup>®</sup>, Inc. will replace or repair any defective component of the equipment or part thereof which fails for reasons other than normal services, use, or wear. Light bulbs are specifically excluded from this warranty and shall be the sole responsibility of the purchaser. Bob's Space Racers<sup>®</sup>, Inc., within its sole discretion, makes the final determination as to whether to repair or replace any component and whether any such repair or replacement shall be performed where the equipment is located or at its home facility in Volusia County, Florida, or another facility of its sole choice. Any and all freight charges for the purposes of repair or replacement shall be paid by the original purchaser. All defective parts shall be returned to Bob's Space Racers<sup>®</sup>, Inc. if requested. Bob's Space Racers<sup>®</sup>, Inc. does not warrant that the equipment will meet any original purchaser's specific requirements or that the operation of the equipment will be uninterrupted. These remedies are the original purchaser's exclusive remedies for breach of warranty.

2. EXCLUDED BY THIS WARRANTY. Bob's Space Racers<sup>®</sup>, Inc. does not warrant (a) any product, components or parts not manufactured by Bob's Space Racers<sup>®</sup>, Inc.; (b) damage caused by use of the equipment for purposes other than those for which it was designed; (c) defects caused by failure to provide a suitable installation environment for the equipment; (d) damage caused by unauthorized attachments, modification, or service; (e) damage caused by normal wear and tear or improper power supply; (f) damage caused by accident or disaster such as fire, flood, lighting and wind; (g) any other abuse or misuse of the equipment.

3. EXCLUSIVE WARRANTY. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OR REMEDIES, WHETHER WRITTEN, ORAL OR IMPLIED. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, COURSE OF DEALING OR USAGE OF TRADE ARE HEREBY EXPRESSLY DISCLAIMED AND EXCLUDED.

## **BOB'S SPACE RACERS<sup>®</sup>, INC.'S ONE-YEAR NEW EQUIPMENT WARRANTY** (CONTINUED)

4. **REMEDIES LIMITED.** UNDER NO CIRCUMSTANCES, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, SHALL BOB'S SPACE RACERS<sup>®</sup>, INC. BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECT OR INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL ARISING OUT OF THE USE OR INABILITY TO USE THIS EQUIPMENT INCLUDING BUT NOT LIMITED TO ANY CLAIM FOR LOSS OR PROFITS, LOSS OF SAVINGS OR REVENUE, LOSS OF USE OF THE EQUIPMENT, OR ANY ASSOCIATED EQUIPMENT, FACILITIES OR SERVICE, DOWNTIME, THE CLAIMS OR COST(S) OF THIRD PARTIES INCLUDING CUSTOMERS, AND INJURY TO PROPERTY. Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

5. **NO OTHER WARRANTIES.** Unless modified in writing and signed by both parties, this agreement is understood to be the complete and exclusive agreement between the parties, superseding all prior agreements, oral or written, and all other communications between the parties relating to the subject matter of this agreement. No employee or representative of Bob's Space Racers<sup>®</sup>, Inc. or any other party is authorized to make any other warranty or to assume any other liability in connection with the sale of its equipment.

6. **TIME LIMIT FOR CLAIMS.** Any claim for breach of warranty or claims under this warranty must be received in writing by Bob's Space Racers<sup>®</sup>, Inc. within 13 months following delivery of the equipment.

7. **FUTURE CHANGES.** Bob's Space Racers<sup>®</sup>, Inc. reserves the right to reserve, change or modify the construction and design of its equipment or any component part or parts thereof without incurring the obligations to make such changes or modifications in present equipment.

8. **ALLOCATION OF RISKS.** This agreement allocates the risks of equipment failure between Bob's Space Racers<sup>®</sup>, Inc. and the original purchaser. This allocation is recognized by both parties and is reflected in the price of the goods. **THE PURCHASER ACKNOWLEDGES THAT IT HAS READ THIS AGREEMENT, UNDERSTANDS IT, AND IS BOUND BY ITS TERMS.**

9. **TO OBTAIN WARRANTY SERVICE.** The original purchaser must, at his own expense, bring or ship the equipment to an authorized location for service. Additionally, the original purchaser must pay all freight, shipping or transportation charges for the return of the equipment from Bob's Space Racers<sup>®</sup>, Inc. to the original purchaser. Telephone or write:

Bob's Space Racers<sup>®</sup>, Inc.  
427 15<sup>th</sup> Street  
Daytona Beach, Florida 32117  
Telephone number 386-677-0761  
FAX 386-677-0794

## ADVANCED REPLACEMENT POLICY

After speaking with our Technical Department it may be necessary for Bob's Space Racers<sup>®</sup>, Inc. to ship an assembly item or part to repair your game. We will ship the item(s) according to your preference via United Parcel Service, Federal Express, US Postal Service, etceteras. Note: we will not ship anything to P.O. Boxes via the US Postal Service. You will be billed, per your account status, for the total cost of the shipment (which includes shipping charges).

Upon shipment of the new item(s) a Return Merchandise Authorization Number (RMA #) will be issued for you to use when returning the defective item(s) to Bob's Space Racers<sup>®</sup>, Inc., or you may use the order number. After the defective item(s) is received by Bob's Space Racers<sup>®</sup>, Inc. your account will be issued either a:

1. Warranty credit: if your game is under warranty. (See the Warranty Policy page.)  
Note: this credit does not include return shipping charges.

**OR**

2. Credit for the item(s). Note: this credit does not include return shipping charges, nor does it include the repair charges for the item(s).

If the item(s) cannot be repaired to the point where it could be shipped to another customer as an Advanced Replacement item (i.e. cosmetic damage), we will ship your original item(s) back to you. You will be required to return the Advanced Replacement item(s) or pay for it. You will be responsible for all shipping charges, should you decide to not keep, and pay for, the Advanced Replacement item(s).

## ADVANCED REPLACEMENT ITEM(S) SHIPPING RULES

When you request an Advanced Replacement item from us, we have a few rules for you to follow:

1. **DO NOT** try to repair the defective item(s) on your own; **DO NOT** disassemble the defective item(s) prior to returning it to Bob's Space Racers<sup>®</sup>, Inc. – this could cause further damage and the possibility of you not receiving any credit at all on the item(s). There are not any user serviceable parts inside, and our vendors may void their warranty on disassembled parts. (Please review the last paragraph of the Advanced Replacement Policy.)
2. Wait for the Advanced Replacement item(s) to arrive prior to returning the defective item(s).
3. When the new item(s) arrive, verify that it is the correct part. If it is not, please note what the differences are and contact Bob's Space Racers<sup>®</sup>, Inc.
4. Return the defective item(s) in the exact same packaging the Advanced Replacement item(s) came in. This insures no more damage will be done to the item(s) during the return shipping.

Thank you for your cooperation.



# **OWNER'S MANUAL**



## CONGRATULATIONS!

Congratulations on your purchase of a Bob's Space Racers® Game! Bob's Space Racers® continues to lead the amusement industry in the manufacturing and the operation of amusement games and has operated these games at several of North America's largest expositions for the last 30 plus years. Some of these expositions include: The Canadian National Exhibition, Toronto, Ontario, Canada; The Calgary Stampede, Calgary, Alberta, Canada; The Minnesota State Fair, St. Paul, Minnesota, USA; The Ohio State Fair, Columbus, Ohio, USA; The Big E, Springfield, Massachusetts, USA; The South Carolina State Fair, Columbia, South Carolina, USA; and, The Dade County Youth Fair, Miami, Florida, USA. This experience has allowed us the opportunity to field test each piece of equipment that we manufacture, and helps us to stay in tune with the amusement industry with its ever-changing trends.

What you are about to read may appear a little overwhelming at first, but it will help you reach the high profits you seek. Keep in mind we are offering this only as a guide for you to get started. These tips have proved time and again to work successfully in our own operations over the last thirty years.

## MANUAL INTRODUCTION

This owner's manual is divided into several sections beginning with Operator's Guide, Introduction and Set-up, and so on. We have provided direction on every aspect of the game from running and maintaining it to pertinent technical information and troubleshooting problems. We, also, cover coin mechanisms, ticket dispensation, and prize redemption in the appendix section.

Each section has troubleshooting guides that contain enough information so that the game can be repaired with little difficulty. If this information is not sufficient, a call to Bob's Space Racers will provide additional assistance. Between the manual and the personal assistance, downtime of your game will be minimal. (When you call, we assume that you have read this manual and have tried the suggested repairs.)

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# **INSTALLATION AND SET-UP**



## **INSTALLATION AND SET-UP**

Decide on the location you want the game to be set up in, then ensure the ground is stable and flat. Simply plug the game into a standard AC outlet. To load the balls just open the upper back of the game and put the balls in, and close the upper back of the game. Turn game on, and when game is coined up, or activated, it is ready to play.

## OBJECT OF THE GAME

The object of the game is to catch as many balls as possible within the specified amount of time.

## SEQUENCE OF PLAY

There is a motor that rotates a chain from the top to the bottom of the game. This chain has arms attached to its linkage which lifts the balls to the top of the game. When the game is coined up, the balls are dropped down a solenoid-controlled platform which allows the balls to be caught for scoring.

Once the game is coined up, the 120V AC solenoid is energized. This releases the gateway, or platform, which allows the balls to fall forward as they roll. A ladle type spoon is used to catch as many balls as possible within a preset, or predetermined amount of time. The ladle, or cup, has a microswitch wired to it to count the amount of balls caught for scoring.

## ELECTRICAL REQUIREMENTS

Voltage	Hertz	Amps
120	60	0.5

Bob's Space Racers®

Thunderball™

## COMPLETE GRAPHIC





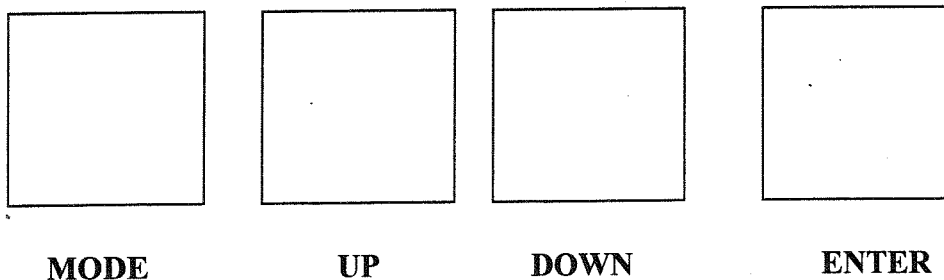
# OPTIONS



## SETTING THE OPTION REGISTERS FRONT PANEL BOARDS

In order to set the Option Registers, first locate the Front Panel Board and Credit Display. The Front Panel Board (also called the Register Select Board) is located inside the game, behind the Coin Door, and on top of the Coin Box. The Credit Display is on the Ticket Dispenser door and is part of the Coin/Ticket Box. They will be used in conjunction with one another to set the Registers. Turn the game power **ON**.

The two digits to the left on the Credit Display represent the number of coins required to play the game; the two digits to the right on the Credit Display represent the number of credits. To set the Registers and enter the desired Options, locate the four white pushbuttons on the Front Panel Board labeled "**MODE**", "**UP**", "**DOWN**", and "**ENTER**" (see diagram below). To enter the Options, press the two buttons on the right ("**DOWN**" and "**ENTER**") simultaneously. On the Credit Display, the first two digits indicate the Register you are in; the two digits on the right show the value in that Register. The system is now ready to accept changes in the Options. The value can be set from 00 to 255. If there is a decimal point after the last digit, this means there is a value of 100 plus that value; if there is a decimal point after the third and fourth digit, it means there is a value of 200 plus that value. Once the system has reached the 255 value, the counter will default back to 00.



The "**MODE**" button sequences through each Register displaying the value in that Option Register. The "**UP**" and "**DOWN**" buttons increase or decrease the value of the current register. The change is NOT made permanent until the "**ENTER**" button is pressed. Doing this also advances to the next Register. Pressing the "**MODE**" button before pressing "**ENTER**" leaves the register unchanged. Once all changes have been made, press the "**MODE**" and "**UP**" buttons simultaneously. This will cause the Credit Display to return to its normal operation.

**NOTE:** The registers cannot be accessed when game is being played, has credits or is loading balls into the Shooter Mech.

**THUNDERBALL GAME OPTION REGISTER SETTINGS****2400****T BALL00 V-1.4 OR LATER****\* 1-PLAYER ARCADE \***

Reg#	Reg Name	BSR	Actual	Description
00	COINS/GAME	1	_____	Coins per game.
01	TRIES/GAME	1	_____	Plays per game.
02	GAME TIME	25	_____	Game length in seconds.
03	BALLY TIME	60	_____	Bally interval in .1 seconds.
04	FREE TICKET	1	_____	Free tickets per game.
05	MIN TICKETS	0	_____	Minimum tickets per game.
06	MAX TICKETS	99	_____	Maximum tickets per game.
07	TICKETS/BALL	2	_____	Tickets per ball caught.
08	START BONUS	20	_____	Starting bonus ticket count.
09	ADD BONUS	1	_____	Tickets to add to bonus per game.
10	BONUS SCORE	5	_____	Starting bonus score.
11	INTRO MSG TIME	20	_____	Time to wait before starting game play.
12	GM OVER MSG TM	20	_____	Time to wait before game over complete.
13	ACTIVITY MODE	0	_____	Activity mode: 0=intermittent; 1=continuous.
14	BONUS COINS	4	_____	Number of coins for credit bonus.
15	BONUS VALUE	0	_____	Credit bonus.

Game Sound: Bright Ideas Sound File: ThunderballOther Settings: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_Program Approved For: BSR**A NOTE ON BONUS COINS:**

To be compatible with multi-coin systems and dollar bill acceptors, this game is equipped with bonus levels for additional coins. If you want customers to put in a dollars worth of coins (or a dollar bill) instead of just a 25 cent piece, set bonus level to 4 (4-25 cent coins = 1 dollar). Then set the bonus coins to a number greater than zero. If it was set on 1, then 4 coins would be the same as putting in 5 coins, one after each game. To get the bonus, all coins need to be put in before a game is played. Once a game is played, the bonus level starts from zero.

# **MAINTENANCE**



## GAME MAINTENANCE INFORMATION

Your pride is reflected by the cleanliness and flash. A good game with good flash will make money. The very best game, if not clean or properly flashed, will be easily passed by. Remember, no one can enjoy the game until they have played it. Proper maintenance is extremely important for good game operation and profitable stock averages.

Clean all Laminated surfaces **daily** (see chart below).

### TO CLEAN GAMES

You may use soapy water on Formica, Plexi-glass, regular glass, Stainless Steel, and other metals without causing any damage. The following list of cleaners can only be used on the materials they are listed with. If a cleaner is used on a material that it is not listed with it will cause damage to that material and Bob's Space Racers® will not be held responsible for repair and/or replacement of that damaged material.

#### Cleaner

Lacquer Thinner  
 Mineral Spirits  
 Clean-On-The-Go Glass  
 and Hard Surface Cleaner™  
 De-Solve-It®  
 Brilliantize™  
 Windex®  
 3812S Enamel Reducer  
 Old English® Oil; Baby Oil

#### Material

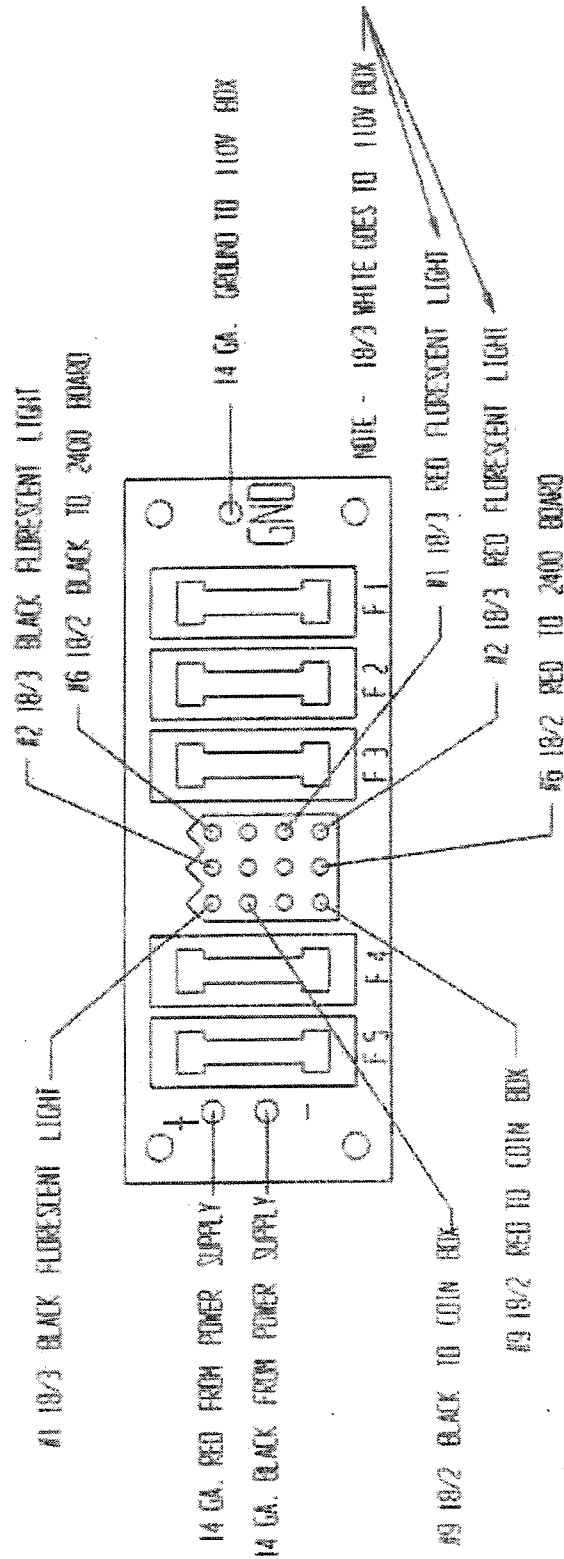
Formica; regular glass  
 Formica; Plexi-glass; Stainless Steel; other metals  
 Formica; regular glass; Stainless Steel; other metals  
 Formica; Plexi-glass  
 Plexi-glass; regular glass  
 regular glass  
 Plexi-glass  
 Formica; Stainless Steel; other metals



# **TECHNICAL DATA**



# POWER DISTRIBUTION BOARD





**2400 SERIES MICROPROCESSOR ELECTRONICS**



## 2400 SERIES ELECTRONICS MICROPROCESSOR BOARD OVERVIEW

The basic operation of the processor board is as follows.

The inputs on this board are on J9. The J9 connector inputs are ground-seeking. The row of pins closest to the edge of the board is at ground and the row in towards the board are the actual input pins. To check an input, simply ground the input's corresponding pins and the corresponding LED should light up – if good. These LED's are tied to opto-couplers which convert the 12 volt circuit to TTL for the board.

The output connectors, J10 through J13, are open collector to ground. If the LED is on, the output is working because they are tied directly to the output pin. DO NOT ever short a front and back row pin on the output connector together. If the output was good, it isn't anymore!

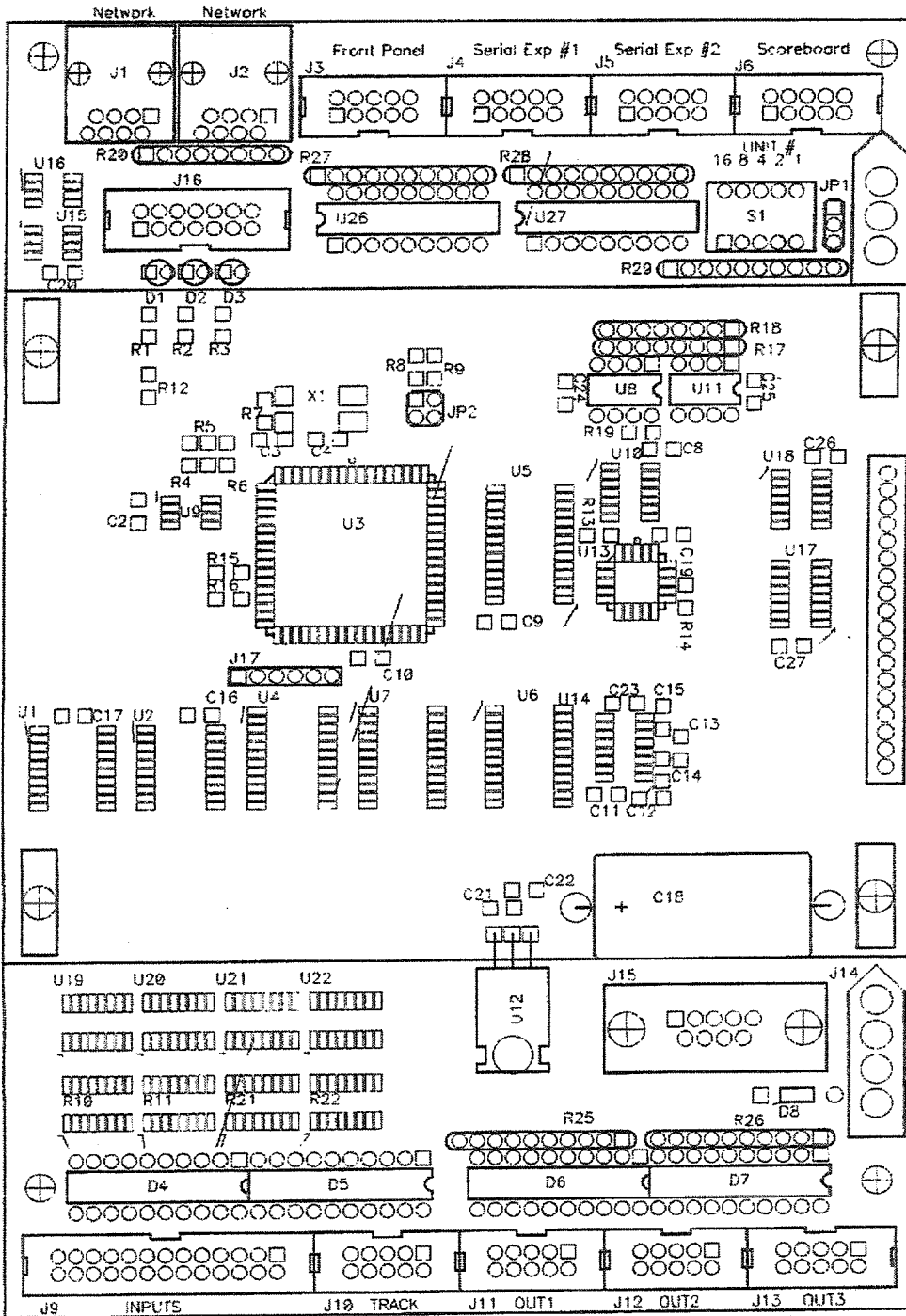
The 4-pin Molex connector is the +12V (pin 4) and ground (pins 2 and 3) power input to the board.

The two (2), RJ-45 connectors at the upper left corner of the board, are communication ports to other boards and systems, and are wired in parallel.

There is a row of serial expansion connectors that are used to communicate with serial devices; such as the front panel board, credit display, etc. There is a total of four (4) connectors, only three (3) of these ports are being used at this point. The other two (2) are for future use.

There is an 18-position SIP header connector. This is an 8-bit, clocked parallel TTL port. It is set up to be used for a sound board to plug 'piggyback' on top of this board.

# 2400 ELECTRONICS MICROPROCESSOR BOARD DIAGRAM

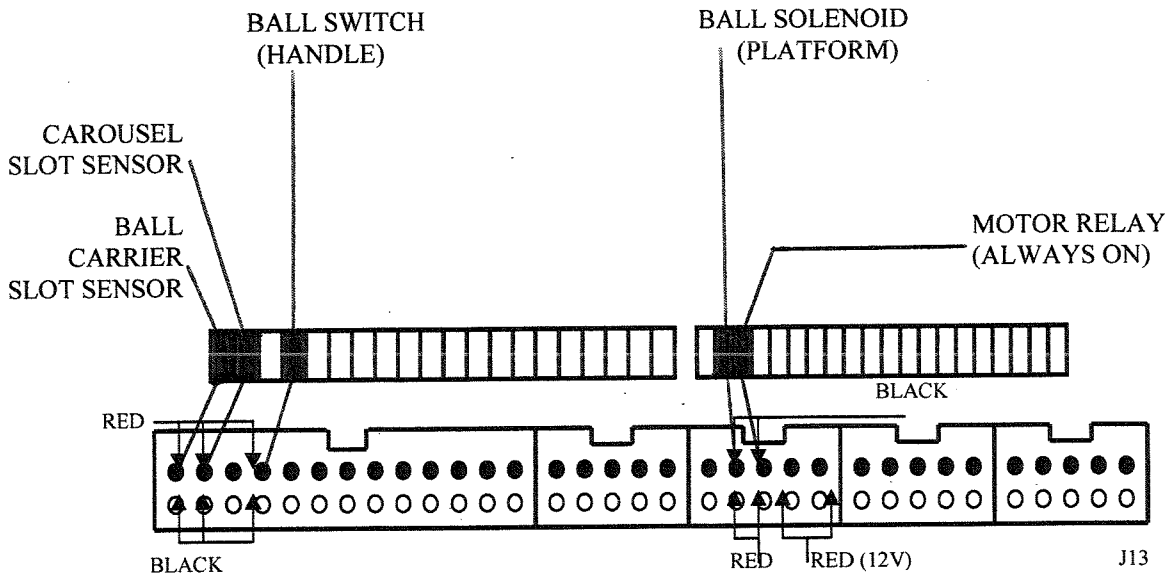
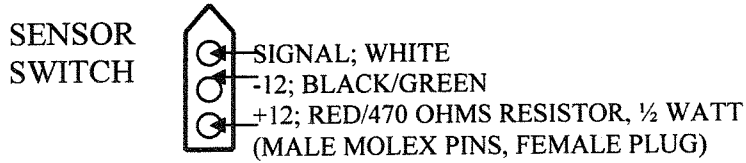
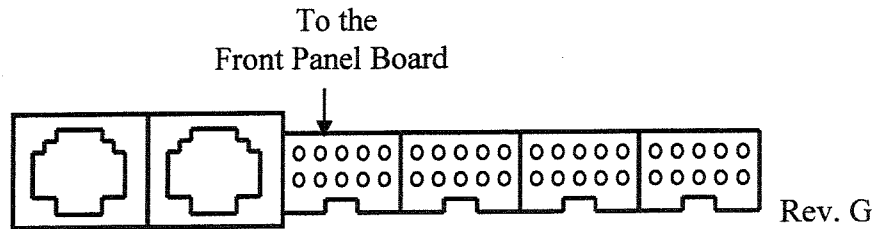


PIN	SIG
1	MISO
2	GND
3	SCLK
4	+12v
5	MOSI
6	-12v
7	SEL2
8	+12v
9	SEL1
10	GND

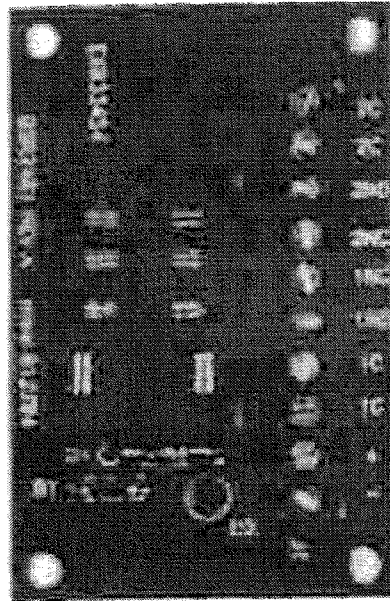
PIN	SIG
1	NET+
2	NET-
3	WIN+
4	
5	
6	WIN-
7	
8	

SPKR  
 SPKR  
 NU  
 D7  
 D6  
 D5  
 D4  
 D3  
 D2  
 D1  
 D0  
 /ACK  
 /REQ  
 RESET  
 +5v OUT  
 GND  
 +12v  
 GND

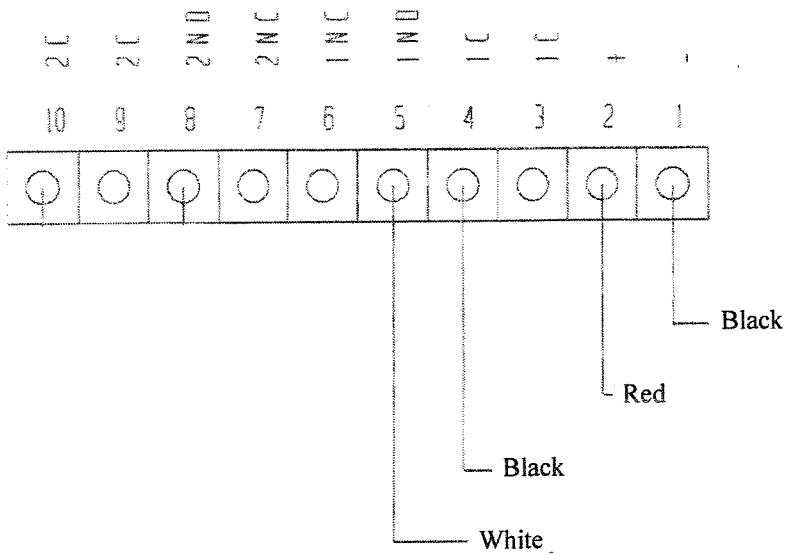
## 2400 MICROPROCESSOR BOARD PIN-OUT



# THUNGERBALL SINGLE RELAY BOARD (TO ACTIVATE BALL PLATFORM)



## SINGLE RELAY PIN-OUT



## FRONT PANEL BOARD OVERVIEW

The basic operation of the Front Panel Board is as follows.

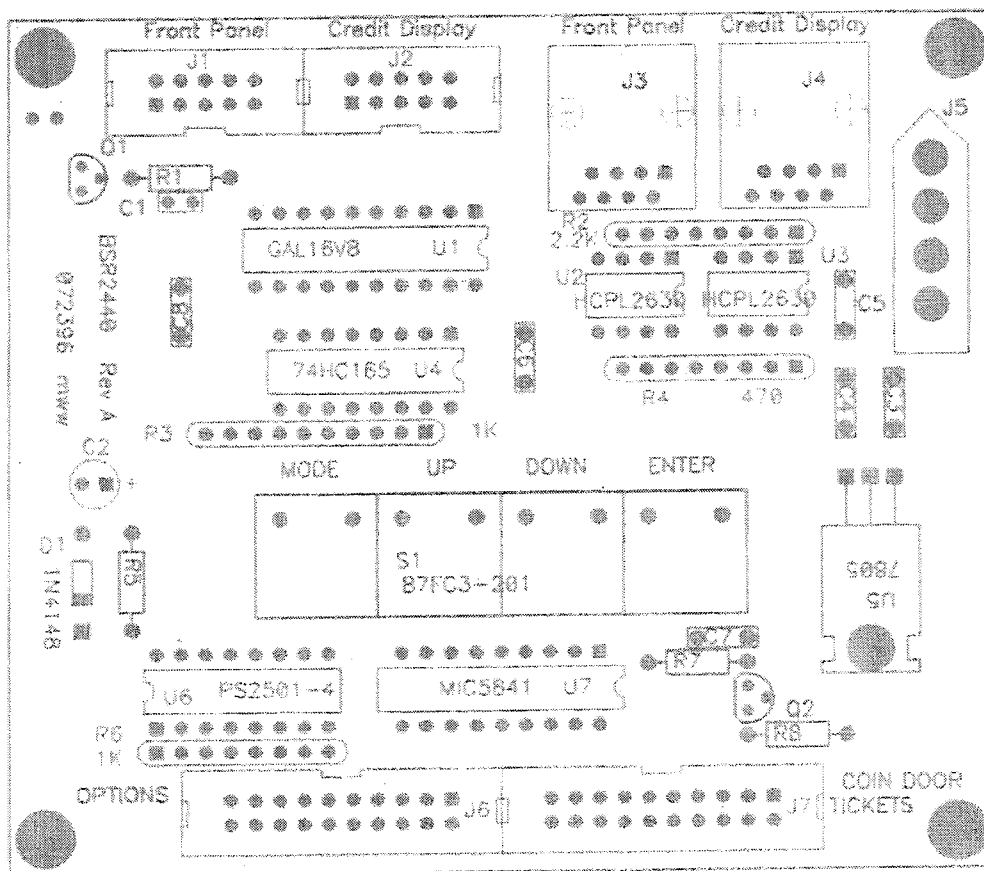
The Front Panel Board is used as a distribution point for the Credit Display Board and gives the customer the ability to change the Option Registers via the four (4) pushbutton switches.

The two 20-Pin Connectors (J4 and J5) are Expansion Inputs and Outputs via the Main Processor. One of the 20-Pin Connectors is the Coin Door and Ticket Dispenser Connections. The other 20-Pin Connector is labeled 'options' and will be used at a later date.

The 4-Pin Molex Connector (J3) supplies +12VDC (Pin 4) and Ground (Pins 2 & 3) to the Board.

The top two 10-Pin Ribbon Cable Connectors (J1 and J2) are Input/Output Connectors--one from the 2400 Board and one from the Credit Display.

## FRONT PANEL BOARD DIAGRAM



## CREDIT DISPLAY BOARD OVERVIEW

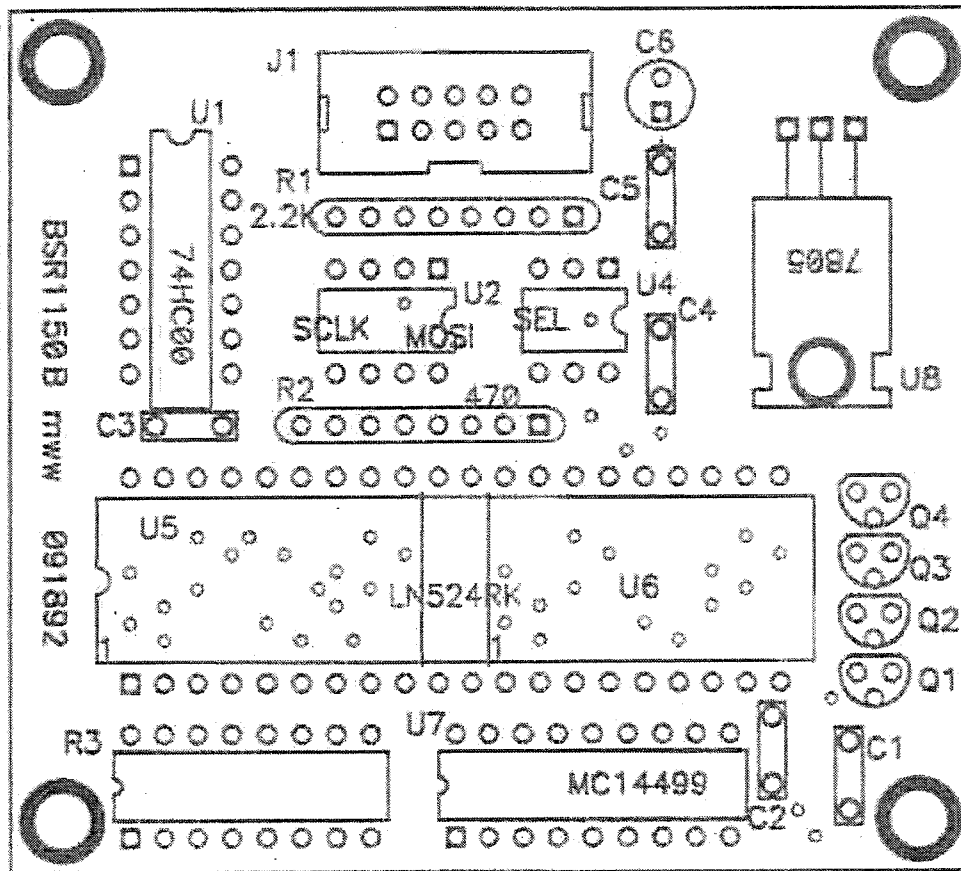
The basic operation of the Credit Display Board is as follows.

The Credit Display Board is used to show the Player how many coins or tokens are required for a play and how many credits are remaining. The Credit Display Board, when used in conjunction with the Front Panel Board, will display the Option Registers and the contents of that register, when needed.

The only connector on the Board is a 10-Pin Ribbon Cable Connector that connects the Credit Display to the Front Panel Board or directly to the 2400 Microprocessor Board.

**\*The Credit Display Board is not used to set Options on multi-player games. See OPTION REGISTERS - 2400 SERIES on how to change Registers and the contents thereof.**

## CREDIT DISPLAY DIAGRAM



## CLEVER DEVICES SOUND BOARD OVERVIEW

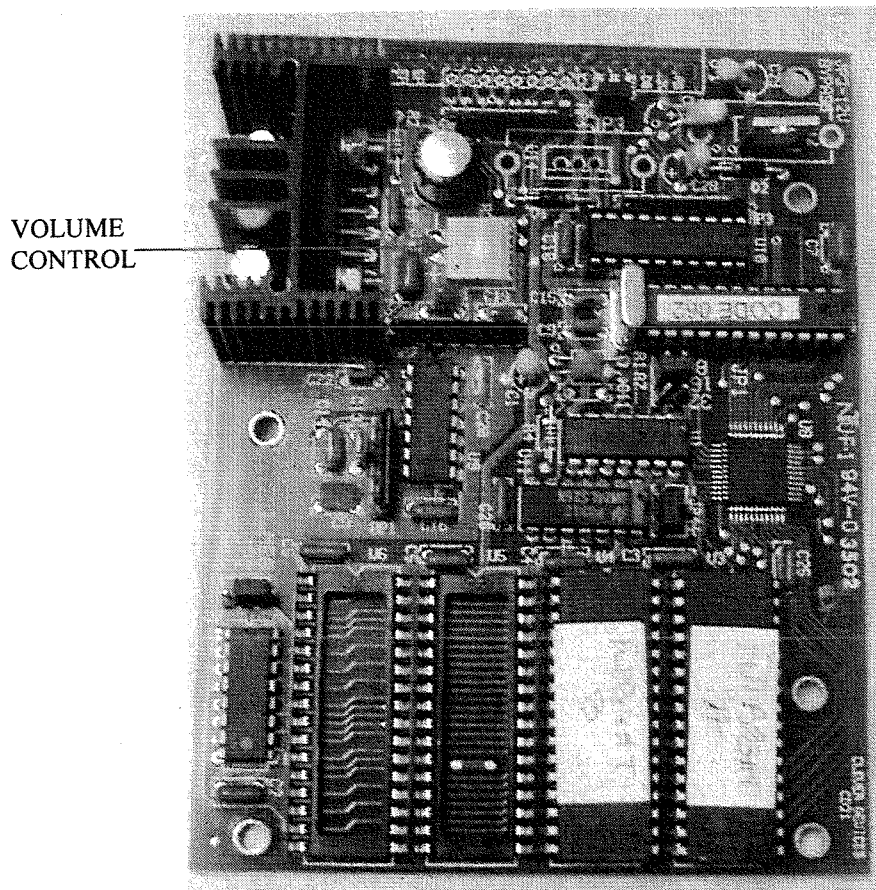
The Clever Device board has been the most commonly used arcade sound board. It is very important not to allow this board to get wet. Bob's Space Racers® does not Advance Replace this board unless it has a direct affect on the game play. The sound board piggy-backs on top of the 2300 or 2400 controller boards.

For example: A Monkey Drop™ Arcade Game cannot be played without the use of it's sounds or play instructions.

A Whac-A-Mole® Arcade Game can obviously be successfully played without sound. Therefore, you will be required to send in your sound board for repair.

### VOLUME CONTROL

The Clever Device board has a small potentiometer for volume control. It requires a small screwdriver to adjust the volume. The music is stored in two (2) program chips and must be addressed correctly.

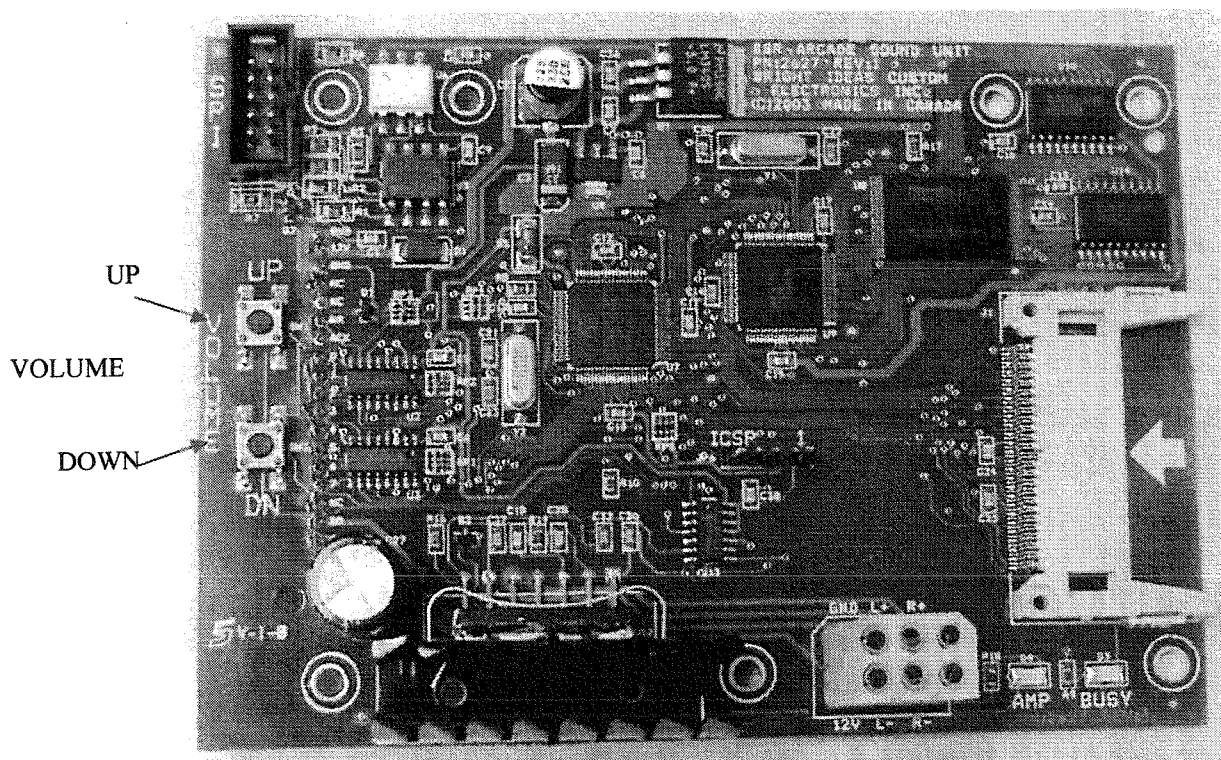


## BRIGHT IDEAS SOUND BOARD OVERVIEW

A newer generation of our arcade sound boards is the Bright Ideas board. It piggy-backs on top of the 2300 or 2400 controller board. The music is stored to a microprocessor by use of a digital sound card. These sound boards are not Advanced Replaced unless they have a direct affect on the play or performance of the game.

### VOLUME CONTROL

The volume control can be easily adjusted by use of two (2) buttons, "Up" and "Down". These buttons are clearly labeled and visible on the sound board.



## TROUBLESHOOTING

### PROBLEMS/CAUSES

Balls/Chain Not Moving

Playfield Dark

Game Not Scoring

Displays Not Working

Game Powers Up, Then Shuts Off

Platform Does Not Activate

Chain or Motor Not Turning

### SUGGESTED FIX

Check for power to motors. Check 5A fuse at ON/OFF switch.

Check bulbs. If burned out, then replace with same wattage.

Check switch for proper operation.

Check ribbon cables for damage. Check controller board.

One of two (2) Slot Sensors is bad.

Check single relay board.

Look for obstruction.



# MISCELLANEOUS



## PARTS LIST

<u>ITEM #</u>	<u>DESCRIPTION</u>
EX033656	2400 G BOARD
EX033454	SINGLE RELAY BOARD
EX004012	PHIHONG POWER SUPPLY
M0004475	POLYPROPYLENE BALL
E0029131	8 WATT FLUORESCENT BULBS
E0029130	15 WATT FLUORESCENT BULBS
E0023750	5A FUSE (MAIN POWER)



# APPENDIX



# COIN MECHANISM



## **COIN MECHANIM OVERVIEW**

In all of our arcade games we use the Coin Mechanisms, Inc. brand of coin mechanism, unless the customer requests a different brand.

### **Standard (Mechanical) Coin Mechanisms**

When a player inserts a coin or token, it travels through a chute to the coin mechanism. The coin travels down onto a weighted lever that slows the coin and flips it over in front of a magnet. If the coin used is too light, it will get stuck on that weighted lever. If it is too heavy, the coin will be shot straight past the magnet and out the coin return slot. As the coin passes the magnet, the magnetic field slows the coin down enough to change its path and pass the coin by the coin switch. The coin mechanisms are replaceable and are available for a variety of coin sizes and tokens.

### **Coin Comparator (Electrical) Mechanisms**

Also available is an electronic coin comparator that is used if you need high security, or have an unusual token or coin size. The coin comparator uses a good coin to compare to the coin being inserted. A coin must first pass the comparing circuit and register as a good coin, then travel past both optical sensors, in the correct direction, within a pre-determined time. If a coin is passed by the optical sensor backwards, as if on a string, the comparator will detect it and cause an "inhibit." The inhibit will cause a complete rejection of any coin, good or bad, for 16 seconds. After that time, the unit resets itself.



# **TICKET DISPENSER**



## TICKET DISPENSER

### ELECTRONIC OPERATION

When the control unit calls for a ticket to be issued, 12V DC is applied to the ticket enable wire causing the motor to turn on. When a ticket is dispensed, the sensor senses a notch in a ticket and sends back a signal to the control unit. If no more tickets are called for, the enable voltage is turned off and the motor stops.

### MECHANICAL OPERATION

The tickets are moved through the ticket chute by means of a power driven roller, which is spring loaded against an idler roller. The power driven roller has two Neoprene o-rings installed, and under normal operating conditions, are the only things in contact with the tickets.

The power driven roller is mounted on the output shaft of the motor gear train assembly. The motor assembly is mounted to the pivot bracket assembly in two Oilite bearings. The motor assembly has a limited free swing, limited by a single pin engaged in the brake sprag. The brake sprag engages the power assembly. The direction of torque, when electric power is applied is in a direction so as to release the brake sprag. When an attempt is made to pull tickets from the machine with the power off, the torque is reversed and the brake sprag is engaged. Also, the pulling of tickets will cause the pivot bracket assembly to apply a pressure to the power driven roller against the ticket and idler roller greater than the pre-set spring load. This causes the o-rings to depress and the coarse knurled surface of the roller will grip the tickets. One ounce of pull on the tickets will apply 20lbs of pressure on the rollers.

During 1992 Deltronic Labs made enhancements to their ticket dispensers. These included a push-to-feed ticket button on the main ticket dispenser board for ease of feeding tickets and the removable top on the ticket guide to allow ease of access to removing jammed tickets.

## TROUBLESHOOTING – TICKET DISPENSER

### PROBLEMS/CAUSES

### SUGGESTED FIX

#### Dispenses Tickets Continuously

(Not the same as Too Many Tickets)

Bad driver IC

Replace the IC that has the ticket enable line – see the output definitions for your controller board.

Bad Darlington on ticket dispenser board

Put a jumper between the white wire and black wire on ticket dispenser plug. If motor stops, the problem is in the game. If the problem continues: it's a bad ticket dispenser board. (Replace the driver transistor or ticket dispenser board.)

Shorted pull-up resistor

Locate the pull-up resistor (1K ¼ W); make certain the leads are not shorted. Replace if necessary.

White and red wire shorted

Examine the wire terminations from the game to the ticket dispenser. The wire may have been closed in the ticket dispenser door causing a short.

#### Dispenses No Tickets

No power to ticket board

Check the voltage between the red and black wires on the ticket dispenser Molex plug; it should be 12V DC.

Bad Darlington transistor(s)

Replace Darlington transistor(s) or ticket dispenser board.

Bad motor

Swap the ticket dispenser with another unit.

Wrong option setting(s)

Check the option setting(s) for this game (see information on your controller board).

Bad IC driver

Replace the IC that has the ticket enable line (see the output definitions for your controller board).

## TROUBLESHOOTING – TICKET DISPENSER

(CONTINUED)

### PROBLEMS/CAUSES

#### Dispenses No Tickets (CONTINUED)

Bad ticket dispenser

#### Doesn't Dispense Enough Tickets (OR)

#### Dispenses Too Many Tickets

Wrong option setting(s)

Ticket guide spring missing/needs adjustment

Bad/dirty optic sensor

Bad ticket count input on controller board

Bad ticket notch output transistor on the ticket dispenser board

Bad board

Bad front panel board

### SUGGESTED FIX

When tickets are to be dispensed, check between the white (enable) wire and the black wire; should be 12V DC. If voltage is okay, ticket dispenser may be bad.

Check the options setting(s) for this game (see information on your controller board).

Read the ticket dispenser manual under "Ticket Guide Spring".

Blow paper dust out of the optic sensor. If that doesn't solve the problem then swap ticket board with another unit.

Check ticket count LED on your controller board (see info on the controller board).

Swap board with another unit to verify this, then replace the bad board or ticket notch output transistor (see Ticket Dispenser Manual). The blue wire goes to ground when no tickets are under the sensor eye.

Check connections between front panel board and ticket dispenser.

Check voltage between the green wire (ticket sensor) and the black wires: should be pulsing 12V DC for each ticket. If that is okay, then the front panel board may be bad.



# REDEMPTION



## **REDEMPTION**

### **INTRODUCTION**

This explanation of redemption procedures is not meant to be an all inclusive document or a 'cast-in-stone' rule book. It is designed to outline basic concepts of what redemption is, how it works, and why it is both popular and profitable. For further discussion on planning, design, game selection, and operation of Redemption Centers, please contact our sales office.

### **WHAT IS REDEMPTION?**

The concept of redemption is to give players an incentive to play the game other than just for the entertainment value. The way this is usually done is to give some type of reward based on the player's score or performance.

Redemption games are any games in which a player has an opportunity to win tickets, tokens, prizes, bubble gum cards, baseball cards, or any other type of award for playing the game. Usually the amount of the prize is based upon the performance of the player - it may be based on how many players the person beats in a game, or how many points are scored.

### **WHAT IS A PERCENTAGE?**

A percentage is how many cents, on average, you are giving back for every dollar taken in. (When you see the % from here on it means cents on the dollar awarded.)

### **FIXED PAYOUT**

Standard Bob's Space Racers® games give tickets as the reward. You will need to determine what percentage you want to use. The most successful percentage of payout is thirty percent (30%).

### **WHY DOES REDEMPTION WORK?**

One reason that redemption works is because Family Fun Centers are becoming more popular and families can spend quality time together. The video game industry was pretty much reliant upon teenagers as their main clientele. With the advent of the Family Fun Center, video games are still there for the teenagers, although they have lost some of their popularity (possibly due to the home game industry). Redemption games are usually targeted for general audiences. With the addition of "kiddie" models that target now extends to the whole family. Redemption is popular in this family group due to the fact that the parents are usually paying for the entertainment and, generally, they like to see that they are getting something for their money.

With a payout of tickets, parents are more willing to let their children play the various games when the kids are going to actually receive some type of reward for what they have done.

## REDEMPTION

(CONTINUED)

### WHY DOES REDEMPTION WORK? (CONTINUED)

For example: If a younger child has a small prize (i.e. a novelty pencil eraser) they would like to win, the parents will probably allow him/her to continue to play the game until they have won enough tickets to exchange for that prize. Whereas older children, such as teenagers, may want to save up their tickets to redeem them for a larger prize (i.e. a portable radio) that will encourage them to visit the establishment more frequently.

It is important to note that the most successful redemption operations do have some video games. They are a good means of entertainment, but the redemption allows a draw from a larger variety of patrons for your market. Also, because redemption games are played for the ticket payout as much as they are for the entertainment value, they typically do well as the years go by versus the video game only lasting for several months before a significant drop-off in game play is experienced.

### MERCHANDISING

Redemption is yet another method of selling merchandise. Your customer is the family that comes into your Fun Center. Your merchandise selection should include items of interest to all age groups. It is very difficult to entice people to play the games if there is no merchandise they wish to win. A well stocked, properly displayed, and brightly-lit redemption counter is essential. Your pricing should also be competitive. Your customers are aware of retail pricing on most items you will have in stock; if they see items marked at exorbitant prices, they will not play our games.

A good rule of thumb is to mark your merchandise up only ten percent (10%). Thus, an item you bought for \$1.00 should sell for \$1.10 (110 tickets). You have already made a fair profit on the play of the game, so mark the merchandise up enough to handle freight (shipping) and handling – which in most instances is ten percent (10%) of the cost you pay for the merchandise. It might seem as though you are losing an opportunity to increase your profits, however the word-of-mouth comments on your operation will pay off much more in the long run.