



FREE FALL

ARCADE

OWNERS MANUAL

WARNING:

**ALL 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.**

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 are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio 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 own expense.

BOB'S SPACE RACERS, INC.'S ONE-YEAR NEW EQUIPMENT WARRANTY

1. INCLUDED IN THIS WARRANTY Bob's Space Racers, 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, Inc. within 13 months from the date of delivery. Within a reasonable time of such written notification Bob's Space Racers, Inc. will replace or repair any defective component of the equipment of part thereof which fails for reasons other than normal services, use, or wear. Light bulbs are specifically excluded from excluded from this warranty and shall be the sole responsibility of the purchaser. Bob's Space Racers, 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, Inc. if requested. Bob's Space Racers, 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, Inc. does not warrant (a) any product, components or parts not manufactured by Bob's Space Racers, 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.

4. REMEDIES LIMITED. UNDER NO CIRCUMSTANCES, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, SHALL BOB'S SPACE RACERS, 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 COSTS 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, Inc. of 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, Inc. within 13 months following delivery of the equipment.

7. FUTURE CHANGES. Bob's Space Racers, 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, 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, Inc. to the original purchaser. Telephone or write:

Bob's Space Racers, Inc.
427 15th Street
Daytona Beach, Florida 32117
Telephone number 386/677-0761
FAX 386/677-0754

SERVICE POLICY

At **BOB'S SPACE RACERS®**, 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, Eastern Time, 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 Services telephone lines are manned 8:00AM - 5:00PM, Eastern Time, excluding holidays. The direct Customer Service telephone number is (386) 677-0761, Ext. 34. Customer Service Representatives will 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®** by calling (386) 677-0794, 24 hours a day.

ADVANCED REPLACEMENT POLICY

After speaking with our Technical Department, it may be necessary for **Bob's Space Racers®** to ship an assembly or part to repair your game.

We will ship, via your preference (i.e., United Parcel Service, Federal Express, etc.), the part(s) needed. We do not ship via the postal service or to PO Boxes. You will be billed, per your account status, for the total cost of the part(s) plus shipping charges.

An RMA# will be issued or you may use the order number to return the defective part(s) to **Bob's Space Racers®**. After returning the part(s) your account will be issued:

- a) warranty credit, if your game is under warranty (See Warranty Policy) which does not include shipping charges, or
- b) credit for that item minus the repair charges.

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

A REQUEST FROM BOB'S SPACE RACERS®

When you request an advanced replacement from us we would like to follow a few simple rules.

1. Wait until the replacement part arrives before returning the defective part. This way we can verify that the part is correct, and if not, what differences there are.
2. Please return the defective part in the same package the advanced replacement arrives in. This will insure no further damage will result in return shipping.
3. DO NOT disassemble the returned part or try to repair it. There are not any user serviceable parts inside. Further damage will most likely result. Also there is the possibility of our vendors voiding their warranty on parts disassembled.

Thank You For Your Cooperation.



BOB'S SPACE RACERS®

FREE FALL GAME ARCADE OWNERS MANUAL

*** First Edition December 2002 ***

**427 - 15th Street
Daytona Beach, FL 32117
(386) 677-0761
(386) 677-0794 FAX**

OWNERS MANUAL

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MANUAL INTRODUCTION

Your Free Fall Game Arcade Owners Manual is divided into several sections beginning with the Introduction and Set-up, Operation, and continuing with Maintenance of the game and Technical information. The Appendices provide information regarding Coin Mechanisms, Redemption, and Ticket Dispensers.

The Troubleshooting Guides 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, any downtime of the game will be minimal. (When you call, we assume that you have read the Owners Manual and tried the suggested repairs.)

OBJECT OF THE GAME

The object of the Free Fall Game is to catch balls and "score" them by depositing balls through the hole in the panel.

Once the game is coined up; a predetermined number of balls are dropped, in timed intervals into play, on the vertical play field. The metal balls bounce from post to post on a unique route to the bottom. The object is to catch the ball in a horseshoe shaped catcher as it drops or bounces from post to post downward. The ticket payout is pre-determined and set via option registers. (See Option Registers Section).

INSTALLATION

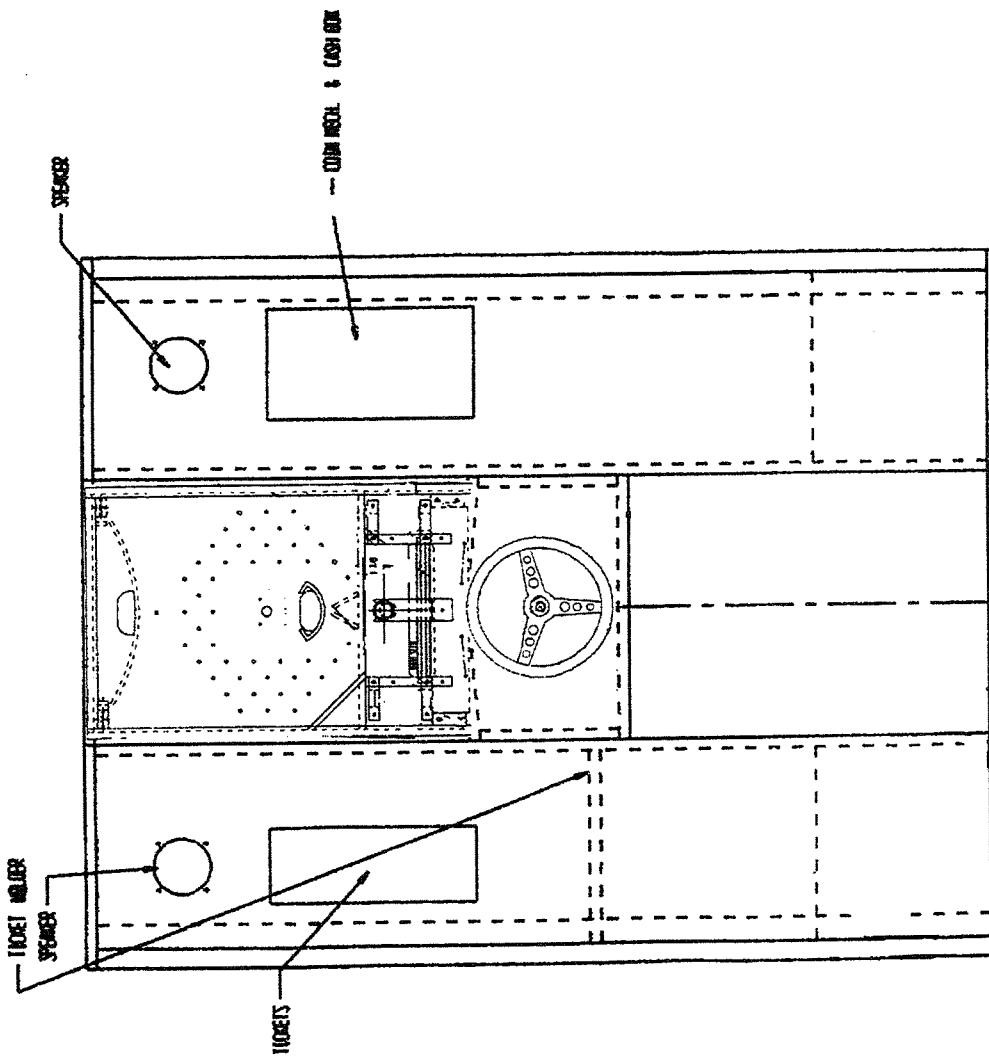
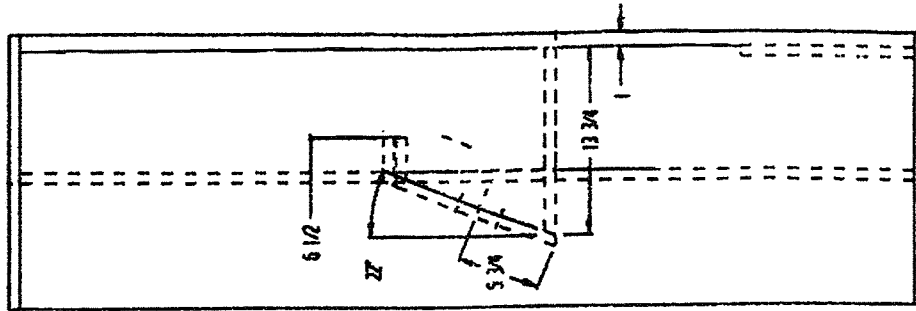
Choose a suitable indoor location for the game and unpack.

1. The game will come to you completely assembled. All you need to do is supply power to the game. Make sure there is adequate power for the game according to the power requirement label(s) on the back of the game.
2. The balls used for play may be shipped separately. Open the back of the game and place balls in the bottom trough/tray. When power is turned on, the balls will automatically feed into the game.
3. Set the game in place. Ensure game is level and in a dry and adequately ventilated area.
4. The ON/OFF switch is located inside the rear right panel door, along with the game electronics.
5. Check the game for proper operation, ticket payout, etc. Adjust if necessary. We recommend a thorough check for proper operation of game by playing several times and adjusting and the parameters if necessary.

ELECTRICAL REQUIREMENTS

Single Unit

Voltage	HZ	Amps
100V-125V	60	.8 amps Operating



**FREE FALL
COMPLETE ASSEMBLY**

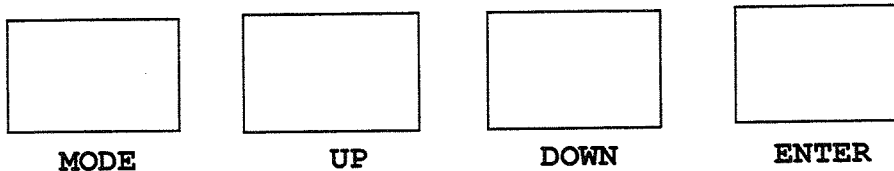
SEQUENCE OF PLAY

1. Insert coin(s) required for credit.
2. Theme music will start and game will drop balls individually into playfield.
3. Player uses the horseshoe shaped Ball Catcher to catch balls as they fall.
4. When a catch is made, the player moves the ball to the scoring hole and the ball falls through, automatically scoring the amount of points set in Option Registers.
5. After all balls have been dropped, the game ends and ticket(s) are dispensed. The fill motor starts and balls are placed into the tube chamber. When the proper amount of balls have been loaded into the tube chamber, the game is ready for the next player.

FREE FALL GAME
Option Registers - 2400 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.

FREE FALL GAME
Version 24XX "G"

<u>REG #</u>	<u>Setting</u>	<u>Actual</u>	<u>Description</u>
00	1	_____	Coins Per Game
01	1	_____	Number of Plays Per Game
02	20	_____	Game Time in Seconds
03	0	_____	Number of Free Tickets
04	0	_____	Minimum Number of Tickets
05	255	_____	Maximum Number of Tickets
06	0	_____	Number of Balls Caught to Make Beacon Light
07	30	_____	Beacon Time in .1 Seconds
08	15	_____	Number of Points Per Ball
09	15	_____	Number of Points Per Ball
10	15	_____	Number of Points Per Ball
11	50	_____	Points per Ticket
12	0	_____	Bally Time Register in Seconds
13 - 28	0	_____	Not Used
29	1	_____	Game Over Time Delay for Scoring
30	4	_____	Number of Coins for Bonus
31	0	_____	Value of Bonus 1 in Extra Coins

NOTE: We recommend you write your settings in the Actual column for future reference. Your settings can be different depending on coins per game, number of balls, etc.

A NOTE ON BONUS COINS:

To be compatible with multi-coin systems and dollar bill acceptors around, 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

MAINTENANCE

Free Fall games require very little maintenance, but the maintenance needed is extremely important for good game operation and profit stock averages. Your pride is reflected by cleanliness and flash. A good game with good flash will make money. Keep the game clean and pleasing to the eye. Even the very best game, if not clean or having improperly working flash, will easily be passed by. Remember, no one can enjoy the game until they play it.

Daily

1. Clean all Formica: a clean game is a profitable game.
2. Clean the Plexi-glass, catcher handle and ball trough.
3. Check game for correct operation: Do the correct number of balls enter the shooter chamber? Does the shooter mech operate correctly? Are sensors (micro switches) operating properly?

Disassembly of Play Field for Cleaning and Repair

1. To remove right side rear door (facing rear of game); simply remove the four screws which will give you access to entire electrical assembly.
2. Removal of left rear door will also be necessary so that the bolts protruding through insert walls and frame can be removed. Once these four bolts (2 on each side) are removed, the playfield insert can then pulled out rearward.
3. The motor and fluorescent lights are connected by molex plugs which will need to be disconnected in order to completely remove the insert.
4. To remove front plexi; simply slide it upward once insert is removed from game.

TECHNICAL DATA

**2400 SERIES
ELECTRONICS**

2400 MICROPROCESSOR BOARD OVERVIEW

The basic operation of the Processor Board is as follows.

The Inputs on this Board are on connector J9. The Inputs are ground seeking which means to check an input, simply ground the Inputs corresponding pins and the corresponding LED should light up, if good. These LEDs 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 pins on the Output Connectors together. If the Output was good, it isn't any more!

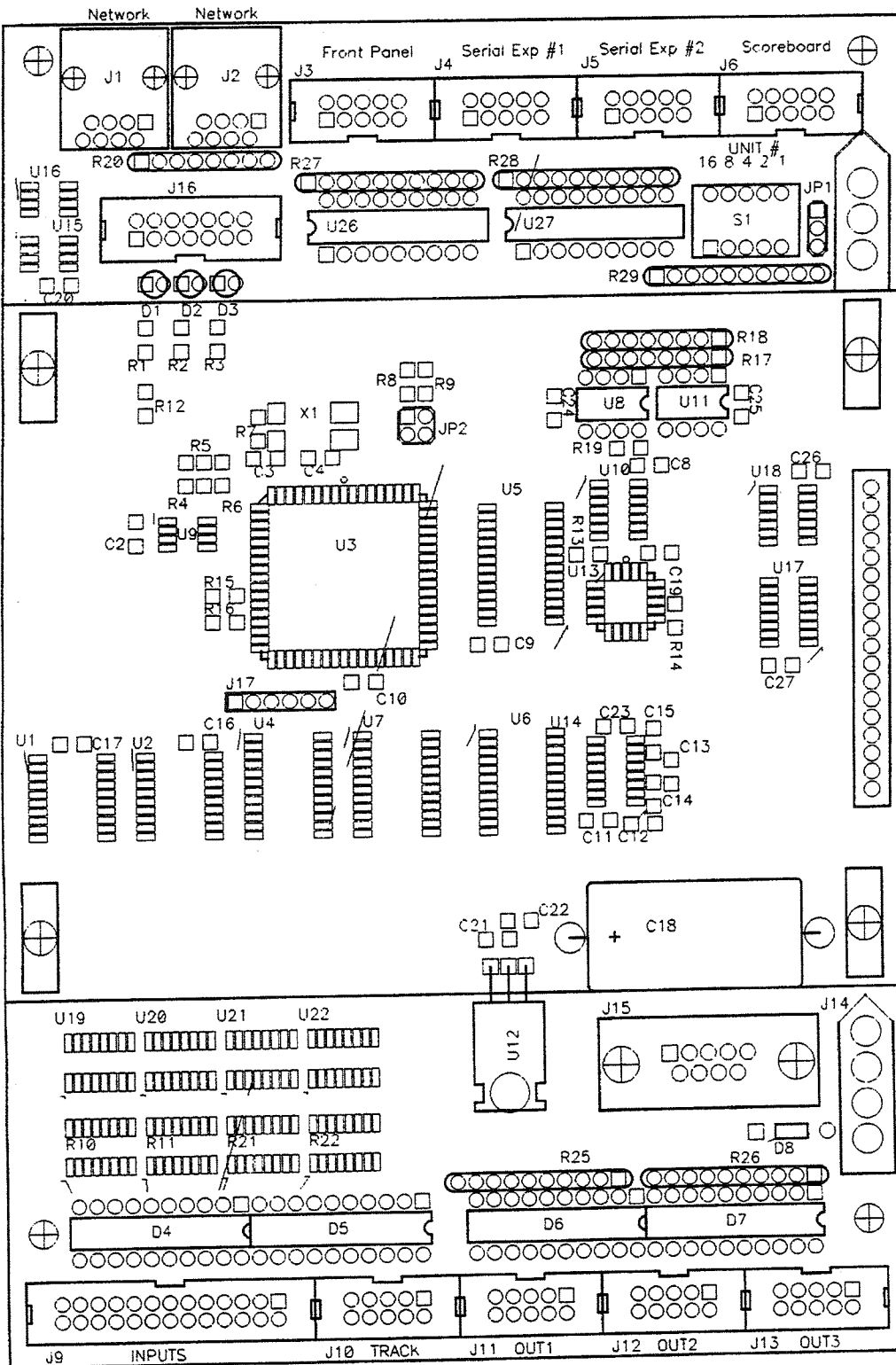
The 4-Pin Molex Connector supplies +12V (Pin 4) and Ground (Pins 2 & 3) to the Board.

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.

The top left two (2) RJ45 connectors are used for network connectors in Multi Player games. The third connector is used to connect the 2400 board to the Front Panel port of the Register Select board. In multi player games, this connector is used to connect the LCDisplay; the next three (3) connectors in Rev. G are used for other peripheral devices. The far right connector is used to connect the Scoreboard.

There is a Dip Switch (5 position) package. This is used for setting the unit number in a multi player games. In a single unit game the switches should all be "ON". This sets the board to "Master" status. "ON" would be all dip switches in the up ↑ position.

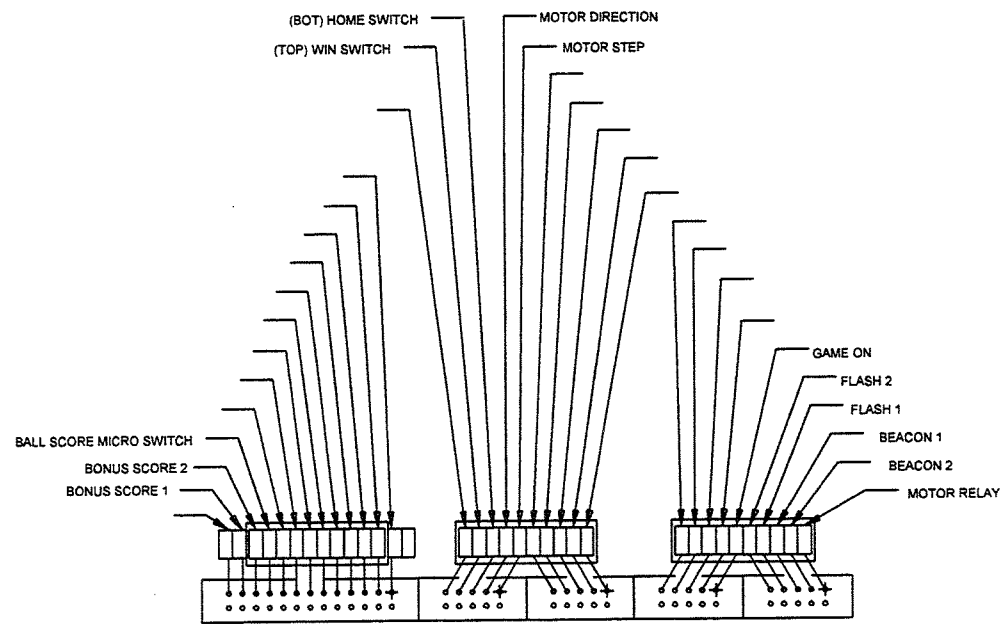
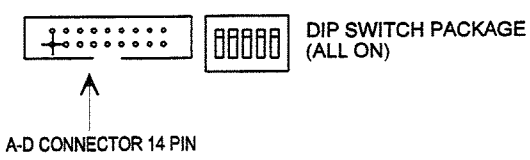
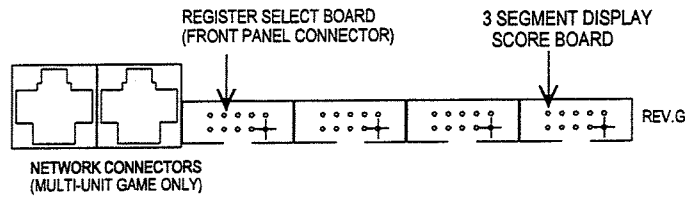
Jp1 is next to the dip switch package, and has a 3 pin header. The jumper should be across the two (2) top pins (top and middle) for normal operation.



SPI	
PIN	SIG
1	MISO
2	GND
3	SCLK
4	+12v
5	MOSI
6	+12v
7	SEL0
8	+12v
9	SEL1
10	GND

RJ-45 NET	
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



**FRONT PANEL BOARD
Overview/Drawing**

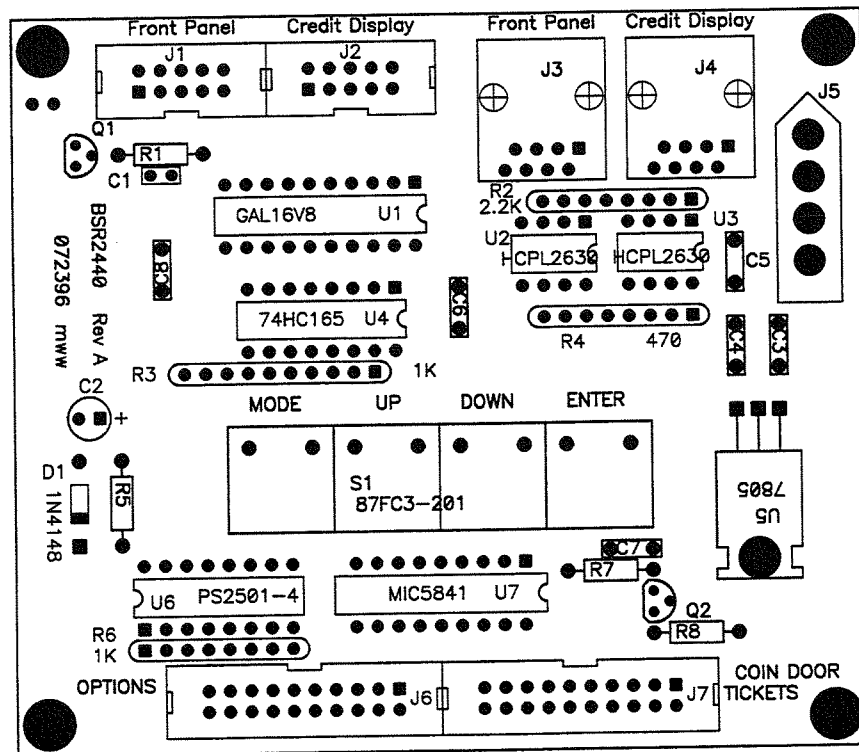
The basic operation of the Front Panel Board is as follows.

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.



CREDIT DISPLAY BOARD

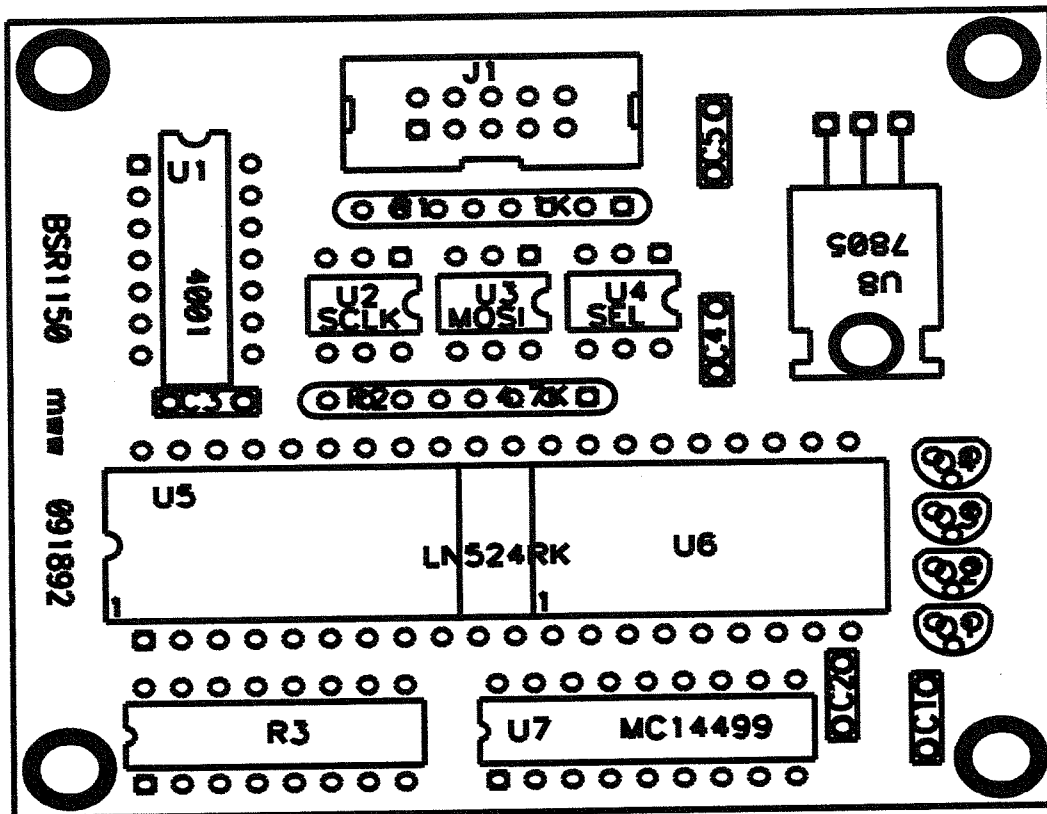
Overview/Drawing

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.

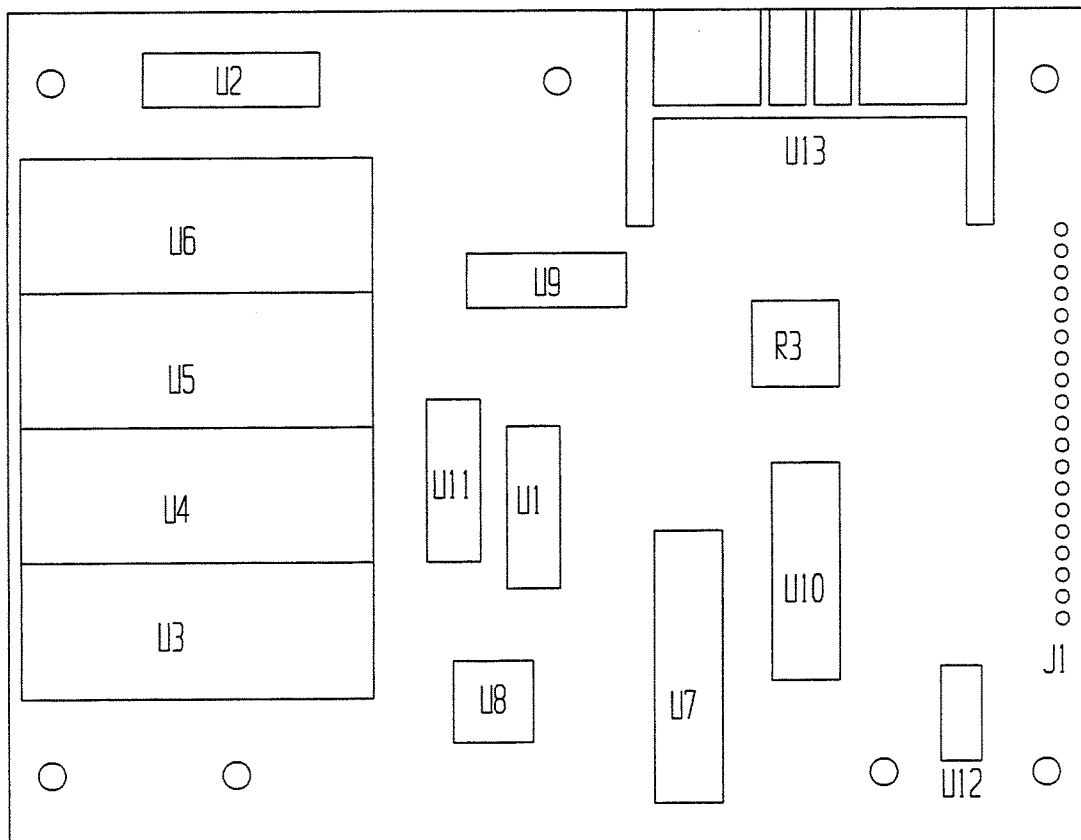
* The Credit Display Board is not used to set Options on multi-player games. See **OPTION REGISTERS - 2400 SERIES** on how to change Registers and the contents thereof.



SOUND BOARD OVERVIEW

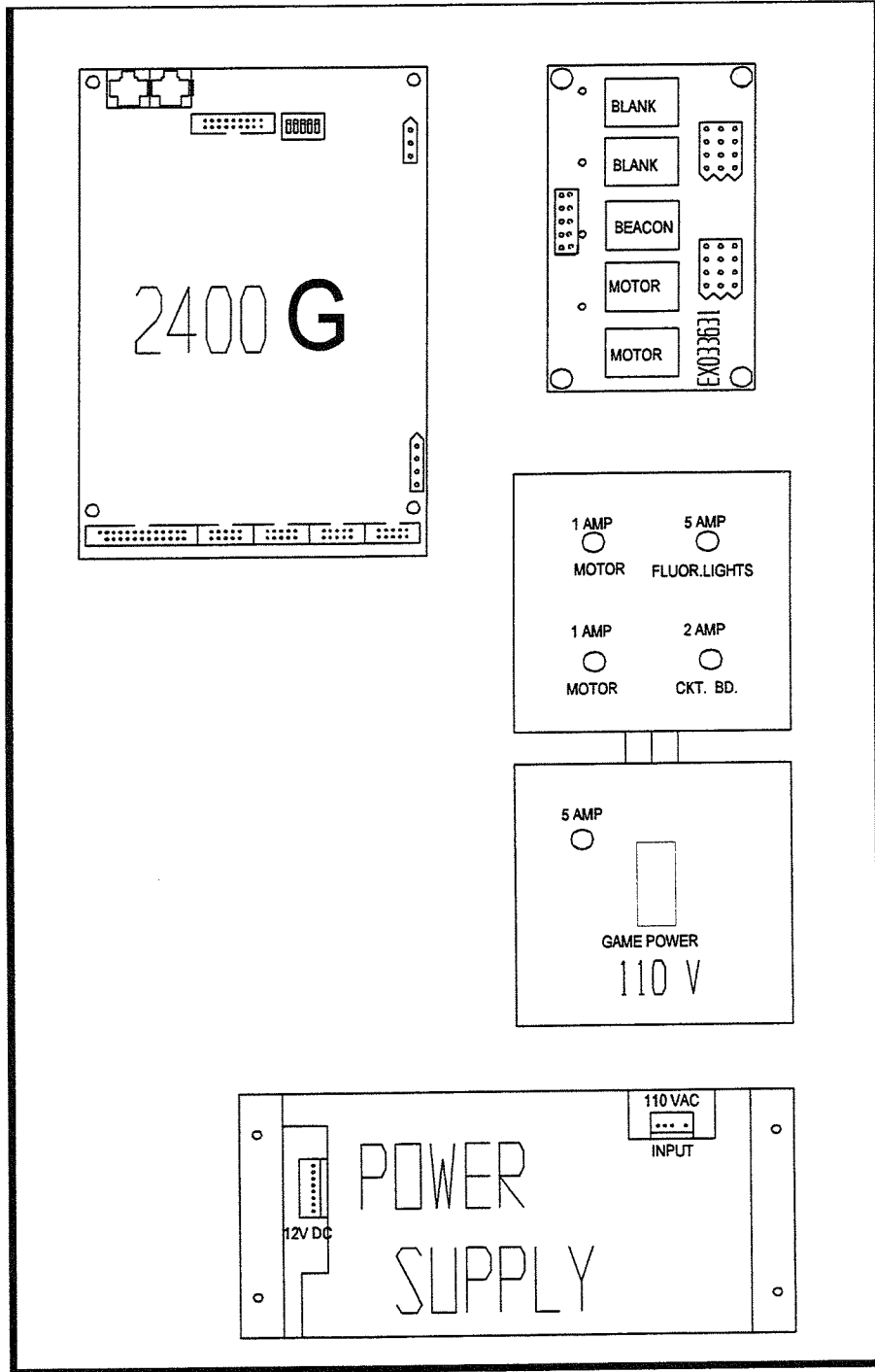
Over the years Bob's Space Racers® has used various sound boards for our Arcade Games. The various boards are similar in operation; however, the newest version, CD-21, has an audio amplifier mounted onto the board which amplifies the sound output. The signals for which sound to play come from the 18 pin connector - J1. Depending on how old your game is, depends on where those signals come from. The original sound boards plugged into a Serial Interface Board to receive the sound input signals. With the 2300 and 2400 Series electronics, the CD-21 sound board plugs directly onto the 2300 or 2400 Master Control Board to receive the sound input signals.

The only adjustment you need to be concerned with either type of electronics is the volume adjustment pot - R3. If the sound level is too high or too low, simply adjust the pot using a small flat screwdriver. See Troubleshooting Section.



M0000051

ELECTRICAL LAYOUT



TROUBLESHOOTING

PROBLEM/CAUSE	SUGGESTED FIX
<u>No Sound</u>	
Loose wire connection	Check speaker wire from sound board to speaker.
Volume adjusted too low on board.	Check adjustable pot on sound board. Turn clockwise to increase volume. Check to see if board is securely mounted. Still no sound? See Bad Sound Board.
Bad Sound Board	Check to see if board is securely mounted. Replace sound board or send it to Bob's Space Racers® for repair.
<u>Credit Display Not On</u>	
No power	Check ribbon cable connection.
No power to Front Panel Board	Check for 12VDC at 4 pin Molex Connector on front panel board.
No Power	Check 2 amp fuse with a meter. Replace if necessary.
<u>Game Won't Coin Up</u>	
Bad Coin Switch	Use a meter to check for continuity when switch is closed.
Bad Front Panel Board	Check 20-pin connector on front panel board for good connection. Check Ribbon Cable from 2400 Board to Register Select Board.
Bad 2400 Board	Check for green LED on board.

TROUBLESHOOTING

<u>PROBLEM/CAUSE</u>	<u>SUGGESTED FIX</u>
Ball Gone (Last Ball)	Check LED on 2400 Board for input.
Micro Switch Bad	If no input, replace. Ensure all balls loaded if parameters set for 8 balls, then ensure 8 balls plus shooter ball are in chamber.
<u>Lift Motor Runs continuously</u>	
Ball Lift Micro Switch Bad	Check LED on 2400 Board for input. If no input replace.
Balls Jammed in Trough	Clean trough and make sure balls roll to lift motor.

NOTES

PROBLEM/CAUSE

SUGGESTED FIX

Should you encounter a particular problem not covered in this or any other Troubleshooting Section of your Owners Manual, please contact the Technical Support Staff at Bob's Space Racers® at (386) 677-0761, or by FAX at (386) 677-0794.

PARTS LIST

<u>PART #</u>	<u>DESCRIPTION</u>
EX033660	Register Select Board BSR1140
EX033455	Credit Board Assy BSR1150
EX033435	Relay Board Assy BSR1110
EX022680	3 LED Display Board Assy
EX033658	BSR2400G Controller Board Assy
E0022680	Power Supply 12v @ 9A
E0023500	1 amp Fuse
E0023750	5 amp Fuse
E0023600	2 amp Fuse
E0007904	Motor 12V 25RPM
E0003800	Relay 12VDC KHAU-17D12
M0004485	Ball 1" Dia Plastic
W0014400	Catcher Ball
AX000010	Plex Credit Display Cover Red

APPENDICES

COIN MECHANISM



OVERVIEW

In all of our Arcade Games, we use a Coin Mechanisms, Inc., brand of coin mechanism, unless a different unit is requested by the customer.

Mechanical (Standard) 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 down and flips it over in front of a magnet.

If the coin used is too light, it will get stuck on the 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 Comparitor (Electronic Mechanisms)

Also available is an Electronic Coin Comparitor that is used if you need high security or have an unusual token or coin size.

The Coin Comparitor uses a good coin to "compare" the coin to the one 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 Comparitor 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.



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?

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. Example: it may be based on how many players the person beats in a race, or how many points are scored.

WHAT IS A PERCENTAGE?

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, as stated earlier, is to give some type of award based on the Player's score or performance.

Fixed (Race) Payout

Standard BOB'S SPACE RACERS® games give tickets as the award. Some of our games are Race Games and will give out so many tickets per player to the Winner. You will need to determine what percentage you want to use. 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 a dollar awarded. The percentage we find to be most successful for most people is right at thirty percent (30%). Normally, we suggest placing a 1-penny value on each ticket. You then need to figure out how many tickets you will give out on average for the amount of money that is coming in. The number of tickets going out should be thirty percent (30%) of how many cents are brought into the game. Maintaining a percentage is something that needs to be checked from time to time. On our Race Games, it's quite simple: figure how many tickets you want to give per Player to the Winner so the payout will always be a fixed constant percentage and, therefore, less attention has to be paid after it is set.

Tickets Based on Score

Whenever there is a payout of tickets on a game based upon a Player's skill, you need to estimate what the average score of a Player will be and figure a payout set at approximately 30%. Let's assume that a Player is going to pay \$.25 to play the game, and that the average score Players can attain is about 300 points. That means that you would want to give out 7-½ tickets for 300 points.

Some Players will score a little on the high side, some a little on the low side. If you figure about 7 tickets at 300 points you should average out at about 30%. Set your ticket options in such a way that 300 points would pay out either 7 or 8 tickets. In a week or so, check to see how many tickets the game has paid out versus how much money was taken in. Calculate the percentage of tickets being paid out per cents coming in (ideally, it should be about 30%). If it is too high or too low, you need to adjust the ticket payout based upon score to keep the percentage at the level you want it to be. This process, (where tickets are being paid out based on score), is going to require constant supervision and modification in order to keep your payout where you need it to be. Many patrons like to see the payout based upon their performance, so these type of machines, which require more monitoring, will help initially get this type of customer into your location.

It is important to note that having a variety of different types of games is helpful in maintaining a good flow of customers. If all your games are just race games or just skill games, etc., you are limiting your market. Although people that prefer to play race games might be interested in games based upon score, they are not going to be coming in to your location in the first place if the race games are not there. Again, what we are trying to impress upon you is that you do not want to lock yourself into just one type of redemption game, as this will limit your market.

Progressive Build-Up

Another ticket dispensing concept that BOB'S SPACE RACERS® has developed is a Progressive Build-Up of tickets. This is used for games of skill where you Win or Lose -- there is no opportunity to accumulate points. With this method, you can make your payout more consistent by having the games start out giving some amount of tickets. Usually the starting number of tickets is set slightly greater than 30% (i.e., 10 or 15 tickets) to get people to try the game. Whenever a person plays and loses, it causes the amount of tickets that the Winner would receive to increase by some amount, normally by 30% (7 or 8 tickets). That way, you can maintain your percent payout because even though people are

losing, it adds more tickets on to the amount of tickets that are given to the next Winner. This concept also helps so that when Players get more proficient at these difficult games, they don't go over and play and win every time. What will happen is if a Player becomes proficient at playing a game, they won't play unless the number of tickets is high. If they walk right over and Win right away and get a lot of tickets, then other people watching will see this happen and think that it is a relatively easy game and go over and play hoping to get a lot of tickets.

This can actually help increase interest in the game. As the ticket amount builds, it also makes it more difficult for a person to walk away from the game because they feel they can win with one more try and they see how high the tickets have been built up. Skill games (where a Player can only Win or Lose), that do not use a Progressive Build-up of tickets, pay out a fixed number of tickets to a Winner. A drawback to this method is that if a Player is very good at playing the game, they will keep playing and winning, making the payout more than 30% for whatever percentage is set. If the payout is lower, those Players who aren't as good at playing the game will not play because there isn't enough incentive in playing a difficult game.

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 and, with the kiddie models that are available from different manufacturers for the younger members of the family, provide entertainment for the entire family in one location. 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, they are more willing to let their children play the various games when they are going to actually win some type of award for what they have done. 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 will continue to allow the child to play until they have won enough tickets to exchange for that particular 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.

BOB'S SPACE RACERS®

REDEMPTION

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 as well as the years go by, versus a video game only lasting for several months before a significant drop-off in game play is seen.

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 be competitive, as well. 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 your 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 and handling (10%). It might seem as though you are losing an opportunity to increase your profits, but the word-of-mouth comments on your operation will pay off much more in the long run.

TICKET DISPENSER

TICKET DISPENSER

BASIC ELECTRONIC OPERATION

When the control unit calls for a ticket to be issued, 12VDC is applied to the ticket enable wire. At this time the motor turns 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 DESCRIPTION OF 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 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 roller as an anti-theft device. With the free swing of the motor 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 will cause the "O" rings to depress and the coarse knurled surface of the roller will then grip the tickets. One ounce of pull on the tickets will apply 20 lbs. 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

PROBLEM/CAUSEFIXDispenses 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, problem is in the game. If problem continues: bad Ticket Dispenser Board. (Replace Driver Transistor or Ticket Dispenser Board).

Shorted Pull Up Resistor

Locate the Pull Up Resistor (1K 1/4W); make sure 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-- should be 12VDC.

Bad Darlington Transistor(s)

Replace Darlington Transistor(s) or Ticket Dispenser Board.

<u>PROBLEM/CAUSE</u>	<u>FIX</u>
<u>Dispenses No Tickets</u> (Continued)	
Bad Motor	Try swapping Ticket Dispenser with another unit.
Wrong Option Setting(s)	Check the Option Setting(s) for this game (see information on your Controller Board).
Bad Driver IC	Replace the IC that has the Ticket Enable Line - See the Output Definitions for your Controller Board.
Bad Connection	Check connections between Front Panel Board and Ticket Dispenser.
Bad Ticket Dispenser	When tickets are to be dispensed, check between White (enable) and Black wire; should be 12VDC. If voltage is okay, probably Bad Ticket Dispenser.
<u>Doesn't Dispense Enough Tickets or Dispenses Too Many Tickets</u>	
Wrong Option Setting(s)	Check the Options Setting(s) for this game (see information on your Controller Board).
Ticket Guide Spring Missing Needs Adjustment	Read the Ticket Dispenser Manual under "Ticket Guide Spring".
Bad/Dirty Optic Sensor	Try blowing paper dust out of the Optic Sensor or swap Ticket Board with another unit.
Bad Ticket Count Input On Controller Board	Check Ticket Count LED on your Controller Board (see info on the Controller Board).

PROBLEM/CAUSEFIXDoesn't Dispense Enough Tickets
or Dispenses Too Many Tickets

(Continued)

Bad Ticket Notch Output
Transistor On The Ticket
Dispenser Board

Swap Board with another unit
to verify this, then replace
bad Board or Ticket Notch
Output Transistor (see Ticket
Dispenser Manual) Blue Wire
goes to Ground when no tickets
are under the Sensor Eye.

Bad Board

Check between Green (Ticket
Sensor) and Black wires on
Ticket Dispenser. Should be a
pulsing 12VDC for each ticket.
If okay, probably bad Front
Panel Board.

Bad Connection

Check connections between
Front Panel Board and Ticket
Dispenser.

Bad Front Panel Board

Check voltage between Green
(ticket sensor) and Black
wires. Should be pulsing
12VDC for each ticket. If
okay, probably a Bad Front
Panel Board.

BOB'S SPACE RACERS®

TICKET DISPENSER

N O T E S

PROBLEM/CAUSE

FIX

Should you encounter a particular problem not covered in this or any other Troubleshooting Section of your Owners Manual, please contact the Technical Support Staff at **BOB'S SPACE RACERS®** by telephoning them at (386) 677-0761, or by FAX at (386) 677-0794.

