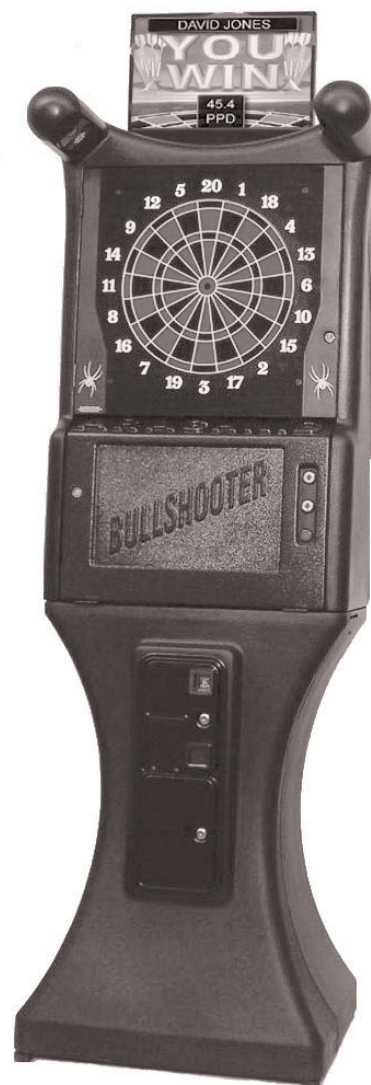


# GALAXY II.5

## Series Operator's Manual



Monitor Mid Mount Position



Monitor Top Mount Position



*The Originator of Electronic Darts*

6212 Material Avenue  
Loves Park, Illinois 61111  
815-654-0212 or 800-435-8319

[www.arachnidinc.com](http://www.arachnidinc.com)  
P/N 42691 Rev. C  
Software Build 3423



## **GALAXY II PURCHASE AND LICENSE AGREEMENT TERMS AND CONDITIONS**

**1. General Provisions.** These terms and conditions (this "Agreement") govern all orders from Arachnid Inc.'s customer ("Buyer") to Arachnid, Inc. ("Arachnid") for, and sales and the grant of related licenses by Arachnid to Buyer of, the Arachnid product referred to as the "GALAXY II" and its software (the "Product"). With respect to the Products, the terms and conditions of this Agreement shall (i) supersede any conflicting or additional terms contained in any advertisement, quotation, purchase order, confirmation, acknowledgment or other document or communication heretofore or hereafter between Buyer and Arachnid, and (ii) apply whether or not Arachnid or Buyer or both specifically reference this Agreement in any document concerning any order for or sale of the Products, unless Arachnid and Buyer expressly otherwise agree in a writing signed and delivered by each of them to the other which specifically references this Agreement by date and describes which terms and conditions of this Agreement are excepted and superseded. Arachnid's acceptance of any order by Buyer for a Product is expressly conditioned upon the applicability of this Agreement. All orders are subject to Arachnid's approval, including approval of credit terms. EXCEPT TO THE EXTENT LICENSED IN SECTION 2 BELOW, BUYER IS NOT ACQUIRING FROM ARACHNID ANY OWNERSHIP OR OTHER RIGHTS IN AND TO ANY OF THE SOFTWARE OR OTHER INTELLECTUAL PROPERTY USED TO OPERATE, OR COMPRISING ANY PART OF, THE PRODUCTS. Unless otherwise specified by Arachnid, payment is due 30 days from the date of Arachnid's invoice. Shipments shall be F.O.B. Rockford, Illinois, and at the risk of Buyer after delivery to the carrier. Arachnid will make all reasonable efforts to meet any shipment schedule specified in Buyer's purchase orders, but shall not be liable for failure to do so. In addition, Arachnid shall not be liable for any damage to or loss of the Products or any delay in or failure to ship, deliver, service, repair or replace the Products arising from any circumstances beyond Arachnid's control. The Products are sold for installation and interconnection by Buyer or its customers and Arachnid shall have no obligation in connection therewith.

**2. License Provisions.** Subject to the terms and conditions of this Agreement, Arachnid grants Buyer a non-exclusive license (referred to in this Agreement as the "License") to use the operating game software supplied as part of the Products ("Game Software"). Arachnid is either (i) the owner of all rights in and to the Game Software, including, but not limited to, copyrights and trade secret rights, or (ii) a licensee of certain components of the Game Software and is authorized to include such components in the Products. This Agreement does not convey to Buyer ownership of any of the software in the Product and Arachnid or Arachnid's licensors retain all title and ownership in such software and any modifications, updates or enhancements thereof. The Game Software shall only be used on a single Product at one time. Buyer shall not transfer or distribute the Game Software or the License to others, except that Buyer may transfer to only the customer purchasing or using the Product a sublicense for that Product only to use the Game Software embedded in the Product on the terms and conditions set forth herein. Except to the extent provided in the next sentence, neither Buyer nor its customers nor any subsequent transferees shall have any right to copy, reproduce, distribute, transmit, remove, download, decompile, reverse engineer or modify the Game Software, nor the right to remove, obstruct or alter copyright, patent, trademark and software license notices on or accompanying the Product or its Game Software. The owner and licensee of the Product shall have the right to copy for installation into the Product and to install into the Product updated Game Software that may be distributed to such owner and licensee from time to time by Arachnid. Neither the Products nor any of its Game Software shall be exported or re-exported in violation of any export provisions of the United States or any other applicable jurisdiction. Except to the extent expressly permitted under this Section 2, any attempt to sublicense, assign or transfer any of the rights, duties or obligations hereunder is void. In the case of the United States Government or an agency thereof as licensee, the following additional terms and notices apply:

Restricted Computer Software, as defined in the Rights in Data-General clause at Federal Acquisition Regulations 52.227\_14; and as applicable,

### **RESTRICTED RIGHTS LEGEND**

Use, duplication, or disclosure by the Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227\_7013.

Arachnid may without notice or demand terminate the right to use the Game Software (or any part thereof) and may also disable use of the Game Software (or any part thereof) if Buyer or its customer or any subsequent transferee or other user of the Product breaches any of the terms and conditions of this Agreement or any other agreement between Arachnid and any other owner/licensee of the Product in question (including without limitation any agreement governing or relating to any of the advertising programs referred to in Section 3 below). Upon termination of this License for any reason, Buyer or its customer or any subsequent transferee shall immediately delete the Game Software from the Product and return to Arachnid any form of the Game Software which is capable of being returned. All restrictions regarding use of and protecting Arachnid's rights in the software in the Product survive termination of Buyer's or any subsequent owner's or user's right to use the Game Software. Arachnid shall at all times while the Products are in use have and be granted access to the Product (whether electronically, including by modem or any other electronic data transmission and reception connector which comprises a part of each Product, or otherwise), at reasonable times and upon reasonable intervals, for the purposes of inspecting the Product, collecting usage information (including without limitation its location) and exercising and protecting Arachnid's rights in connection with the provisions set forth in this Section 2. Buyer shall not, and shall not permit any subsequent owner or user to, obscure, attach or remove any notice, informational plate or sticker affixed by Arachnid to the Product or which Arachnid creates to appear on any screen display of the Product. Buyer shall cause its customers and all subsequent transferees (if any) to be bound by the provisions of this Section 2 and Sections 3, 4 and 5 of this Agreement for the benefit of Arachnid (Arachnid shall be a third party beneficiary with the right of enforcement).

**3. Future Advertising.** Neither Buyer nor any other person or entity is as a result of Buyer's purchase of the Product acquiring any license or other rights in and to the software (if any) in the Product which enables or may enable the Product to display advertising. Arachnid may (but is not hereby obligated to do so) enter into arrangements with the owner/ licensee of a Product pursuant to which the Product may display advertisements; provided, that in the event any such arrangements are made, then (i) any such license to use the software in the Product for any purpose other than game operation shall be terminable at will by Arachnid and Sections 2, 4, 5 and 6 of this Agreement shall apply with respect to that license (and for such purpose, the phrase "Game Software" as used in this Agreement shall also refer to the software of the Product to the extent used in connection with advertising displayed by the Product), and (ii) Arachnid shall not be liable to Buyer for, and Buyer shall indemnify and hold Arachnid harmless against and shall upon request defend Arachnid against, any claims, losses, damages, costs or expenses arising out of or in connection with any such advertising, including without limitation claims for infringement of copyright, tradename, trademark or service mark, and defamation claims.

**4. Warranty.** Subject to the terms and conditions of this Section 4, for the applicable Warranty Period (as hereinafter defined), Arachnid will repair or replace at its plant in Rockford, Illinois, any of the following parts of the Product which Arachnid determines is defective in manufacture or workmanship under normal use and service: the Electronic Package; the darthead assembly (consisting of the spider, segments and matrix); and the cabinet and components of the cabinet. "Electronic Package" means only (i)

the power supply chassis and the parts mounted directly thereon, (ii) the main computer printed circuit board, (iii) to the extent installed by Arachnid, the modem (if any), and the light dimmer board. The "Warranty Period" starts on the date of delivery and means (i) 90 days with respect to the Electronic Package, (ii) 9 months for the monitor, (iii) one year with respect to the darthead assembly, and (iv) 30 days with respect to the cabinet and cabinet components. The Product will not be defective if it substantially fulfills the performance specifications. This warranty shall not apply to any of the Products or parts thereof repaired or altered by anyone but Arachnid, operated or installed contrary to instructions or contrary to this Agreement, or subjected to abuse, misuse, accident or improper environment. This warranty applies only for the benefit of the original purchaser of the Product and is not transferable. For this warranty to apply, Buyer must (i) give Arachnid written notice of any warranted defect within 10 days after discovery and, in any event, not later than the date on which this warranty expires, and (ii) deliver the Product into Arachnid's possession within 15 days following the date on which the warranty claim notice is given to Arachnid. Any Product which is the subject of a warranty claim must be shipped to Arachnid freight prepaid. Prior to repair or replacement, Arachnid shall have the right to examine the part at Arachnid's plant in Rockford, Illinois. If Arachnid determines that this warranty is inapplicable, Arachnid will notify Buyer, and labor and parts furnished at Buyer's request shall be paid for by Buyer at Arachnid's then current rates and prices. Arachnid neither assumes nor authorizes anyone to assume for it any obligation or liability in connection with the Product which is not expressly provided for under this Agreement. Arachnid's liability under this warranty shall be limited to repairing or replacing warranted Products and the expense of the lowest transportation costs for return to Buyer or, if the Product in question cannot be repaired or replaced by Arachnid, to the return of the purchase price paid for the defective or nonconforming warranted Product in question; provided, that Buyer shall first return to Arachnid, and Arachnid shall have the right to thereafter retain as its own property, those Products for which a refund of the purchase price is to be made. Notwithstanding anything to the contrary in this Section 4, Arachnid does not warrant that the operation of the Game Software will be uninterrupted or error-free. **THE WARRANTY SET OUT IN THIS SECTION 4 IS THE ONLY WARRANTY APPLICABLE TO THE ORDER OR THE PRODUCTS. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE DISCLAIMED.**

**5. Limitation of Liability. NEITHER ARACHNID NOR ITS DEALER OR REPRESENTATIVE, IF ANY, SHALL BE LIABLE, WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY, IN NEGLIGENCE, OR OTHERWISE, FOR INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PURELY PECUNIARY DAMAGES OR FOR LOSS OF DATA OR FOR COSTS OF REMOVAL OR SHIPMENT. UNDER NO CIRCUMSTANCES SHALL ARACHNID'S LIABILITY OR BUYER'S REMEDY FOR DAMAGES AGAINST ARACHNID EXCEED THE AMOUNT OF THE PURCHASE PRICE OF THE PRODUCTS WITH RESPECT TO WHICH CLAIM IS MADE. IN THE EVENT THAT ARACHNID'S WARRANTY, IF ANY, OR ANY OTHER OBLIGATION OF ARACHNID APPLICABLE TO THE PRODUCTS FAILS OF ITS ESSENTIAL PURPOSE, BUYER'S EXCLUSIVE REMEDY SHALL BE LIMITED TO RETURN OF OR CREDIT FOR SO MUCH OF THE PURCHASE PRICE AS IS APPLICABLE TO THE PRODUCTS WHICH ARE NONCONFORMING OR DEFECTIVE, PROVIDED SUCH PRODUCTS ARE RETURNED TO ARACHNID F.O.B. ARACHNID'S PLANT IN ROCKFORD, ILLINOIS, U.S.A. NO ACTION ARISING OUT OF THE ORDER OR PERTAINING TO THE PRODUCTS IN QUESTION MAY BE BROUGHT BY BUYER MORE THAN ONE YEAR AFTER THE DATE OF SHIPMENT, OR, IN THE CASE OF WARRANTY CLAIMS, WITHIN ONE YEAR AFTER THE CLAIM WAS OR SHOULD HAVE BEEN DISCOVERED, BUT IN NO EVENT MORE THAN TWO YEARS AFTER SHIPMENT. BUYER'S REMEDIES PROVIDED IN THIS AGREEMENT ARE ITS SOLE AND EXCLUSIVE REMEDIES.**

**6. Other Provisions.** Upon Buyer's failure to pay or otherwise perform in accordance with this Agreement or any order governed by this Agreement, all amounts owing to Arachnid by Buyer under the order in question and any other order or obligation of Buyer to Arachnid shall, at Arachnid's option and without notice, become immediately due and payable. Any payment not received by Arachnid on its due date shall be subject to a late charge of 1.5% per month until paid, unless applicable law limits this charge, in which event, the applicable late charge shall be the maximum monthly charge permitted by applicable law. Buyer shall pay Arachnid all attorneys' and paralegal fees and all court costs and out-of-pocket disbursements incurred by Arachnid to effect collection. Arachnid's rights and Buyer's obligations under Sections 2, 3, 4, 5 and this Section 6 of this Agreement shall survive any termination of this Agreement. This Agreement is made in and it and all matters pertaining to the Products shall be governed by the internal laws (without reference to the conflicts of laws principles thereof) of the State of Illinois. The invalidity of any term contained in this Agreement shall not affect any other of the terms of this Agreement. The failure of any party to enforce or declare a default or breach with respect to any particular term or condition of this Agreement or any purchase order governed by this Agreement shall not be considered a waiver of that party's right to enforce or declare a default or breach with respect to any other term or condition or, on a subsequent occasion, with respect to that particular term or condition. Galaxy II v1 --12/3/01



# Table of Contents

|                                              |          |
|----------------------------------------------|----------|
| <b>Introduction</b>                          | <b>1</b> |
| <b>Section 1: General Description</b>        | <b>1</b> |
| <b>Section 2: Features of the Machine</b>    |          |
| 2.1 Features                                 | 1        |
| 2.2 Available Games                          | 2        |
| <b>Section 3: Unpacking/Assembly</b>         |          |
| 3.1 Unpacking                                | 4        |
| 3.2 Assembly                                 | 4        |
| <b>Section 4: Operation</b>                  |          |
| 4.1 Power Up                                 | 4        |
| 4.2 Game Play                                | 4        |
| 4.3 Test/Setup Mode                          | 4        |
| <b>Section 5: Technical Description</b>      |          |
| 5.1 Power Supply                             | 8        |
| 5.2 Main PC Board                            | 8        |
| 5.3 Video and Monitor                        | 9        |
| 5.4 Target Illumination                      | 9        |
| 5.5 Darthead                                 | 9        |
| 5.6 Technical Information                    | 11       |
| <b>Section 6: Parts Listing</b>              |          |
| 6.1 Lower Cabinet                            | 12       |
| 6.2 Upper Cabinet                            | 12       |
| 6.3 Darthead                                 | 12       |
| 6.4 Mainboard                                | 14       |
| <b>Appendices</b>                            |          |
| Updating Memory in the Machine               | A1       |
| Converting the Monitor to Top Mount Position | A3       |
| Bill Acceptor Door Kit for the Galaxy II     | A4       |

**The most current version is always available on the Arachnid website at:**

**<http://www.arachnidinc.com>**

Note: This equipment has been tested and found to comply with the 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.

Covered by one or more of the following U.S. and/or foreign patents.

140531, 5020806, 5197094, 5359510, 5401033, 5496039, 0477320, P69120886.7, 5114155, 5318319, D328726, 5355302, 5848398, 6397189, 6279912, D414521, D423597, D448809, D468368, 214662, 2815483, ZL01302307.1, 40103986.2, 151194, 6076021, 5743533, 5681044, 5482291, 4955967, 4881744, 6805354, 6974133,

**Caution: Never place the Galaxy II in high traffic areas of the bar. Although Arachnid boards use safety darts, they still do hurt when thrown at patrons. Take care that no accidents happen.**

# Introduction

This manual contains assembly, operation, and troubleshooting information for Arachnid's Galaxy II dart machine.

If you encounter a problem that is not covered in this manual, or if you have any questions, contact Arachnid at 800-435-8319 from 8 a.m. to 5 p.m. CST.

## Section 1 General Description

The dart machine is a coin operated unit offering players a wide variety of game choices to challenge all skill levels. The unit occupies only 3.9 square feet (27" x 21") of floor space.

The machine uses a sealed matrix scoring system behind the dart face. As the darts strike the target, the machine's computerized scoring system instantly displays the score on the color monitor.

The power requirements for a Galaxy II are 120VAC at 60Hz with 1.20A max or 240VAC at 50Hz with 0.70A max.

## Section 2 Features of the Machine

This section lists the features and games available on the machine.

### 2.1 Features

#### A. Automatic Player Change

The machine is equipped with automatic player change, which is operator selectable between manual and auto in the test/setup mode. If this option is used, the game will change players automatically at the end of each player's turn. The remove and throw darts delay time is also operator selectable.

#### B. All coin and credit settings are "software selectable." Free Play is also available.

The selection of coins (1 - 20 ) and the number of credits (1 - 50) allows a wide variety of coin-up options. Both these settings and a "Free Play" option are available in the test/setup mode. "Free Play" will not be reset when the board is rebooted, it must be toggled off. However, it will be reset when the Factory Defaults are reset.

#### C. All Game Credits are Software Selectable

The number of credits required to play each game, preset at the factory, can be changed as desired for any game in the test/setup mode.

#### D. Happy Hour Reduced Pricing

Editable pricing for "Happy Hour" is available along with time settings for each day of the week in the test/setup mode.

#### E. League Pricing

Editable pricing for League Play is available in the test/setup mode.

#### F. All Features are Software Selectable

All selectable options are set in the test/setup mode. (Spread Limits, Round Limits, Single or Double Bullseye, etc.)

#### G. Sounds for Player Feats

Individual sounds are played for each player feat accomplished. (Triples, Hat Tricks, Whitehorses, Wins, etc.)

#### H. LCD Flat Screen Monitor

The color graphics on the new LCD Flat screen monitor look fantastic. The monitor can now be mounted in the middle of the game or on top.

#### I. Missed Dart Detector

Arachnid's exclusive dart catching web (front) will detect a dart hit, and count it as a dart thrown, without giving a score.

#### J. Normal Game Play Statistics

The machine displays player statistics on the screen following the end of every game.

#### K. Operator Reports

Game popularity and coin slot reports are available in the test/setup mode.

#### L. Hours of Operation

Setting the location's hours of operation in the software allows the machine to automatically dim the lights and blank the monitor when the location is closed.

## M. League Mode

Completely automated league mode includes two-way communications and does not require ANY TEAM CARDS. Statistics are shown at the end of each game and are stored for easy retrieval via modem.

## N. Casual Mode Handicapping:

Players can now use handicaps in casual X01 and Cricket games. Handicapped players playing X01 will have their points reduced (i.e instead of having to shoot for 301 they shoot for 201). Handicapped cricket players will get free marks next to the numbers. This option must be enabled in setup mode first (see page 6). The player then toggles the handicap option On in the pregame screen. You can share the handicap with a friend by setting the Handicapping to TEAM in Cricket, or Stacked in X01. Once the game is started enter in your MPR for cricket or PPD for X01 to receive your handicaps. All calculations are based on NDA guidelines.

## 2.2 Available Games

Available for play are all the old favorites and some new challenging “speed” games. The games and their descriptions are listed below:

### A. 01 Games

The 01 family of games are count-down games for 1 to 8 players. Each player starts with 301, 501 or 701 points, depending on the game chosen. The first player to reach exactly zero, or the lowest score when the round limit is reached is declared the winner.

The 01 games are available with the following opening round options:

**Open In:** A hit on any numbered segment will begin the count-down process.

**Double In:** The player must hit any double or the bullseye to begin the count-down process.

**Master In:** The player must hit any double, triple or the bullseye to begin the count-down process.

The 01 games are available with the following final round options:

**Open Out:** Any segment that will bring the players score to exactly zero can be used to “take the game out.”

**Double Out:** Any double that will bring the player to exactly zero must be used to “take the game out.”

**Master Out:** Any double, triple or the bullseye that will bring the players score to exactly zero must be used to “take the game out.”

*Note: Under the 501 menu there is 501 Open In/Open Out Quickie and 501 Open In/ Master Out Quickie. These games play the same as a normal 501 game with the same round options. The only difference is they have a round limit of 10.*

## B. Cricket Games

Cricket is a game of skill and strategy played with the numbers 15 through 20 and the bullseye. A player must “mark” each number three times before that number is “closed.” A single counts one mark, a double two, and a triple three. Points are scored every time a player hits a number he has closed. Once all players have a number closed, no one can score points on that number. The first player to close all the numbers and the bullseye and have equal to or more points than all his opponents is declared the winner.

Maximum points scored by players may be governed by a preset spread limit in some games. Spread limits control the point spread between players in an effort to keep the better player from running up the score and over-extending the game. For example: If player “A” has 89 points, then player “B” cannot score more than 289 points under a 200 point spread limit. When a player reaches the spread limit, he is forced to try and close another number, as no further scoring is possible until the other player(s) add points to their score. Spread limits can be toggled off or on in the test/setup mode.

Cricket comes in six variations as described below.

**Cricket** 1 to 8 players

This is the basic version of Cricket. A 200 point spread limit is the default.

**Hammer Cricket** 2 to 4 players

Hammer Cricket is a count-up game using a different Cricket number each round. There are two “Wild” rounds that display a random number between 12-20 or the Bull. Each round, the first dart scored is worth the segment hit, the second is worth two times the segment scored, and the third dart is worth three times the segment scored. If you miss all three darts the hammer falls and reduces your score by a triple of the segment for that round! During the final round the second and third darts are worth 3 and 5 times the number scored! In the event of a tie game there will be a final tie breaker round. If scores are still tied, the highest MPR wins the game. Hammer Cricket can be configured Masters (Triples only), or Open (Singles, Doubles or Triples).

## Team Hammer

4 players

Team Hammer plays like Hammer Cricket with one major difference, four players compete as two separate teams. Each player tries to get as many points as possible. Points from both team members are added together into one score. When a player misses all three darts, his score and that of his team is reduced by a triple of the segment for that round! Team Hammer can be configured as Masters (Triples only), or Open (Singles, Doubles or Triples).

## Cut-throat Cricket

2 to 8 players

The object is to close all the numbers and have the lowest score. Once a player closes a number, additional marks will score points for opponents who have not closed that number. There is no point spread limit for this game.

## Team Cricket

4 players

Team Cricket has two different sets of rules that can be used to play. To turn on the New Team Cricket rules, you will need to configure that option in the Setup Mode (see page 6 of this manual).

Both sets of rules are played with four players playing as two teams. Each player marks individually; however, team partners score together as a team. Both partners must have a number closed before either can score on that number.

In the **Traditional Rules**, to win, both teammates must have all the numbers and the bullseye closed and the team must have equal to or more points than their opponents.

In the **New Rules**, to win, a team needs only one player to have all the numbers and the bullseye closed. They still must have equal to or more points than their opponents.

A 400 point spread limit is the default for both sets of rules.

## Wild Card Cricket

1 to 8 Players

Instead of the traditional numbers, this game will start with a random selection of six numbers from 7 through 20 (the bullseye will always be present). All numbers are “Wild” and will change at the end of each player’s turn if not marked. Once a number is marked, it will remain the same throughout the rest of the game. A 200 point spread limit is the default.

## Cricket Quickie

1 to 8 players

This game plays exactly like Cricket except this game only has a round limit of 10. Because of its short round limit it is also less expensive than regular Cricket. The final difference is that this game has no spread limit.

## C. Other Games

Here are some other fun games to play. Each one has a different set of rules so please read their individual entries.

### Count Up

1 to 8 Players

Count Up is a good game to begin learning darts, allowing the player to develop throwing technique without being distracted by strategy. Each player begins with zero points and tries to score the most points to win the game. All segments will score points and a winner is declared at the end of 8 rounds.

### Tic Tac Darts

2 Players

This is a variation of traditional Tic Tac Toe. The same nine square grid is used. The machine places the bullseye in the center square with randomly selected numbers in the other eight squares. Player “X” or player “O” claim a square by marking the number four times. Singles score 1 mark, doubles 2, and triples 3. The bullseye scores 1 mark; double bull (if used) will score 1 for the outer and 2 for the inner. The first player to get three squares in a row is declared the winner. In the event of a “Cats” game, where it is not possible to have three squares in a row, the game ends with no winner declared.

Alternatively there is an option in the **Game Setup** menu that allows the game to be scored with points as well as marks. In cases where the game would end in a “Cats” game, the point total will be used to determine the winner.

### Bermuda Triangle

1 to 8 players

Players shoot at a new number each round. The numbers used are 12, 13, 14, Double, 15, 16, 17, Triple, 18, 19, 20, Bull, and Double Bull. Hitting any segment of the current number accumulates points for the player. For example: The first number is 12. A single will score 12 points, a double 24, and a triple 36. When “Double” is the current target, any double will score. The same applies to “Triple” when it is the current target. When a player misses the current number with all three darts, their current total score is cut in half! The highest score at the end of the game wins.

### Gotcha!

2 to 8 players

The object of the game is to be the first player to go from zero to exactly 301 points. Players may try to match their opponent(s) score at which time a bomb is detonated destroying the opponents score and setting it back to zero. If someone exceeds 301, the amount exceeded will be deducted from your original score for that turn. No matching bombs will be detonated.

There is also a “Master Out” option, requiring a double, triple, or bull to reach exactly 301 points and win the game.

The object of this game is to get the ball into the hole in as few “strokes” as possible. A power bar, which is always pointing towards the recommended path, is displayed on the screen. The number that is displayed in the lower left hand corner of the screen shows the direction of the recommended path. Keep in mind that you may have to avoid obstacles yourself. When the power bar reaches the red color, the ball will move the farthest. Timing is critical. If you wait too long, you may “whiff” (miss) the ball. If you wish to change directions of the ball keep in mind the ball will go in the direction of the segment hit.

## D. Speed Games

These two games allow a single player to compete against the clock.

### Count Down

The clock times how long it takes to go from 901 to exactly zero. When a game is completed within the ten fastest times, an input screen appears, where the player adds their name to the Top Ten List.

### Quick Cricket

The clock shows how long it takes to close the 15 through 20 and the bullseye. Three marks are required to close a number, as in regular Cricket above. No points are scored for extra hits on closed numbers. When a game is completed within the ten fastest times, an input screen appears, where the player adds their name to the Top Ten List.

## Section 3 Unpacking/Assembly

### 3.1 Unpacking

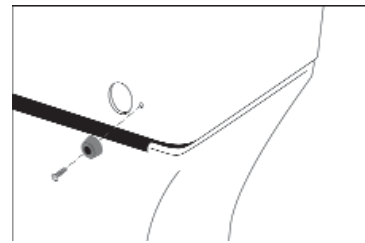
Unpack the machine per the instructions listed on the carton.

**Note: You must be able to lift up to 50 lbs. in order to assemble the Galaxy II.**

### 3.2 Assembly

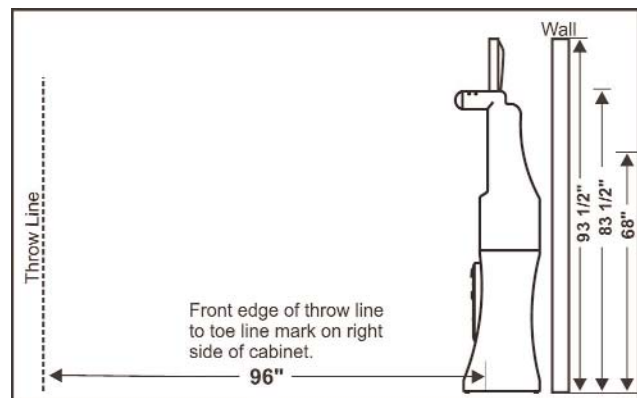
1. Insert the four set screws provided into the top of the lower cabinet
2. Place the upper cabinet assembly on the lower cabinet.
3. Open the upper cabinet door and flip down the monitor bezel.
4. Secure the upper cabinet to the lower cabinet using the four wing nuts provided.
5. Feed the wiring harness and connector through the hole in the upper cabinet to the lower cabinet and connect to the coin door harness.

6. Close and secure the monitor bezel. Close the door to secure the bezel.



**Back Of Game**

7. Install the rubber bumper on the back of the Galaxy II, using the tiny screw hole on the right hand side of the opening for the phone cord. This rubber piece is used to make the Galaxy II square with the wall.



**Figure 1: Side view of play field**

8. Place the throw line Eight feet (96”) from the center of the bullseye. (See Figure 1)

**IMPORTANT: The Galaxy II should not be operated until it is placed with its back against a wall in an area where bystanders will not get struck by a dart.**

## Section 4 Operation

### 4.1 Power Up

Once the machine is assembled and set in place, connect the power cord to a wall outlet. **Note: The outlet must have an earth ground and be wired for the correct polarity.** The incoming line voltage is not switched and power is immediately applied to the mainboard. The monitor and target lights are controlled by the switch on the back of the machine.

## 4.2 Game Play

Upon power-up, the machine is ready for play. Players select their game and options using the on screen menus. The up and down buttons are used to negotiate menus and the enter button to make selections. On-screen instructions are provided from the main menu.

## 4.3 Test/Setup Mode

To enter the test/setup mode, press the test button on the main PC board. All game options and hardware tests are selectable through software via the test/setup mode. The following are descriptions of the various options available in test/setup mode. Use these descriptions as references and follow the instructions on the screen to make changes or view the settings. The up and down buttons are used to navigate menus and the enter button to make selections or changes.

### A. Machine Setup Menu.

**Language Setup:** Used to set the display language on the machine.

**Time Settings Menu:** Used to access current date and time, Happy Hour and Hours of Operation time settings.

**Set Time/Date:** Used to set the machine's clock and internal calendar.

**Set Happy Hour Times:** Allows the operator to offer reduced game pricing for a set period each day. To activate this feature, the time period must be set on this screen and the reduced credits (Happy Hour) set in the Price Settings screen.

**Set Hours of Operation Times:** Setting the location's Hours of Operation will allow the machine to enter **Sleep Mode** outside normal business hours. In Sleep Mode, the target lights will dim and the monitor screen will blank out. While in Sleep Mode, inserting a coin or pressing any button will return the machine to Normal Mode.

**Coin Slot Assignment:** Used to set coins per credit and credits per coin. Adjust the number of coins that have to be inserted to register the number of credits shown or adjust the number of credits that will register for the number of coins shown. Default: 1 coin = 1 credit.

**Give This Machine A Name:** Used to input a "human friendly" name for each machine.

**Input Modem Password:** Used to input the password used for modem security. The password can be from 1 to 8 characters. Only calls submitting the correct password will be allowed to establish communications.

**Free Play:** Used to set free play on or off.

**Fantasee Games:** Use to access the Fantasee Game files.

**Fantasee Game In Use:** This displays which Fantasee Game is currently running on your Galaxy II.

**List Fantasee Files:** Lists the Fantasee Game files currently on the machine and includes memory size information.

**Delete All Fantasee Files:** Use to delete ALL the Fantasee Game files from the machine.

**More Machine Setup:** Contains the following setup options.

#### Reset Menu:

**Reset All:** A one-step method of activating all the resets listed on this menu.

**Reset to Factory Defaults:** Resets all options to the original factory setting.

**Reset Countdown Top Ten List:** Clears information stored in this list.

**Reset Quick Cricket Top Ten List:** Clears information stored in this list.

**Reset Golf Top Ten List:** Clears information stored in this list.

**Reset Count Up Top Ten List:** Clears information stored in this list.

**Reset Popularity Counters:** Resets all the counters back to zero.

**Clear Machine Credits:** Clears any accumulated credits from the machine.

**Reset League Stats:** Clears all stored match statistics. **Warning: Once they have been cleared they cannot be retrieved. Make sure all stats have been collected from the machine prior to using this function!**

#### League Attract Menu:

**List League/Attract Files:** Lists the league and graphic files currently on the machine and includes memory size information.

**View Attract Files:** Displays all operator ads on the board. This is good for troubleshooting.

**Delete League/Attract Files:** Allows league and graphic files to be selectively deleted.

**Delete All League/Attract Files:** Used to delete ALL the league and graphic files from the machine.

**Send Info and Settings to Network:** Sends League Files and Machine settings to the Galaxy II's on the network.

**Setup League Announcement:** Creates a simple ad that displays the number of days before leagues start.

**Setup Tournament Announcement:** Creates a simple ad that displays the number of days before a tournament starts.

**View Collect Stats:** Allows you view new data that has been put on the Galaxy II.

**View Recollect Stats:** Allows you view old data that is on the Galaxy II.

**Adjust Volume:** Allows the operator to adjust the speaker volume.

#### **HotButton Menu:**

**Create HotButton:** Allows the Operator to create Player, Operator and Collector HotButtons.

**Erase HotButton:** Erases the data stored on a HotButton.

**View HotButton Configuration:** Used to view the settings that were setup in Dartman, like Minimum Credits allowed and HotButton promotions.

**Delete HotButton Configuration:** Deletes the HotButton configuration off of the board.

**Write Settings to HotButton:** Writes the machine configuration to an Operator HotButton.

**Read Settings from a HotButton:** Loads the settings to the Galaxy II from an Operator HotButton.

**Write Settings to Port-A-Flash:** Writes the machine settings to the Port-A-Flash.

## **B. Game Setup Menu**

**Price Settings:** Used to set the number of credits required by each player in normal game mode and happy hour mode, for each individual game.

**Bull Setting:** Used to set the single or double bull for each individual game.

**Round Limit Setting:** Used to set round limits for each individual game.

**Spread Limit Setting:** Used to set Spread Limits on or off for Cricket games.

**Out Option Setting:** Used to set the "Out Option," for games that have special requirements for winning the game.

**More Game Setup:** Used to access the following items:

**Auto Player Change:** Used to set auto player change on or off.

**Player Change Delay:** Used to set the time, in seconds, allowed to remove darts between player turns.

**Cheater Alarm:** Used to set free dart sound on or off. When set to ON, the machine will make an alarm sound when players throw darts without inserting any credits. Used to discourage free play.

**Team Fees:** Used to have the machine automatically collect league dues from each team prior to a match. Can be turned "ON" or "OFF" The amount to collect is determined and sent by Arachnid's League Management Software.

**Casual Freeze Rule:** Turns off and on the freeze rule for casual play.

**Freeze Rule Bust:** When this option is set to on, it will allow a player breaking the freeze rule to go bust instead of losing the game.

**Backup Dart:** Turns off and on the unthrow option in casual mode.

**Casual Mode Handicap:** Turns off and on handicapping for casual mode. The percentage is used to determine the minimum starting score for the lowest player. (i.e., 40% of 301 is 121 or 60% of 301 is 181).

**Max Cricket Scores:** This option will limit the number of players that can play Cricket.

**Tic Tac Toe Scores:** This option enables Tic Tac Toe to be scored on points as well as marks.

**Show 'Up Next' Stats:** Toggles on and off the Next Up Stats feature. This feature shows the MPR or PPD of the person shooting next during a player change.

**League Round Limits:** Turns off and on the round limits for leagues. This uses the round limits set up for casual play.

**League Freeze Display:** Turns off and on the Freeze Rule display in leagues.

**League Cancel Button:** Turns on and off the Exit League Play feature. When turned on, you have the option to exit league play before starting the next game.

**New Team Cricket Rules:** Turns on and off the New rules for Team Cricket. If the New Team Cricket rules is switched on, both casual and league play will use the new rules that were detailed earlier in this manual.

**Game Fees:** Turns on and off the Game Fees Screen. With this option on, your players pay for the nights games up front.

## C. Communications Menu

### Modem Menu:

**Modem Information:** Displays information about the modem if it is installed properly and working.

**Modem Receive Test:** Displays all data sent by the modem in yellow and all data received in white.

**Give This Machine A Name:** Used to input a “human friendly” name for each machine.

**Input Modem Password:** Used to input the password used for modem security. The password can be from 1 to 8 characters. Only calls submitting the correct password will be allowed to establish communications.

**Modem Call Window:** Used to set the number of rings within the call window and outside the call window, after which the modem will pick up an incoming call. The call window is defined by the beginning time and ending time set on this screen. This feature is contingent on the machine having the correct time set.

### Modem Call-Out Menu

**Call-Out Type:** Select Internet, DartComm, or WIFI.

**View Settings:** Used to view the current call-out settings.

**Edit DartComm Phone Number:** Used to set the call-out phone number for use with Dartman for Windows.

**Edit Internet Settings:** Used to set the ISP settings and FTP settings for LeagueLeader.

**Edit WIFI Settings:** If you have installed a WIFI Modem, this menu allows you to change the settings of your wireless network.

**Access Point:** This is the name of the wireless access point connected to your Galaxy II machine.

**Security Type:** This is the security type for your wireless access point. You can choose either WEP, WPA TKIP, WPA2 AES or None.

*Note: The Galaxy II.5 will only work with the listed Security types. If the router isn't set to one of the security types listed, it will not work.*

**Security Key:** This is the “password” used when connecting to a secure wireless network. Both access point and Galaxy II must have the same key in order to work.

**Auto/Manual:** This option allows you to choose whether to manually enter in Internet information or let it automatically find it for you.

**IP Address:** This is the address that your Galaxy II uses to access the Internet. If you chose **Manual** under **Auto/Manual**, you will need to set an IP Address manually.

**IP Subnet:** Provided by your Internet provider.

**Gateway:** Provided by your Internet provider.

**DNS Server 1:** Provided by your Internet provider.

**DNS Server 2:** Provided by your Internet provider.

**Call Now:** Used to force the machine to call out immediately.

### Network Menu:

**Reconfigure Network:** Is used to examine the entire network of machines and configure network machine node numbers. Shows the status of each node on the network. This step is required to be done from the modem machine.

**View Network Configuration:** Shows the last known status of all machines on the network.

**Adjust Network Speed:** Used to set the network transmission speed. If Galaxy or Black Widow machines are networked with Galaxy II machines, the network speed must be set to 9600. If only Galaxy II machines are networked, any speed can be used, but they all must be set to the same speed.

**Network Monitor:** Displays all network data sent by the machine in yellow and all network data received in white.

**Network Send Test:** Tests the ability of the machine to send data across the network. (Displays the alphabet in yellow as the characters are being sent.) Used in conjunction with another machine running the Network Receive Test (see below) to verify network communications. Red characters indicate a problem.

**Network Receive Test:** Tests the ability of a machine to receive data across the network. (See Network Send Test above.) When another machine is set up to send, the receiving machine will display the alphabet in white letters as they are being received. Red characters indicate a problem.

**Network Help:** Displays frequently used information on network setup for the technician.

**Direct Connect:** Used to connect a PC directly to the Galaxy II through the network. For configuration and diagnostic purposes only.

## D. Reports

**Game Popularity Counter:** Displays a history of machine usage. Shows all games on the machine, the number of times each game was played and the number of credits collected toward each game.

**Coin Slot Report:** Displays the number of credits taken in by each of the coin slots - individually.

**Credits Report:** Used by the collector to display credits taken in (since last reset) for game play and league dues.

## E. Hardware Test/Software Update Menu

### Hardware Test/Software Update Menu

**System Info:** Provides hardware and software version information.

**Hardware Test Menu:** Allows technician to check the operation of inputs and outputs.

**Receive RS-485 Software Update:** Used to update software Eproms from a PC. See Appendix A.

**Send RS-485 Software:** Used to copy the software from one networked Galaxy II to another Galaxy II that has been set to Receive RS-485 Software Update. Only one Galaxy II machine can be set to receive on the network at a time. See Appendix A.

**Port-A-Flash Software Update:** Used to manually update the software from a Port-A-Flash instead of using the beginning update screen.

**Reboot:** Used to exit the Software Update Menu and reboot the machine.

**Duplicate Boot Flash (To Eprom 1):** Copies the software contents of Eprom 0 to Eprom 1. See Appendix A.

**Update Boot Flash (From Eprom 1):** Copies the software contents of Eprom 1 to Eprom 0. See Appendix A.

**Stuck Segment History:** Shows the most recent history of stuck segments. This is useful for troubleshooting player complaints of missed darts and stuck segments.

**View Boot Log:** This report shows the recent history of when the Galaxy II was turned on and off.

## F. Send Info and Settings to Network:

Sends League Files and Machine settings to the Galaxy II's on the network.

# Section 5 Technical Description

## 5.1 Power Supply

The machine is equipped with a switching power supply. This supply has a universal 85 VAC to 264 VAC 50/60 HZ input. The inputs connect to J1, and the outputs are on J2.

### J1

Pin 1 AC Line  
Pin 2 AC Neutral

### J2

Pin 1 +12 VDC  
Pin 2 +5 VDC  
Pin 3 Unused  
Pin 4 Logic Ground  
Pin 5 Logic Ground  
Pin 6 -12 VDC-Not Used

## 5.2 Main PC Board

The main PC board is controlled with a Motorola ColdFire 5206e microprocessor and associated IC's consisting of the following:

MCF5206EFT54: U15  
Microprocessor

XCS30XL-5PQ208C: U16 - Inputs/Outputs  
Field Programmable Gate Array

SST28VF040A-250-4C-NH: U4 - Boot Flash  
512Kx8 250nS Flash Rom

CY7C1049V33-12VC: U14 - Video Memory, U13 - Ram  
512Kx8 12nS SRAM

SST39VF160-90-4C-EK: U5 - Main Program Flash  
1Mx16 90nS Flash Rom

DS1746W-70: U3 - Real Time Clock  
128Kx8 NVSRAM W/RTC

MC34064P-5: U11  
Low Voltage Inhibit

Z86E0412PSC: U1  
Power On / Watchdog Reset / Target Head / Low  
Voltage Detect

LT1086CT-3.3: VR2  
3.3 Volt LDO Regulator

ULN2003A: U12,U18,U19  
Line Driver

TDA2003H: U8  
Audio Amp

SN75176B: U9  
RS-485 Line Driver

MM74HCT04N: U10  
Hex Inverter I.C.

Most major components operate on 3.3V except for U1,  
U9 and U11, which operate at 5.0V.

The ColdFire 5206e interfaces with the memory that  
includes two Flash memory IC's (U4, U5), and a battery  
backed Dallas memory IC that includes a clock function.  
The Flash memory is divided into:

1. Boot Flash which is required for the most basic  
functions including loading new software (U4).
2. Program Flash (U5).

The ColdFire 5206e also interfaces to the Xilinx IC which  
provides almost all of the INPUT and OUTPUT functions  
including the VGA video output. The only INPUT/OUT-  
PUT that comes direct from the ColdFire 5206e is the seri-  
al communications for the COM IN, COM OUT and  
MODEM.

## A. Reset Circuit

The circuitry can be RESET by pressing the reset button  
(SW2) on the mainboard. This will trigger the Zilog IC,  
U1, and a reset pulse of the proper length will be sent to  
all IC's that would require that signal.

## B. Low Voltage Circuit

IC U11, a 34064, will trigger the RESET function if the DC  
voltage (5 Volts) at the mainboard is too low. This will help  
prevent bad data from getting into the Dallas volatile mem-  
ory area. If the voltage stays low, the game will lock up  
until the voltage goes to an acceptable level.

## C. Player Change and Up Down Buttons

The player change and up/down push buttons are buffered  
through ULN2003 IC's to prevent damage to the Xilinx  
IC. The ULN2003 IC's are in sockets so they can be  
replaced easily should they be damaged.

## D. Player Change and Up Down Button Lamps

The player change and up/down buttons contain lamps that  
are controlled by the game. The signals are generated from  
the Xilinx IC, and buffered by ULN2003 IC's to control  
the lamps.

## E. Sound Circuit

Sound is generated by the Xilinx IC, pin 185, and ampli-  
fied by U8, a TDA2003 amplifier. Volume can be adjusted  
with RP1 volume control on the mainboard.

## 5.3 Video and Monitor

Video is generated with the Xilinx IC, and the weighted  
RGB outputs are buffered with transistors Q1, Q2 and Q3.  
The horizontal and vertical sync is buffered through U10,  
a 74HCT04. All of the video signals go out through J13, a  
standard PC style VGA connector. The monitor is a 19"  
flatscreen VGA monitor.

## 5.4 Target Illumination

The target is illuminated by two standard 40 watt bulbs  
mounted in reflecting boxes above the darthead. During  
attract mode the bulbs are dimmed to discourage free play.  
This is done by means of a dimmer PC board, mounted  
next to the power supply.

## 5.5 Darthead

The darthead assembly consists of (from front to back):  
the spider and segments, a matrix cushion, and the switch  
matrix. This assembly is resting on two screws at the bot-  
tom and is secured to the door (backboard) by means of  
five spider retaining latches.

A single 19 pin ribbon cable on the switch matrix brings  
the signals to connector J14 on the main PC board.

## A. Darthead Disassembly/Reassembly

To clean or replace parts in the darthead:

1. Remove the four retaining screws and remove the catch  
web.
2. Disconnect the switch matrix cable from the main PC  
board.

3. Hold the spider and segments against the backboard while sliding the retaining latches off the spider. **Do not remove the two resting screws at the bottom of the spider.**
4. Grasp the switch matrix, matrix cushion, and spider together as a unit and gently pull the assembly (top first) off the backboard. **Keep the face of the spider and segments angled downward. Tipping the assembly face up will allow the segments to fall out.**
5. Lay the assembly face down on a flat surface.

NOTE: It is recommended, at this point, that the switch matrix, matrix cushion, and spider be marked with a permanent marker before disassembly to make proper orientation during reassembly easier.

6. Lift off the switch matrix, then lift off the matrix cushion, exposing the segments.
7. Check for dirt, broken tips, or other foreign matter between the spider, segments, matrix cushion and switch matrix. Check and remove any broken tips inside the segments. Remove the segment back cover by gently prying it up. Snap the cover back in place when finished.
8. Replace any worn or broken segments.
9. There is a small locating hole on the outer edge of the yellow spider. It is smaller and closer to the edge than any other hole. With the spider and segments face down, position this hole at approximately 10 o'clock (top and slightly left). The two alignment pins should be near the top and away from you.
10. Check the matrix cushion for badly worn spots or holes. If none are found, clean the cushion and set it over the alignment pins and back on the spider. There is a small "U" shaped cutout on the edge of the cushion. Place the cutout toward the top of the darthead. This cutout will line up with a similar cutout on the switch matrix in the next step.
11. Clean the switch matrix and place it over the alignment pins and back on the matrix cushion with the tail at 9 o'clock. Make sure the cutout on the switch matrix lines up over the one on the matrix cushion. Adjust the matrix cushion if necessary.
12. Grasp the spider, matrix cushion and switch matrix as a unit. Install it on the backboard by placing the bottom first on the resting screws. Gently rock the top backward, aligning the pins with the holes in the backboard. Make sure the matrix ribbon cable goes through the hole in the backboard. Press it against the backboard until fully seated. Turn the retaining latches over the spider to secure the assembly in place.
13. Make sure the ribbon cable is through the backboard and the top (12 o'clock) double segment is black and aligned straight up. Remove the assembly and make any adjustments if necessary.

14. If alignment is correct, reinstall the catch web with the four screws provided and reattach the ribbon cable to the main PC board. Installation is now complete.

It is important to keep dirt and foreign material out of the area between the spider and segments as non scoring or improper scoring can result. On heavily played machines it is a good practice to disassemble and clean the darthead regularly. Following this suggestion will prevent service calls between scheduled visits.

## B. Missed Dart Detector

The machine has the ability to detect darts that miss the darthead and strike the surrounding catch web. Mounted behind the web is a vibration sensitive piezoelectric switch circuit board. The wiring harness from this switch is connected to the main PC board at connector P5.

If the Missed Dart Detector detects a hit anywhere on the catch web face, the machine will record a dart thrown and no score will be given.

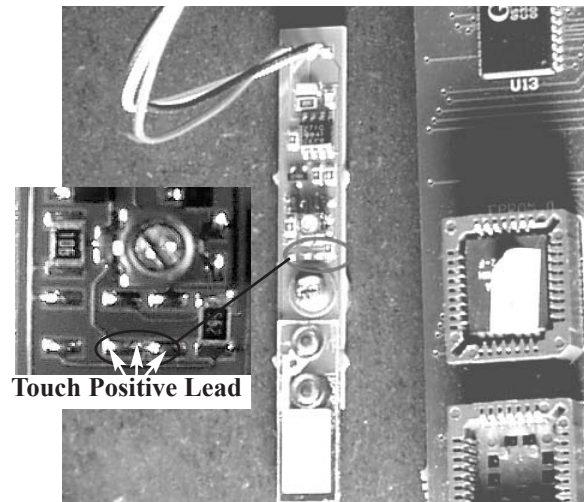


Figure 9a

There is a small sensitivity adjustment pot on the detector assembly. Turning it clockwise will increase the sensitivity and counter-clockwise will decrease the sensitivity. **This is a single revolution pot, there are no stops when turning it.** One complete revolution brings the setting back to the same point, adjustments should be made in one tenth revolution increments.

Ideally, the detector should effectively sense darts striking anywhere on the web surface, even the lightest dart. Optimum sensitivity will vary from location to location depending on the environmental circumstances. For instance, if a machine is in close proximity to a loudspeaker which gives off vibrations, or possibly a dance floor, sensitivity may have to be decreased to compensate for the interference.

To adjust the sensitivity, connect the ground lead on your multimeter to a ground test point on the mainboard. Touch the plus lead to the middle of the 2 pins (see Figure 9a). The default setting is 4.75Volts. Adjust as needed for each location's needs. Test by tapping the catch web until you have achieved the desired results.

**Warning:** *If the missed dartdetector is plugged in incorrectly, you will damage the main board and/or missed dart detector. Make sure the red wire is on the bottom (as printed on the main board) when reattaching the Missed Dart detector.*

## C. Target Interface

The switch matrix is connected to the mainboard via the 19 pins of J14. For troubleshooting purposes, it is important to know which pins on J14 will give a particular score. This information is given in the table below.

| Pin # | 13  | 12  | 11  | 10  | 9   | 8   | 7   | 6   |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1     | D3  | O3  | T3  | I3  | D1  | O1  | T1  | I1  |
| 2     | D17 | O17 | T17 | I17 | D18 | O18 | T18 | I18 |
| 3     | D2  | O2  | T2  | I2  | D4  | O4  | T4  | I4  |
| 4     | D15 | O15 | T15 | I15 | D13 | O13 | T13 | I13 |
| 5     | D10 | O10 | T10 | I10 | D6  | O6  | T6  | I6  |
| 14    |     |     | OB  | IB  |     |     |     |     |
| 15    | D19 | O19 | T19 | I19 | D5  | O5  | T5  | I5  |
| 16    | D7  | O7  | T7  | I7  | D12 | O12 | T12 | I12 |
| 17    | D16 | O16 | T16 | I16 | D9  | O9  | T9  | I9  |
| 18    | D8  | O8  | T8  | I8  | D20 | O20 | T20 | I20 |
| 19    | D11 | O11 | T11 | I11 | D14 | O14 | T14 | I14 |

### Revision B

With the machine in setup mode, choose Darthead Test from the Hardware Test Menu. After removing the switch matrix connector from J14, pairs of pins can be shorted and opened (quickly - less than 60 milliseconds) with a jumper wire to simulate a dart hit. The score will not register until the jumper wire is removed from one of the pins. This procedure can determine whether a scoring problem is caused by the switch matrix or in the machine's electronic circuits.

## 5.6 Technical Information

**Packed Weight:** 150lbs

**Unpacked Weight:** 118lbs

**Packed Dimensions:** 39"X32"X46"

**Unpacked Dimensions:** 27"X21"X831/2"

**Unpacked Dimensions (Top Monitor):** 27"X21"X931/2"

**Monitor:** 100 - 240 VAC, 1.5 - 0.7A, 50/60 Hz

**Power Supply:** 85 - 264 VAC, 1.32A Surge @ 264 VAC, 50/60 Hz

**Light Bulbs:** 240V, 40W, 410 Lumens  
130V, 40W, 490 Lumens

**Operation Conditions at 120VAC:**

0.11A - W/O Lights and Monitor  
0.77A - Attract Mode, Lights Dim  
1.01A - Maximum, Lights Bright W/O Bill Acceptor

## Section 6 Parts Listing

The numbers listed are Arachnid part numbers. Please use the Arachnid numbers when placing an order. Some descriptions are followed by a number in parentheses. This number is the quantity used in that assembly.

### 6.1 Lower Cabinet

| Part# | Ref# | Description                                   |
|-------|------|-----------------------------------------------|
| 41651 | 1    | Lower Cabinet                                 |
| 42416 | 2    | Leveler (4)                                   |
| 41685 | 3    | Coin Door-Dual \$0.25 Mechs                   |
| 41883 | 3    | Coin Door-Single \$0.25 Mech w/opening for BA |
| 41804 | 3    | Coin Door Harness For dual Mechs              |
| 41884 | 3    | Coin Door Harness For BA                      |
| 40384 | 3    | Mars Bill Acceptor - Model 2451               |
| 41790 | 4    | League Chute                                  |

### 6.2 Upper Cabinet

|       |   |                                                         |
|-------|---|---------------------------------------------------------|
| 41676 | 5 | Push Button - Up/Down (black/yellow) (2)<br>GE 658 Bulb |
| 19131 | 6 | Push Button - Player Change (black/red)<br>GE 658 Bulb  |

*Warning: Do not use GE161 bulbs in the push buttons.*

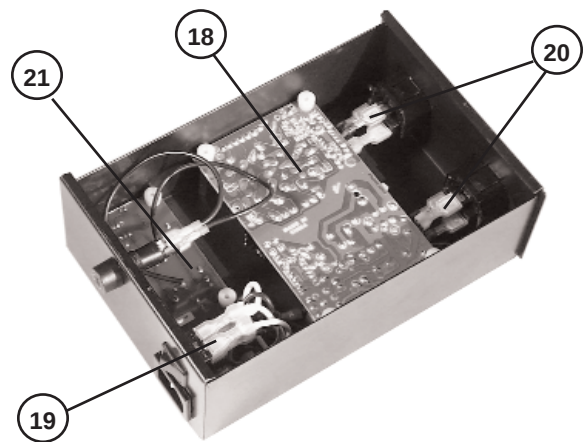
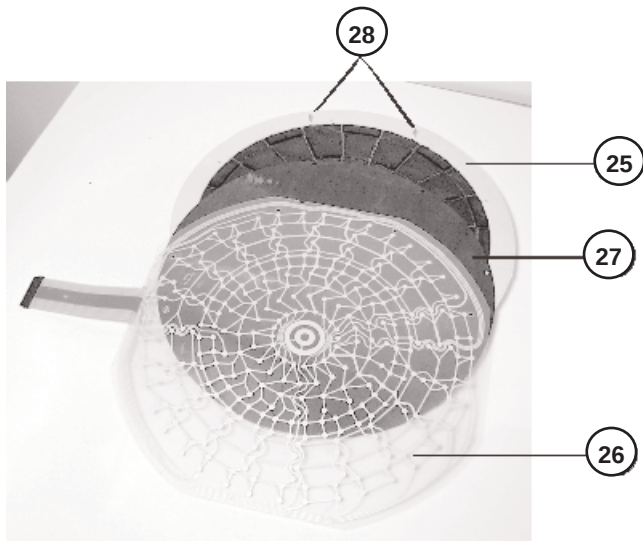
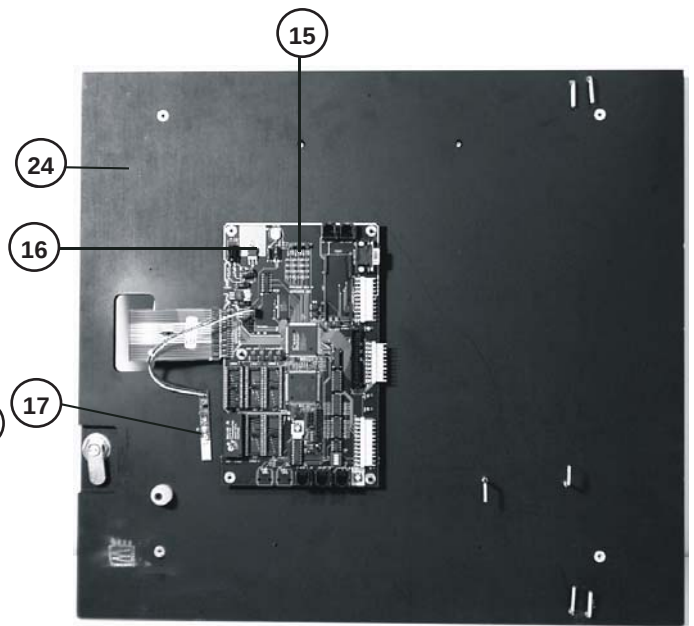
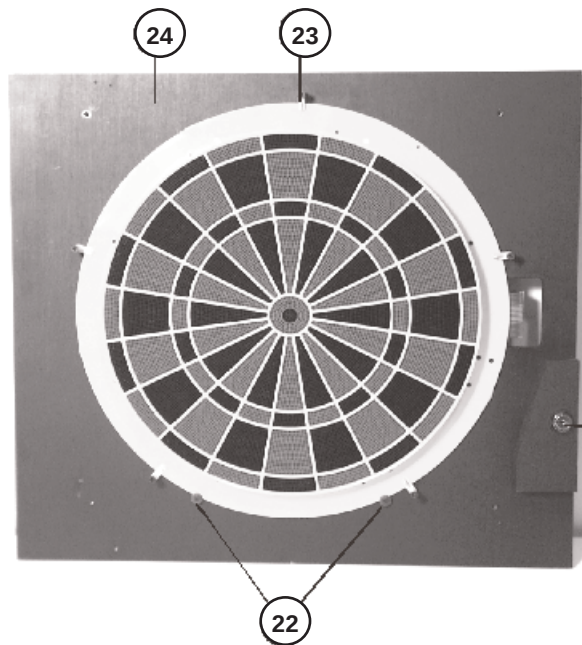
|       |    |                                                  |
|-------|----|--------------------------------------------------|
| 41971 | 7  | Lamp Reflector (2)                               |
| 41970 | 7  | Lamp Socket (2)                                  |
| 37024 | 7  | Light Bulb 40 watt (2)                           |
| 21484 |    | Speaker                                          |
| 42710 | 8  | Color Flat Screen Monitor 19"                    |
| 42749 | 8  | Monitor Mounting Bracket                         |
| 42643 | 8  | Monitor Quick Mount Brkt, Lower                  |
| 42644 | 8  | Monitor Quick Mount Latch (2)                    |
| 41570 | 9  | Lock Assembly                                    |
| 42599 | 10 | Upper Cabinet LCD                                |
| 41944 | 11 | Door Assembly-No Mainboard                       |
| 42037 | 11 | Catch Web Kit                                    |
| 42747 | 12 | Hinged Bezel 19" LCD                             |
| 42716 | 12 | Bezel Insert 19" LCD                             |
| 41857 | 13 | Hinge Bottom Leaf Cabinet Side (2)               |
| 42018 | 13 | Hinge Upper\ Top Leaf                            |
| 41859 | 13 | Hinge Lower\ Top Leaf                            |
| 42120 | 14 | HotButton Kit                                    |
| 41924 | 15 | Modem (optional)                                 |
| 42987 | 15 | WiFi Modem (optional)                            |
| 41784 | 16 | Main PC Board, Complete                          |
| 42043 | 17 | Missed Dart Detector Kit                         |
| 41801 |    | Main Harness; Power Supply/ Main Board/ Coindoor |
| 42129 |    | Main Harness Power Switch Kit                    |
| 41965 |    | Power Supply Kit                                 |
| 39267 | 18 | Power Supply Board                               |
| 41679 | 19 | Socket, Power Inlet                              |
| 41680 | 20 | Socket, Power Outlet (2)                         |
| 42331 | 21 | Lamp Dimmer Board                                |
| 42023 | 21 | Fuse 3.15 AMP (5X20mm)                           |

|       |                                                 |
|-------|-------------------------------------------------|
| 42064 | External Fuse Kit, Fuse Holder Only             |
| 42138 | External Fuse Kit, Dimmer Board and Fuse Holder |
| 42146 | Set Screw - Top to Base (4)                     |
| 42159 | Wing Nut - Top to Base (4)                      |

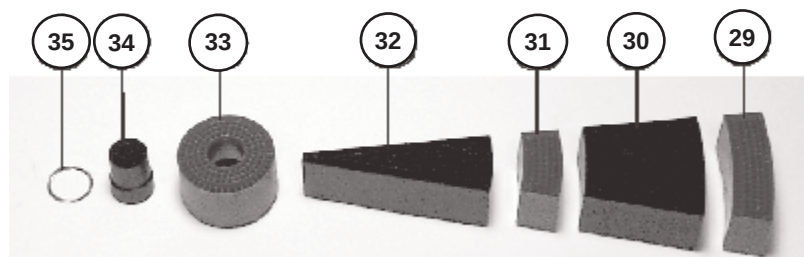
### 6.3 Darthead Assembly - 41944

|       |    |                                         |
|-------|----|-----------------------------------------|
| 42568 | 22 | Spider Resting Screw (2)                |
| 42569 | 23 | Latch Assembly (5)                      |
| 41658 | 24 | Target Back (Door)                      |
| 14617 | 25 | Darthead Assembly (spider and segments) |
| 40081 | 25 | International Darthead Assembly         |
| 29268 | 25 | Spider                                  |
| 37738 | 25 | Spider - International                  |
| 12575 | 26 | Switch Matrix                           |
| 28258 | 27 | Matrix Cushion                          |
| 41590 | 28 | Alignment Pin (2)                       |
| 42036 | 28 | Alignment Pin Screw (2)                 |
| 18069 | 29 | Segment, Double Red (10)                |
| 19079 | 29 | Segment, Double Black (10)              |
| 21408 | 30 | Segment, Outer Single Red (10)          |
| 22518 | 30 | Segment, Outer Single Black (10)        |
| 23628 | 31 | Segment, Triple Red (10)                |
| 24738 | 31 | Segment, Triple Black (10)              |
| 25848 | 32 | Segment, Inner Single Red (10)          |
| 26958 | 32 | Segment, Inner Single Black (10)        |
| 29078 | 33 | Segment, Outer Bull Red                 |
| 27148 | 34 | Segment, Inner Bull Black               |
| 35845 | 35 | Spring, Inner Bull                      |



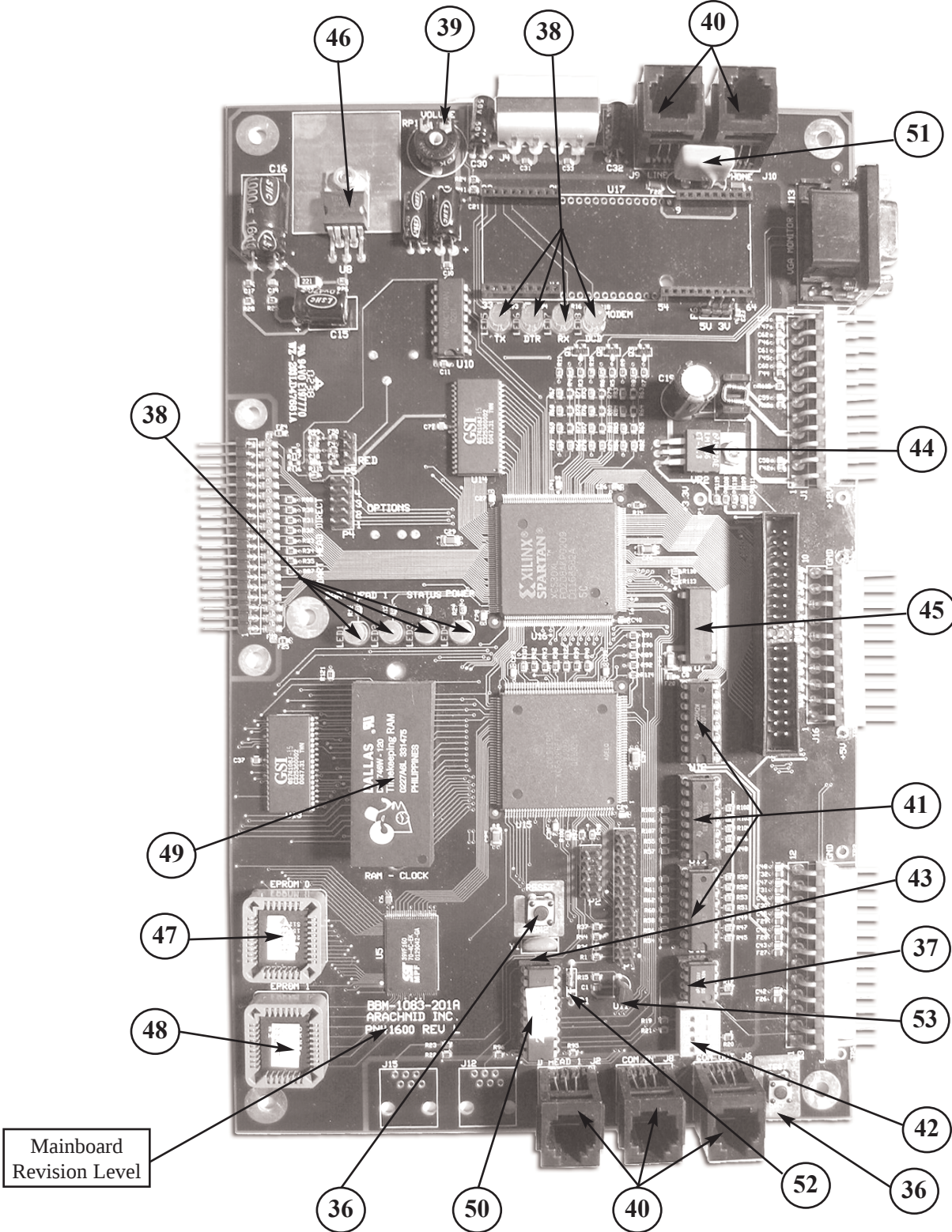


**Power Supply Kit - 41965**



6.4 Main Board - 41784

| Part# | Ref# | Description                               |
|-------|------|-------------------------------------------|
| 11465 | 36   | Test/Reset Button, Push Button 6mm (2)    |
| 13653 | 37   | IC, Logic, Bus Transceiver, 75176B, 8 Pin |
| 17031 | 38   | Red LED, 5mm, T- 1 3/4 (8)                |
| 19113 | 39   | Resistor, 10K OHM, Pot                    |
| 22588 | 40   | Conn, Modular, 6 Pin, Top (5)             |
| 30513 | 41   | Transistor, Network, ULN2003A (3)         |
| 33681 | 42   | 4 Position Dip Switch                     |
| 39266 | 43   | Crystal, 4Mhz, Cer, Resonator W/Caps      |
| 41609 | 44   | IC, 3.3V Reg, LT1086CT - 3.3              |
| 41612 | 45   | Crystal, 50.000Mhz oscillator, 3.3V       |
| 41646 | 46   | IC, Audio Amplifier TDA2003H              |
| 41733 | 47   | IC, boot, Program, GI/ GII, V2.0          |
| 41850 | 48   | IC, Memory Flash                          |
| 41862 | 49   | IC, Smartwatch, DS1746W 128KX8, 3.3V      |
| 41874 | 50   | Configuration Chip                        |
| 41887 | 51   | Fuse, Resetable, Polyswitch, TR600-150    |
| 42133 | 52   | Diode, MBD301, Low VF                     |
| 42134 | 53   | IC, Power Monitor, MC3416P                |



# Appendix

## Updating Memory in the Machine

### Overview of Memory on the Galaxy II

Memory on the Galaxy II machine consists of:

1. PROGRAM FLASH memory – U5
2. BOOT FLASH memory – U4
3. Battery backed RAM – U3

The BOOT FLASH and the PROGRAM FLASH must be programmed before the Galaxy II will work.

At the very least, the machine must have a programmed BOOT FLASH. If the machine does not have a programmed BOOT FLASH, make a copy from another Galaxy II mainboard that has a working BOOT FLASH. See instructions: **Duplicating the Boot Flash IC**.

The PROGRAM FLASH (and BOOT FLASH) can also be updated using a PC computer. See instructions: **Updating the Galaxy II from a PC**.

### Duplicating the Boot Flash IC (from another programmed Boot Flash IC)

1. Remove power from the machine (unplug the power cord).
2. Insert a blank FLASH IC (or a FLASH IC that needs to be updated) into IC socket U6. Make sure that it is in the socket with pin 1 in the proper position. (See figure B1)
3. Restore power to the machine (plug in the power cord).
4. Press the TEST switch.
5. Choose HARDWARE TEST/SOFTWARE UPDATE MENU
6. Choose DUPLICATE BOOT FLASH (To EPROM 1)
  - a. Screen will say FLASH COPY – BYTES COPIED XXX K – where XXX will increment as it programs the FLASH.
  - b. When done it will say SUCCESS! DONE COPYING FLASH
7. Remove power from the machine (unplug the power cord).
8. Remove the FLASH IC in socket U6.
9. The Galaxy II machine, where the programming was done, can now be plugged in and returned to service.
10. Take the programmed FLASH IC to the machine that needs the new BOOT FLASH and with the POWER OFF (machine unplugged), insert the FLASH IC into U4, making sure that pin 1 is in the proper position.

11. Restore power to the machine (plug in the power cord). The Machine should boot properly and run at least the BOOT FLASH CODE. If the PROGRAM FLASH (in U5) is not programmed, or is corrupted, the software may need to be updated to run. If unexpected results occur with the PROGRAM FLASH, the BOOT FLASH should run by itself to allow loading or copying software.

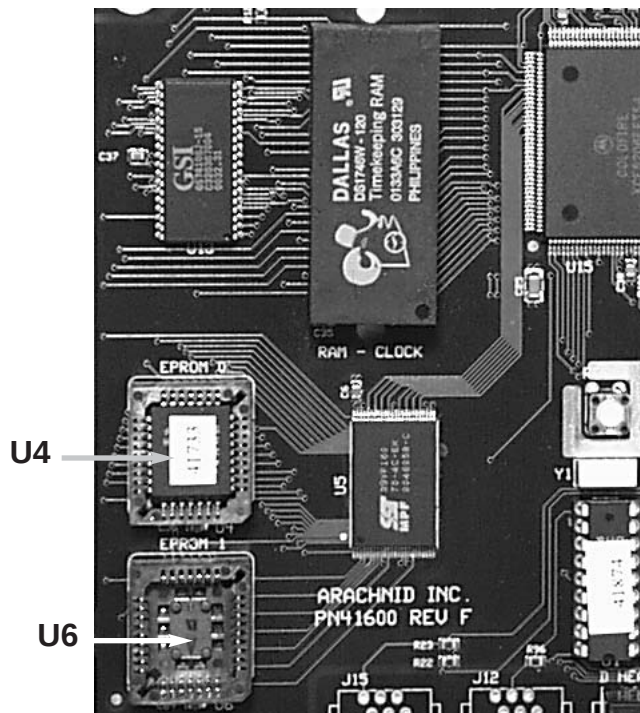


Figure B1 - Mainboard Detail

### Updating the Galaxy II from Another Galaxy II (Networked)

When Galaxy II machines are networked, software updates can be transferred from one machine to another on the network.

1. Update the software on the first machine from a PC as described above.
2. Make sure the machines are networked properly and communicating with one another.
3. Put the two machines (the updated machine and the one to be updated) in test mode by pressing the test switch on both machines.

#### On the Machine to Receive the Update:

4. Select HARDWARE TEST/SOFTWARE UPDATE MENU.
5. On the next menu: Select HARDWARE TEST/SOFTWARE UPDATE MENU again.
6. Select RECEIVE RS-485 UPDATE. Set the speed at which the update will be received.

### **On the Machine to Send the Update:**

7. Select HARDWARE TEST/SOFTWARE UPDATE MENU.
8. On the next menu: Select HARDWARE TEST/SOFTWARE UPDATE MENU again.
9. Select SEND RS-485 SOFTWARE. Adjust the speed to match that set in step 6 above. When the update is finished, reboot the machine that received the update and press the test button. If a BOOT FLASH update was sent, answer yes to update the boot software.

Repeat steps 3 through 9 on the remaining Galaxy II machines in the network that need to be updated. When finished reboot all machines to resume normal operation.

**Note: Only one machine on the network can be updated at a time.**

### **Port-A-Flash**

All information pertaining to the Port-A-Flash can be found either in the Dartman for Windows manual or the Port-A-Flash manual that was included with the Port-A-Flash device.

### **Configuring the Galaxy II to Work With LeagueLeader**

Arachnid provides you with unique ISP (Internet Service Provider) and FTP (File Transfer Protocol) settings. These must be entered into the Galaxy II modem settings. Follow the instructions below:

*Note: It is important to make sure the screen ID and the modem password of the master machine match those listed in LeagueLeader.*

1. Enter the setup menu.
2. Select the Communications menu.
3. Select the Modem menu.
4. Select the Modem Call-Out menu.
5. Change the Call-Out type to Internet.
6. Select View Settings.
7. Enable Call-Out.
8. Select Edit Internet Settings.
  - a. Enter in the ISP phone number you were given by Arachnid.
  - b. Enter your ISP username and password.
  - c. Enter your FTP username and password.
9. Return to the main menu.

If all steps have been completed correctly, the Galaxy II is now ready to access our server.

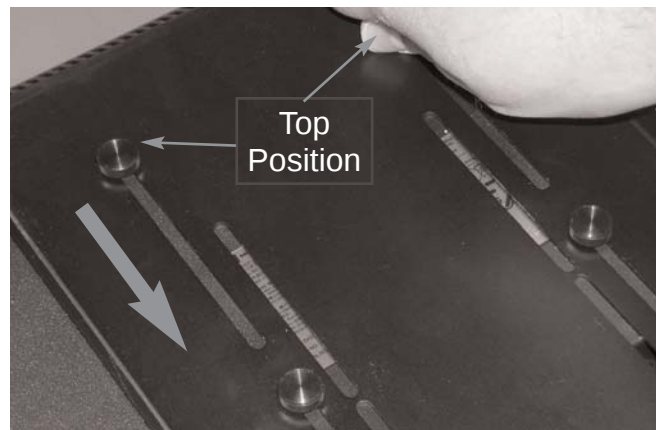
## Converting a Middle Mounted LCD Monitor to a Top Mounted LCD Monitor

Arachnid has developed a way to allow you to either have an LCD monitor underneath the darthead or on top. The following instructions walk you through this simple conversion.

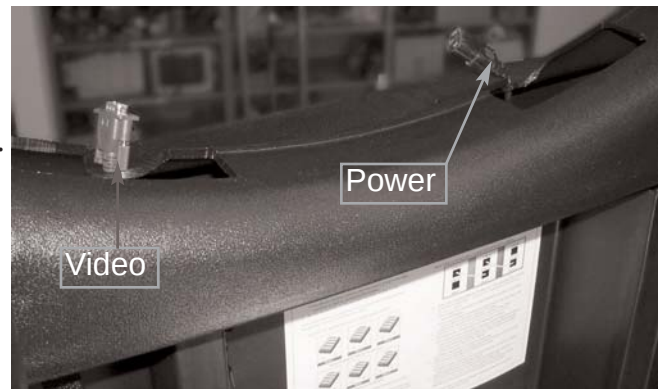
1. Unplug the Galaxy II.5 from the wall.
  2. Open the darthead door.
  3. Swing down the monitor bezel.
  4. Remove the video cable from the Galaxy II.5 main board and pull it completely out of the machine.
  5. Remove the monitor power cable from power supply.
  6. Press down both latches at the bottom of the monitor bracket.
- 
7. Remove the monitor from it's mid mount position.
    - a. Lift up from the bottom of the monitor.
    - b. Swing out toward you
    - c. Unhook from cabinet.



8. Remove the video and the power cables from the monitor.
9. Lay the monitor on a flat surface.
10. Loosen the four thumb screws on the monitor bracket.
11. Move the monitor bracket to the top mount position.
12. Tighten the thumb screws.



13. Insert monitor cables into the top of the cabinet.  
Be sure the video and power cables correspond to the correct sides of the monitor.



14. Insert the monitor bracket into the narrow slot at the top of the cabinet.



*Note: When installed correctly, you will be able to see the monitor bracket sticking through the top of the machine. As Shown.*



15. Attach the hairpin cotter to the right side of the monitor bracket, inside the upper cabinet.  
16. Attach the video and power cables to the monitor.  
17. Plug the monitor power cable into the right side of the powersupply.  
18. Plug the video cable into the mainboard.

19. Remove the bezel insert from the inside back wall of the upper cabinet.  
20. Install the bezel insert to the inside of the bezel using the four thumb nuts.



21. Replace the bezel and close the darthead door.
22. Plug the Galaxy II.5.5 back into the wall.



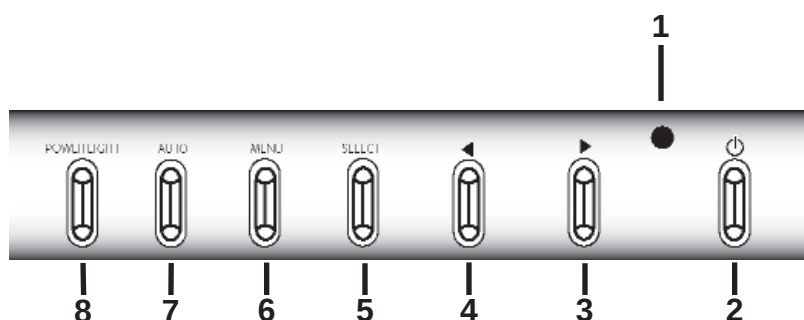
## General Operation Instructions for the Monitor

The below instructions come from the monitors operation manual.



### External Monitor Controls

|   |                 |   |              |
|---|-----------------|---|--------------|
| 1 | Power Indicator | 2 | Power Button |
| 3 | ▶               | 4 | ◀            |
| 5 | Select          | 6 | Menu         |
| 7 | Auto            | 8 | Power Light  |



### Notes:

- ◆ Do not install the monitor in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, or excessive dust vibration or shock.
- ◆ To keep monitor looking new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution. Never use strong solvents such as thinner, benzene, or abrasive cleaners, since these will damage the cabinet. As a safety precaution, always unplug the monitor before cleaning it.

## Section 7

### Troubleshooting

**WARNING: UNPLUG POWER TO THE GALAXY II BEFORE WORKING ON THE MACHINE**

| Problem                                                       | Probable Cause                                                                                                                                                       | Procedure                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Target Lamps not on                                           | a. Blown fuse for the Dimmer Board.<br><br>b. If the monitor is also not on, it is possible that the power switch in the back is not on.<br><br>c. Bulbs burned out. | a. Replace the fuse with a 3.15A Slo-Blo.<br><br>b. Make sure switch in the back is on.<br><br>c. Replace with standard 40watt bulbs. Unplug the machine before replacing the lamps. A loose filament may short out causing damage to the dimmer board.                                                                                                     |
| Target Lamps are dim all the time                             | a. The Triac on the Dimmer Board is blown open.                                                                                                                      | a. Replace the Triac chip. The schematic and part numbers for the Dimmer Board are available at <a href="http://www.arachnidinc.com">www.arachnidinc.com</a>                                                                                                                                                                                                |
| Target Lamps are bright and then shut off instead of dimming. | a. The diode on the dimmerboard is bad.                                                                                                                              | a. Replace diode. ARA P/N 16065 Desc 1N4007                                                                                                                                                                                                                                                                                                                 |
| No video display                                              | a. If the target lamps are not on, it is possible that the power switch in the back is not on.<br><br>b. Galaxy II is locked up.                                     | a. Make sure the power switch is on.<br><br>b. Open the darthead and check the four LEDs on the left side of the mainboard. All lights should be on with the Status light blinking. If only power is lit the Galaxy II is locked up. Try rebooting the Galaxy II. Clean the J1header on the mainboard with isopropyl alcohol and a nylon toothbrush.        |
| Intermittent Resets                                           | a. Contaminated J1 header on the mainboard.<br><br>b. Bad crimps along the wire harness.                                                                             | a. Clean the J1header on the mainboard with isopropyl alcohol and a nylon toothbrush.<br><br>b. Measure the resistance along the wireharness to determine if this may be the cause. See our bulletin on <a href="http://www.arachnidinc.com">www.arachnidinc.com</a> .                                                                                      |
| Not coining                                                   | a. Contaminated J1, J3, or J16 headers on the mainboard.<br><br>b. Loose or bad connection along the wire harness                                                    | a. Clean the J1, J3, and J16 headers with 91% or better isopropyl alcohol and a toothbrush. See our bulletin on <a href="http://www.arachnidinc.com">www.arachnidinc.com</a> .<br><br>b. Use a multimeter to test the resistance along the wire harness. Fix bad crimps. See our bulletin on <a href="http://www.arachnidinc.com">www.arachnidinc.com</a> . |

| Problem                                            | Probable Cause                                                                                                                                                                                                                                 | Procedure                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Not Scoring                                        | a. A piece of foreign material or broken tip in the darthead holding a switch on the matrix.                                                                                                                                                   | a. Clean out the foreign material or broken dart tip with pliers and/or a tip remover. Disassemble the darthead and clean the segments, matrix and rubber mat thoroughly. Reassemble being careful to line up the segments and layers correctly.                                                                                                                                                              |
| Skipping Darts or Cheater sound going off randomly | a. Missed Dart Detector is too sensitive.<br>b. Defective Missed Dart Detector.<br>c. Stuck segment.                                                                                                                                           | a. Adjust the Missed Dart Detector slightly using the adjustment pot in the center of the Missed Dart Detector.<br>b. Replace the Missed Dart Detector.<br>c. Clean the darthead removing any foreign matter.                                                                                                                                                                                                 |
| Modem not answering                                | a. Modem not seated properly.<br>b. Jumper not on the 5 Volt pins.<br>c. The phone line running to the wall is in the "Phone" jack on the main board.<br>d. The phone line is not plugged into the wall.<br>e. Its quitting after a few rings. | a. Make sure the modem is in the modem sockets and none of the pins are outside of the sockets.<br>b. Make sure there is a jumper on the 5 Volt pins below the modem.<br>c. It needs to be in the "Line" jack.<br>d. Make sure the line is good, plugged into a working wall jack.<br>e. Some modems and phone companies limit the number of rings. Try setting it to one ring and seeing if it answers then. |

**If there are any problems with these instructions, please call 1-800-435-8319 and ask for technical support. For more troubleshooting tips, visit our website [www.arachnidinc.com](http://www.arachnidinc.com)**



