GALAXY II

Series Operator's Manual

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Remove the Cathode Ray Tube (CRT) before recycling this product.

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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.

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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. Credits required per game are "software selectable" for each individual game on the menu.

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. No dip-switches for game options; 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. VGA Color Graphics and Monitor

Color graphics provide crisp, clear game and menu screens.

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 seperate 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.

BS Golf   1 to 4 Players

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 remove the monitor bezel by lifting upward and outward.
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. Replace the monitor bezel by placing the lower T-brackets into the T-cutouts on the cabinet then rotate the top inward. Align the plastic pins near the top of the bezel with the holes in the cabinet and press the bezel flush. Close the door to secure the bezel.
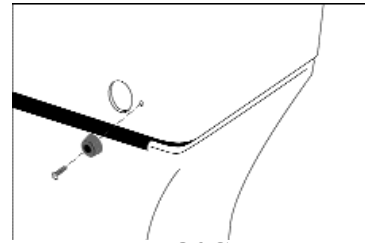
Back Of Game

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.
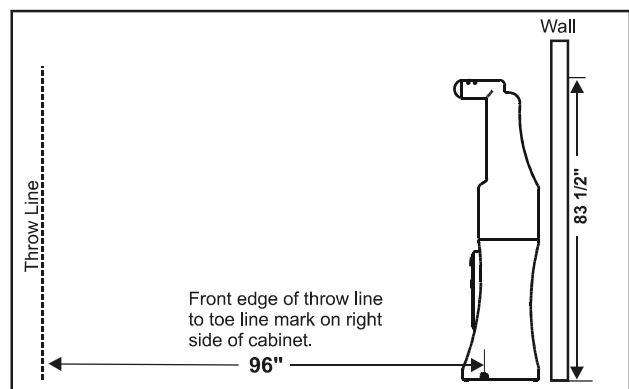

Figure 1: Side view of play field

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. Generally 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.

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 for use with LeagueLeader or DartComm for use with Dartman for Windows.

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.

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/OUTPUT that comes direct from the ColdFire 5206e is the serial 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 memory 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 amplified 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 standard PC style 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 bottom 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.
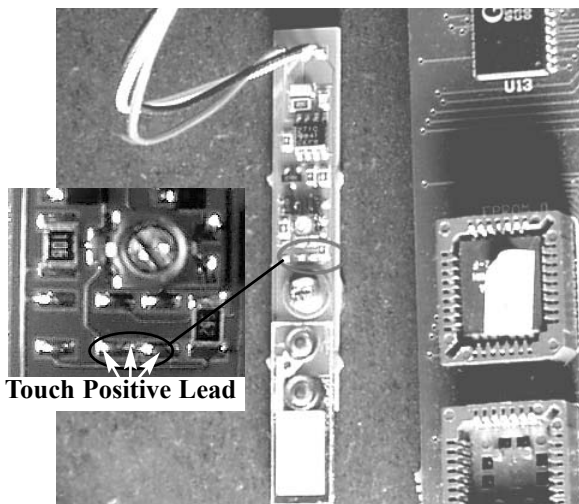

Touch Positive Lead

Figure 9a

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.

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 4.75 Volts. Adjust as needed for each location's needs. Test by tapping the catch web until you have achieved the desired results.

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"X83$1/2$"

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 $0.25 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) GE 658 Bulb
19131	6	Push Button - Player Change (black/red) 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
41906	8	Color Monitor 15"
41570	9	Lock Assembly
41933	10	Upper Cabinet 15"
41944	11	Door Assembly-No Mainboard
42037	11	Catch Web
41932	12	Monitor "T" Bezel 15"
42168	12	Monitor Hinged Bezel 15" (Starting at Serial #15358)
42001		Monitor Mounting Plate
41857	13	Hinge Bottom Leaf Cabinet Side (2)
42018	13	Hinge Upper\ Top Leaf
41859	13	Hinge Lower\ Top Leaf
42120	14	HotButton Kit (for older machines)
41924	15	Modem (optional)
41784	16	Main PC Board, Complete
42043	17	Missed Dart Detector
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)
41670	21	Lamp Dimmer Board (Above Rev. H)
42023	21	Fuse 3.15 AMP (5X20mm) (Above Rev. H)
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 - 41943

41176	22	Spider Resting Screw (2)
40767	23	Latch (5)
42025	23	Spacer 5/8" (5)
41535	23	Spacer 1/8" (5)
41536	23	Screw 1 1/2" (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

"T" Bezel
41932

Hinged Bezel
42168
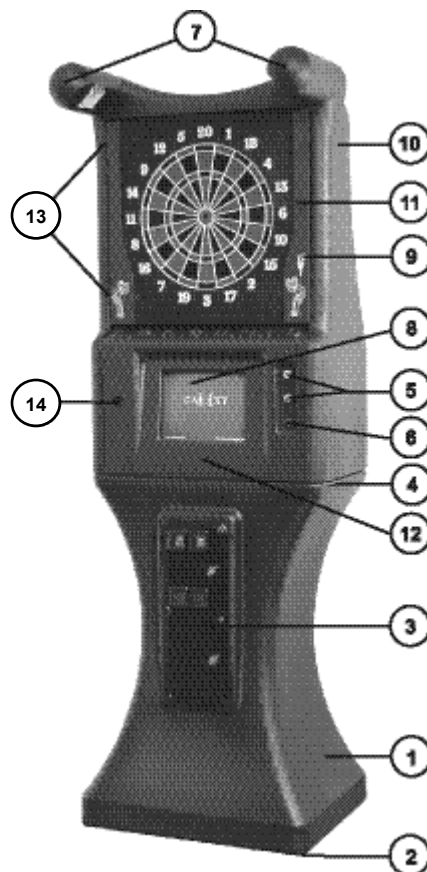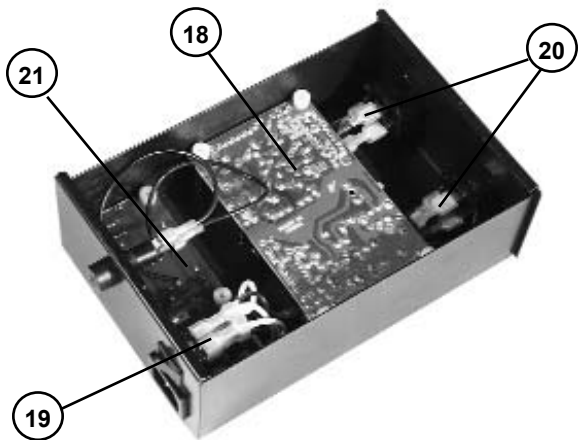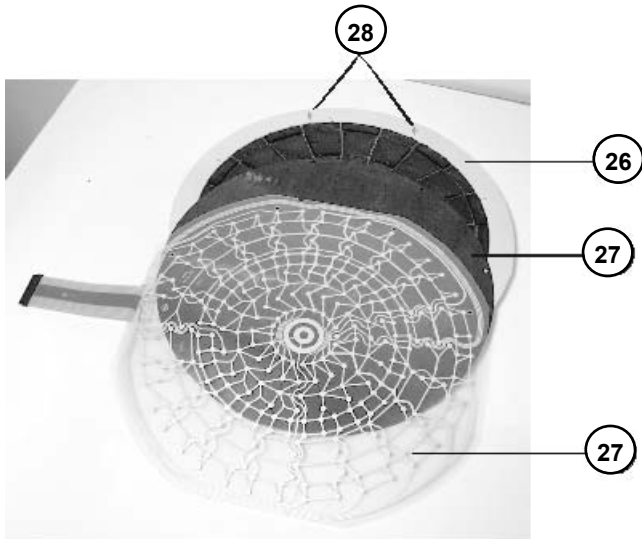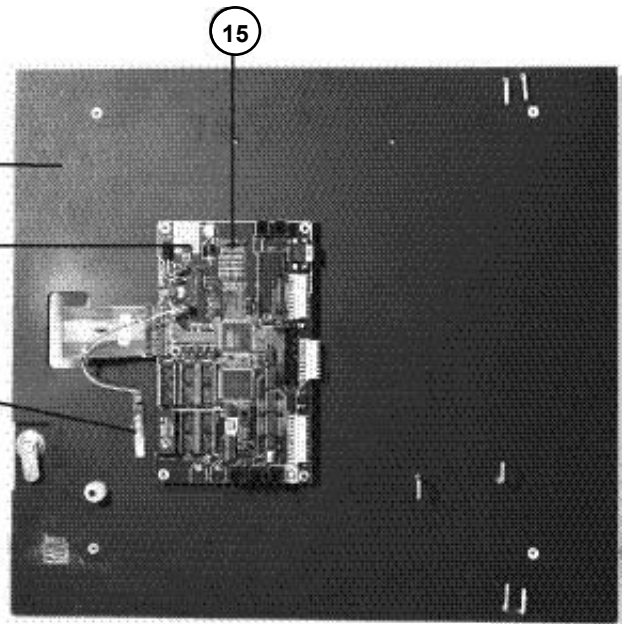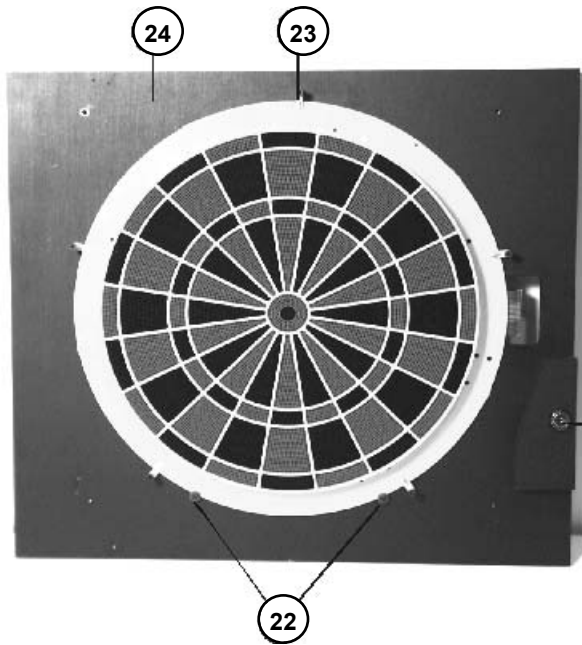
Power Supply Kit - 41965
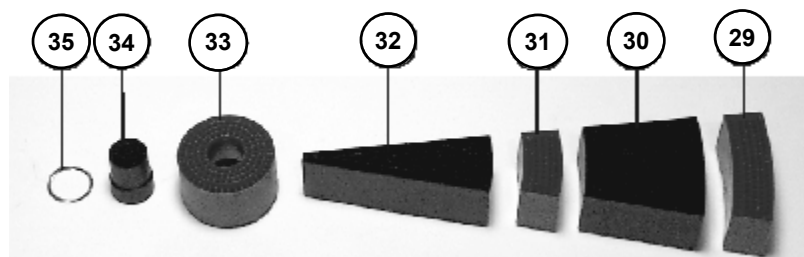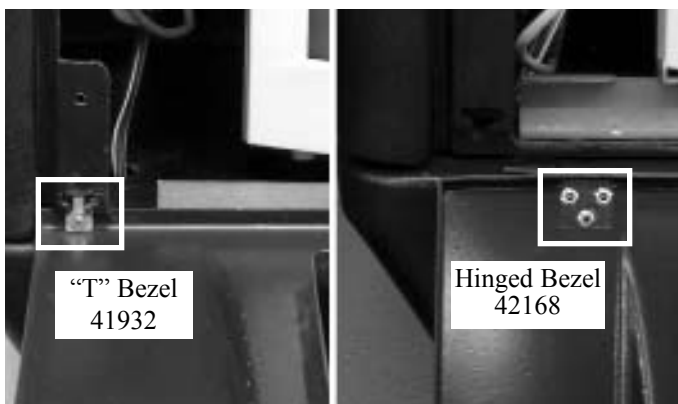
6.4 Main Board - 41784

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

Mainboard Revision Level
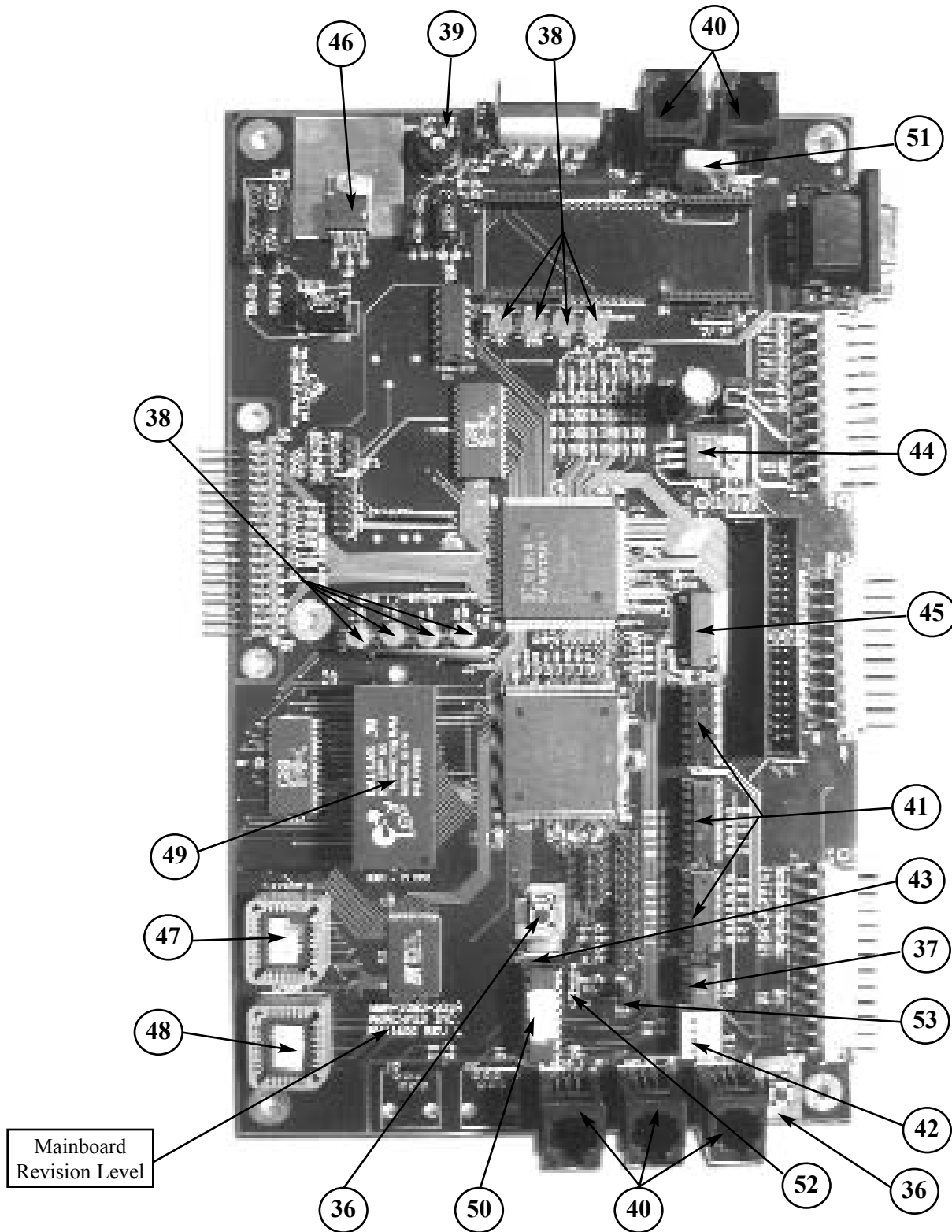
Appendix

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.
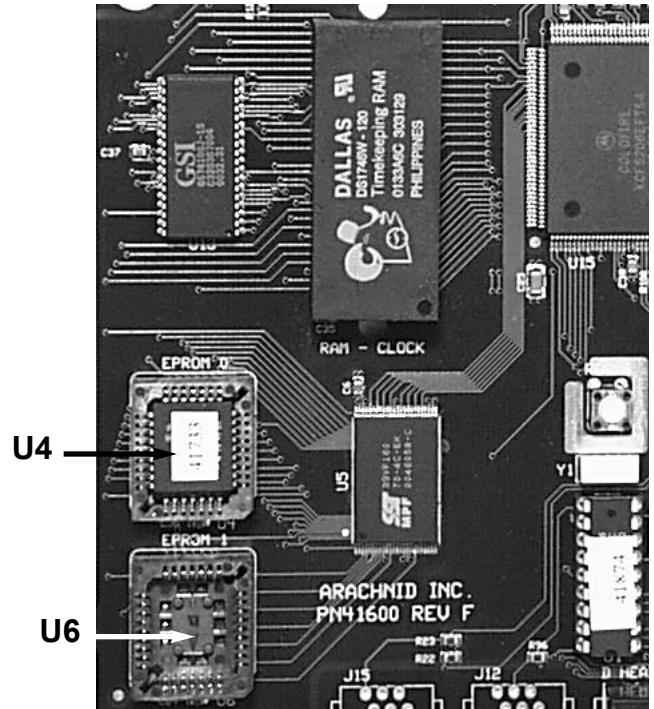

Figure B1 - Mainboard Detail

Updating the Galaxy II Software from a PC

What is needed:

1. RS232 to RS485 adapter with 6 wire cable. Arachnid Part Number 41955.
2. Laptop or PC with an available serial port.
3. G2UPDATE software loaded on the PC.
4. If the RS232 to RS485 converter will not plug directly into the laptop a standard 9-pin serial cable adapter may be needed. Usually this will be a serial to USB adapter. (This cable cannot be a null-modem cable.)
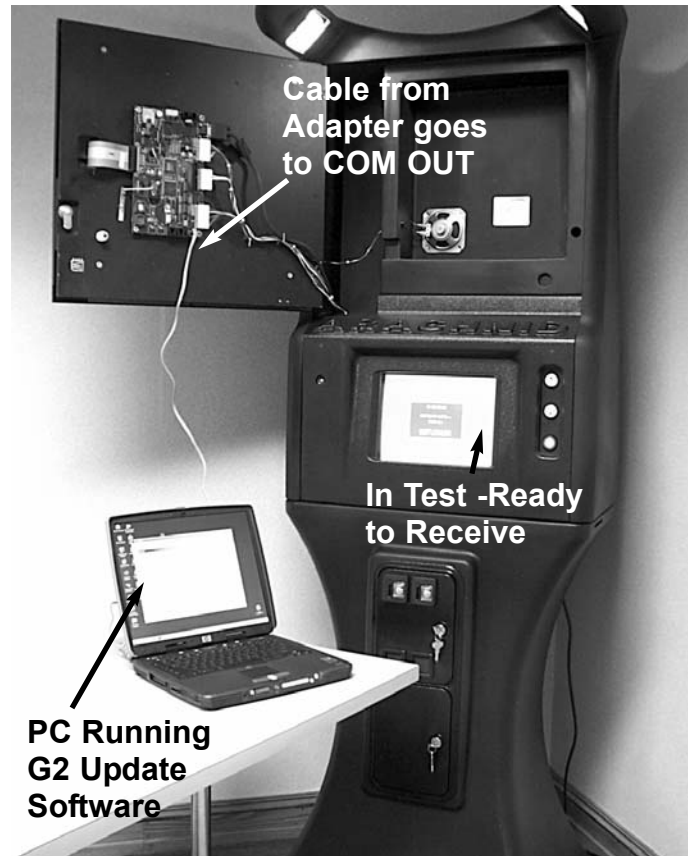
Procedure: (Unplug the power cord to the Galaxy II first.)

1. Connect the 6-wire cable from the adapter into the COM OUT connector on the Galaxy II mainboard.
2. Plug the RS232 to RS485 adapter into the serial port of the laptop or connect through serial cable from the serial port on the computer to the RS232 to RS485 adapter.
3. Set the DIP SWITCHES on Galaxy II mainboard so that 1, 2, and 3 are on.

4. Start the G2UPDATE program on the PC. The first time G2UPDATE is executed, OPTIONS need to be set.
   a. From the FILE MENU, choose OPTIONS.
   b. Choose the COM port you will be using. On a laptop, this will usually be COM1.
   c. Choose the RATE (speed) that you want to transfer such as 57600 bps. This has to be the same as the speed set on the Galaxy II (see below).
   d. Under TRANSFER SETUP, choose what you want to do. For software update, choose UPDATE SOFTWARE.
   e. At the bottom of the OPTIONS window, c h o o s e the drive letter where the update file is located.

NOTE: The actual software update file must be in an UPDATE folder directly off the root folder of the drive. For example: If the drive is "A" the file must be in A:\UPDATE; for "C" drive it must be in C:\UPDATE. If DARTCOMM has saved the file to the drive or floppy, you will be ready to proceed. If the file was downloaded from the Internet, make sure to copy the file to a DIRECTORY called UPDATE on the drive. This is where G2UPDATE will expect to find the file.

5. At the Galaxy II machine:
   a. Turn on power (plug in the power cord).
   b. Press the TEST switch.
   c. Go to the main Test/Setup menu.
   d. Select HARDWARE TEST/SOFTWARE UPDATE MENU.
   e. Again select HARDWARE TEST/SOFTWARE UPDATE MENU from the next menu.
   f. Select RECEIVE RS485 SOFTWARE UPDATE. The screen should say "Waiting for update – 57600* bps." Using the up and down buttons, change the rate so that it is the same as the rate set in step 4c above.
6. At this time select Connect in the G2UPDATE program on the PC.
7. After transfer has been started, the GALAXY II screen should say "Received XXX K" with the "XXX" being a number that should change and get larger as the file transfers.
8. When the transfer has been completed, the Galaxy II screen will say "SUCCESS! Done receiving update." At this time the Galaxy II needs to be RESET or powered OFF and then back ON to use the new updated software.
9. Press the test switch, you will be asked if you would like to update the boot flash memory if a boot flash update was included with the software update. Answer YES and you will have the latest program in the boot memory as well as the program memory.

RS232 to RS485 Adapter Connected to Serial Port on PC

Cable from Adapter goes to COM OUT

In Test -Ready to Receive

PC Running G2 Update Software

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/SOFT-WARE 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/SOFT-WARE 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.

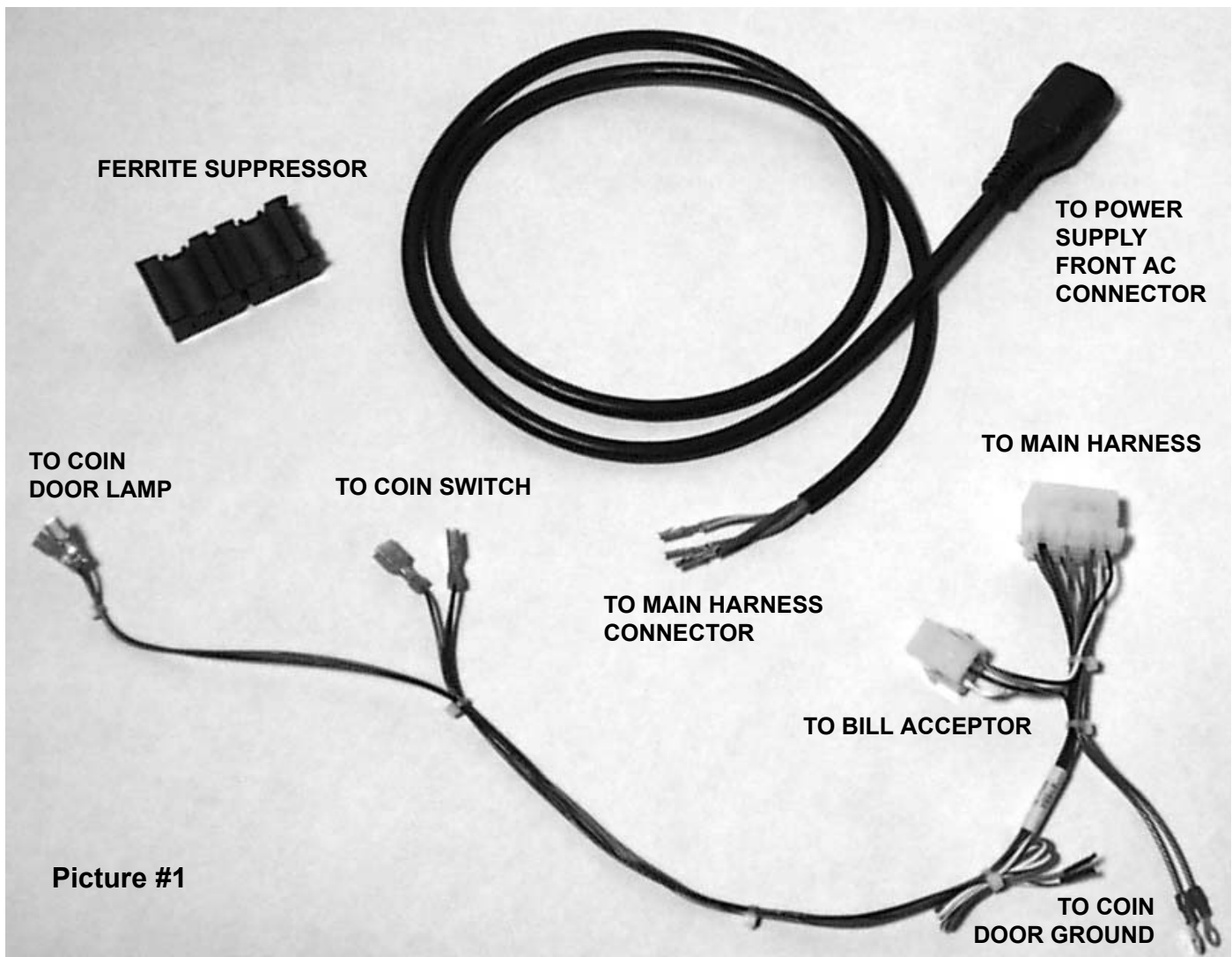# Bill Acceptor Door Kit For The Galaxy II
P/N 41950

This kit is designed to replace a coin door with two coin slots with a coin door that has one coin slot and a Mars AE2451 or AE2651 Series bill acceptor. The AE2451 bill acceptor accepts One and Five dollar bills. The AE2651 bill acceptor accepts One, Five, Ten and Twenty dollar bills. The bill acceptor is not provided.

Parts included are:

| P/N	Description
41952	Metal door with opening for bill acceptor
41884	Harness for one coin and bill acceptor
41926	Power cable for bill acceptor
42083	Ferrite suppressor, split donut
41951	Instructions (this page)
17035	Nylon wire tie (2)

WARNING - UNPLUG GAME BEFORE STARTING!

1. Remove the existing coin door by removing the four screws on the coin door hinge.
2. Remove one coin slot and lock from the door just removed and attach to the new coin door.
3. Install the Mars AE2451 or AE2651 Series bill acceptor (not provided).
4. Attach P/N 41884 wire harness to the new door (see picture #1). The small beige 9-pin connector goes to the bill acceptor. The two-wire bundle with a blue wire and a black with red stripe (the longest two) go to the lamp above the reject button. The next shorter pair, gray with black stripe and black with red stripe, goes to the coin switch. There are two green wires that go to the ground stud on the inside of the coin door close to the hinge.
5. Insert the three wires from P/N 41926-power cable into existing Main Harness connector (in the coin door area) as shown in picture #2. Make sure that you hook up these wires correctly! These are the 120 VAC to the bill acceptor.

FERRITE SUPPRESSOR

TO POWER SUPPLY FRONT AC CONNECTOR

TO COIN DOOR LAMP

TO COIN SWITCH

TO MAIN HARNESS

TO MAIN HARNESS CONNECTOR

TO BILL ACCEPTOR

TO COIN DOOR GROUND

Picture #1

Color On Power Cable	Pin Number Main Harness	Wire Color On Coin Door Harness
Brown	12	Black
Blue	11	White
Green/Yellow	10	Green

Picture #2

PIN 10 GREEN /YELLOW

PIN 11 BLUE

PIN 12 BROWN
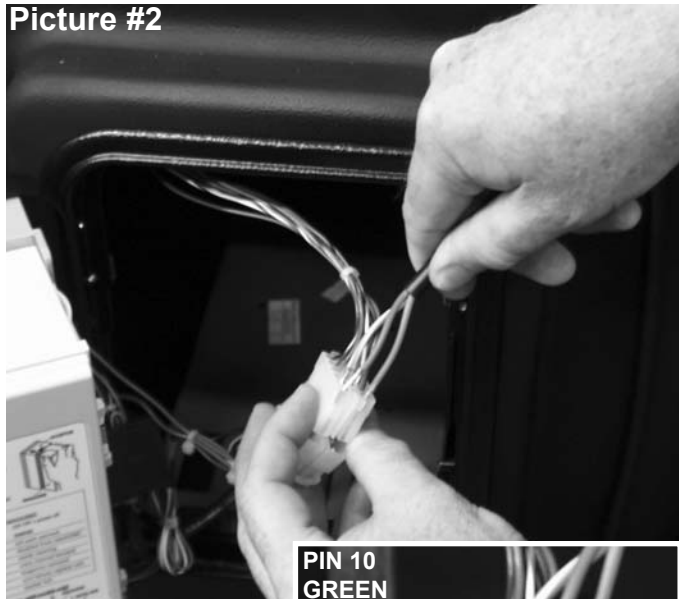
The two white 12 pin connectors in the coin door area can now be connected together. The other end of the power connector should be routed into the top cabinet, behind the monitor, and plugs into the receptacle next to where the monitor is plugged in.
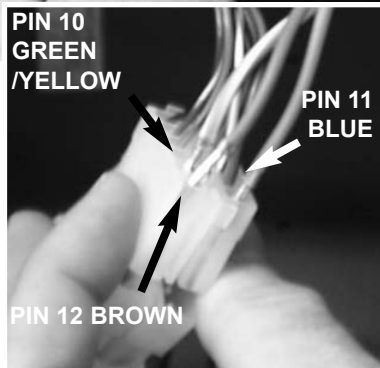
6. Attach ferrite suppressor as shown in picture #3. Notice that it is placed over the wire cable from the bill acceptor, not the Arachnid supplied harness. Also notice the two plastic wire ties used to keep it in place, one on each side of the ferrite bead.

Picture #3

7. The game can now be powered up. The recommended setting for the Mars bill acceptor would be four pulses per dollar. See the Mars bill acceptor book for directions on how to set the options. In the Galaxy II Test Mode, Machine Setup, make sure to set the COIN SLOT ASSIGNMENT #3 to 1 COIN = 1 CREDIT.

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.	a. Replace the fuse with a 3.15A Slo-Blo.
	b. If the monitor is also not on, it is possible that the power switch in the back is not on.	b. Make sure switch in the back is on.
	c. Bulbs burned out.	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 www.arachnidinc.com
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.	a. Make sure the power switch is on.
	b. The horizontal output transistor is blown in the monitor.	b. Only on Daewoo 531 monitors. We have a kit for this issue. P/N 42107
	c. Galaxy II is locked up.	c. 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.	a. Clean the J1header on the mainboard with isopropyl alcohol and a nylon toothbrush.
	b. Bad crimps along the wire harness.	b. Measure the resistance along the wireharness to determine if this may be the cause. See our bulletin on www.arachnidinc.com.
Not coining	a. Contaminated J1, J3, or J16 headers on the mainboard.	a. Clean the J1, J3, and J16 headers with 91% or better isopropyl alcohol and a toothbrush. See our bulletin on www.arachnidinc.com.
	b. Loose or bad connection along the wire harness	b. Use a multimeter to test the resistance along the wire harness. Fix bad crimps. See our bulletin on www.arachnidinc.com.

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.	a. Adjust the Missed Dart Detector slightly using the adjustment pot in the center of the Missed Dart Detector.
	b. Defective Missed Dart Detector.	b. Replace the Missed Dart Detector.
	c. Stuck segment.	c. Clean the darthead removing any foreign matter.
Modem not answering	a. Modem not seated properly.	a. Make sure the modem is in the modem sockets and none of the pins are outside of the sockets.
	b. Jumper not on the 5 Volt pins.	b. Make sure there is a jumper on the 5 Volt pins below the modem.
	c. The phone line running to the wall is in the "Phone" jack on the main board.	c. It needs to be in the "Line" jack.
	d. The phone line is not plugged into the wall.	d. Make sure the line is good, plugged into a working wall jack.
	e. Its quitting after a few rings.	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

Arachnid