

COUGAR 8 Manual

MODEL COUGAR 8

EL-A-AA-EN8

Part Number and Revision Number

P/N 219-0410-5 Rev. 1.0, September 6, 2004

Copyright

© copyright 2004
by Shelti, Inc., 469 North California St., Sycamore, IL 60178

The information in this document is subject to change without notice. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of the copyright owner displayed above.

Manual Development

Shelti, Inc.
Product Support Group
469 North California St.
Sycamore, IL 60178
(815) 895-8464

PRECAUTIONS AND SAFETY



TO ENSURE SAFETY WHILE SERVICING, REMOVE POWER CORD FROM WALL OUTLET. THE SLEEP SWITCH (ON REAR OF CABINET) **DOES NOT** REMOVE POWER FROM THIS GAME.



THIS GAME CONTAINS A LITHIUM BATTERY. PLEASE CONTACT YOUR LOCAL WASTE HAULER FOR PROPER DISPOSAL OR RECYCLING POLICIES.



ONLY AUTHORIZED PERSONNEL MAY USE KEYS TO ACCESS SERVICE AREAS.



LOCATE GAME CLOSE TO POWER OUTLET. IN CASE OF FIRE HAZARD, UNPLUG POWER CORD FROM OUTLET.



MAKE SURE POWER CORD IS NOT TRAPPED BETWEEN TOP AND BOTTOM CABINET WHEN GAME IS IN ITS UPRIGHT POSITION.



DO NOT BLOCK VENT HOLES.

ALTERATION TO ANY PART OF THE GAME IS PROHIBITED.

DUPLICATION OF THIS DOCUMENT IS NOT PERMITTED WITHOUT AUTHORIZATION.

Part Number and Revision Number	i
Copyright.....	i
Manual Development	i
PRECAUTIONS AND SAFETY.....	II
LIMITED WARRANTY	VII
SERIAL NUMBER.....	VII
NOTICE	VIII
GAME SPECIFICATIONS AND INSTALLATION	10
SPECIFICATIONS	10
INSTALLATION.....	10
VALLEY COUGAR 8	10
<i>MODEL EL-A-AA-EN8</i>	11
LINE CORD ROUTING FIGURES	12
STABILITY ASSURANCE KIT	13
<i>Parts List</i>	13
<i>Installation Instructions</i>	13
Tools Needed	13
Attachment of the chain to the wall	13
Step 1: Fasten eye bolt and chain to the game.....	13
Step 2: Fasten to the wall according to the following instructions A, B, or C.....	14
A. Hollow wall: plaster, drywall, etc.	14
B. Concrete, brick, stone wall	15
C. Wood stud mounting	15
Attachment to the floor	16
Concrete floor.....	16
Wood floor	16
GAME FEATURES	17
GAMES	18
GAME SELECT PANEL	19
MISSED DART DETECTOR AND INFRARED BODY SENSOR.....	20
TRU-SCORE® AND TRU-SCORE® II	20
AUTOMATIC PLAYER CHANGE / INFRARED BODY SENSOR.....	21
GENERAL PLAYING INSTRUCTIONS	22
DIDDLE TIME	22
TO START THE GAME	22
PLAYING INSTRUCTIONS FOR EACH GAME.....	23
301.....	23
501/701/901	23
TRADITIONAL CRICKET	23
HI SCORE	23
SHANGHAI.....	23
INTRODUCING RAPID FIRE™	24
INTRODUCING STOP WATCH™.....	24
OPTIONS (1) FOR 301/501/701/901	24
<i>Wipe Out™</i>	24

<i>Double In</i>	24
<i>Double Out</i>	25
<i>Double In/Double Out</i>	25
<i>Masters Out</i>	25
<i>Double In/Masters Out</i>	25
OPTIONS (1) FOR TRADITIONAL CRICKET	25
<i>Chance It Cricket</i>	25
<i>You Pick It Cricket</i>	25
<i>Cut Throat Cricket</i>	25
<i>Masters Cricket</i>	25
<i>Chance It / Cut Throat Cricket</i>	26
<i>Chance It / Masters Cricket</i>	26
<i>You Pick It / Cut Throat Cricket</i>	26
<i>You Pick It / Masters Cricket</i>	26
<i>Introducing Split Score™</i>	26
OPTIONS (2)	26
TEAM OPTIONS FOR 301/501/701/901	26
<i>Team: 4 Player; 2 Position</i>	26
<i>Team: 4 Player; 4 Position</i>	26
WIPE OUT™ TEAM RULES	27
TEAM OPTIONS FOR CRICKET	27
<i>Team: 4 Player 2 Position</i>	27
<i>Team: 4 Player; 4 Positions</i>	28
NDA HANDICAPPING	28
<i>Entering Averages/Spot Darts</i>	28
ADA NEUTRALIZER	29
<i>Cricket</i>	29
<i>301</i>	29
INTRODUCING TIME HANDICAP	29
INTRODUCING AUTO ADJUST	29
HONEST ERNIE	29
FEATS READOUT	30
SAMPLE DISPLAY SHOWING A “WIN” FEAT	30
<i>301/501/701/901 Feats</i>	31
<i>Cricket Feats</i>	33
MAINTENANCE MODE	35
HOW TO ENTER A MAINTENANCE MODE:	35
HOW TO USE BUTTONS IN A MAINTENANCE MODE:	35
MAINTENANCE MODE QUICK REFERENCE TABLE	36
PROGRAMMING MODE	37
TO ENTER PROGRAMMING MODE	37
P01 - SEL gA: GAME PROGRAMMING MODE	38
FACTORY SETTINGS TABLE	39
<i>Credit(s) per player, Bullseye, and Round limits</i>	39
P02 - SEL LAN: MESSAGE LANGUAGE PROGRAMMING	41
P03 - SEL Cn: CREDIT PER COIN/COUNTER ADVANCES PROGRAMMING MODE	41
P04 - SEL SEC: SECURITY CODE PROGRAMMING	41
P05 - SEL FEA: FEATURES PROGRAMMING	41
DESCRIPTION OF PROGRAMMABLE FEATURES	42
<i>One Dart Out</i>	42
<i>Attract Mode Sounds</i>	42

<i>Dart Alarm</i>	42
<i>Power Fail Recovery</i>	42
<i>Automatic Player Change</i>	42
<i>'01 Freeze Rule</i>	42
<i>Delay Time</i>	42
<i>Skip Frozen Player</i>	42
<i>Single Bullseye Start/Finish for Double In or Double Out</i>	42
<i>Starting a Game using the Player Change Button</i>	43
<i>Free Play</i>	43
<i>Wipe Out™</i>	43
<i>Fast Player Change</i>	43
<i>Player Setup Mode</i>	43
<i>Stopwatch Game Timer Start</i>	43
<i>NDA Handicap method</i>	43
<i>Back up feature</i>	43
P06 - SEL rTC: DATE AND TIME PROGRAMMING	44
P07 - SEL dOR: DORMANT TIME-OUT PROGRAMMING	44
P08 - SEL mC: MACHINE CODE	44
P09 - SEL dPR: DATA PRINT TRANSFER	44
P10 - SEL rPd: TIME HANDICAP PROGRAMMING	45
P11 - SEL StP: STOP WATCH™ TIMER PROGRAMMING	45
P12 - SEL HND: NDA HANDICAP ADJUSTMENTS	45
STATISTICS MODE	47
TO ENTER STATISTICS MODE	47
<i>S01 - SEL Cn: To View Coin Statistics</i>	48
<i>S02 - SEL gA: To View Games Statistics</i>	48
SELF-CHECKING SOFTWARE	49
<i>Power Up Switch Test Software</i>	49
<i>Target Watch Dog Software</i>	49
<i>Power Up Ram Test Software</i>	49
<i>Power Up Real Time Clock Test Software</i>	49
<i>Power Up Coin Switch Test Software</i>	49
<i>Power Up Software Version Display Software</i>	49
DIAGNOSTIC ROUTINES	50
TO ENTER TEST MODE	50
11 TESTS PERFORMED WHILE IN TEST MODE (tSt)	50
<i>Test One - t01 Push Button Switch Test</i>	50
<i>Test Two - t02 7-Segment Display and LED Test</i>	51
<i>Test Three - t03 Audio Test</i>	51
<i>Test Four - t04 Target Segment Test</i>	51
<i>Test Five - t05 Lamp Test</i>	51
<i>Test Six - t06 Cricket Display Test</i>	51
<i>Test Seven - t07 Burn-In Test</i>	51
<i>Test Eight - t08 IR Sensor Test</i>	52
<i>Test Nine - t09 Dart Sensor Test</i>	52
<i>Test Ten - t10 Game Select Panel Test</i>	52
<i>Test Eleven - t11 Serial Loopback Test (factory use only)</i>	52
TO RETURN TO ATTRACT MODE	53
GENERAL MAINTENANCE	54
INFRARED SENSOR ADJUSTMENT PROCEDURE	54
DART SENSOR ADJUSTMENT PROCEDURE	54
MATRIX SWITCH	55
<i>Definition and Purpose</i>	55
<i>Location</i>	55
<i>Analysis</i>	55
<i>Reading the Table for Multiple Non-Scoring Segments</i>	56

Matrix Switch Pin Assignments.....56
Target Segments.....56
SLEEP SWITCH56
REMOVE DEBRIS AND TIPS FROM THE TARGET56
CONTROLLER CARD - AA3 QUICK REFERENCE.....57
INSTALLATION OF EPROM.....58
REPLACING FUSES58
REPLACING LAMPS IN THE UPPER DISPLAY59
To replace lamps in the Upper Display59
REPLACEMENT LAMP INFORMATION.....60
TROUBLESHOOTING GUIDE61
PARTS' LIST / SCHEMATICS / DIAGRAMS.....73
COUGAR 8 SPARE PARTS LIST73
COUGAR 8 LIGHTHOOD ASSEMBLY PARTS LIST75
COUGAR 8 TARGET ASSEMBLY77
COUGAR 8 LOWER CABINET ASSEMBLY80
COUGAR 8 GAME SELECT BUTTON/SWITCH ASSEMBLY82
COUGAR 8 CABLES AND HARNESSSES PARTS LIST83
LIST OF DIAGRAMS.....85
LIST OF FIGURES86
INDEX87

LIMITED WARRANTY

This product is warranted against manufacturer defects or failure of electronic components for a period of one (1) full year. Shelti, Inc. will repair or replace any component, assembly or subassembly that fails during normal operation, free of charge, for a period of one (1) year. Any modification not authorized in writing by Shelti, Inc. made to any part of this product will void all existing warranties. This warranty does not apply to damage resulting from misuse, abuse, neglect, improper installation or maintenance.

The foregoing warranty is exclusive and in lieu of all other warranties of merchantability, fitness for purpose and of any other type, whether expressed or implied. Shelti, Inc. neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with this product and will not be liable for consequential damages.

Warranty service is available through your distributor.



SERVICE PHONE NUMBER: 1-866-895-8464

SERVICE FAX NUMBER: 1-815-895-8467



Please fill in the appropriate information for easy reference.

SERIAL NUMBER

(Found on the lower right side of the upper cabinet near the hinge.)

NOTICE

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.

Changes or modifications not expressly approved in written form by SHELTI, INC. for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

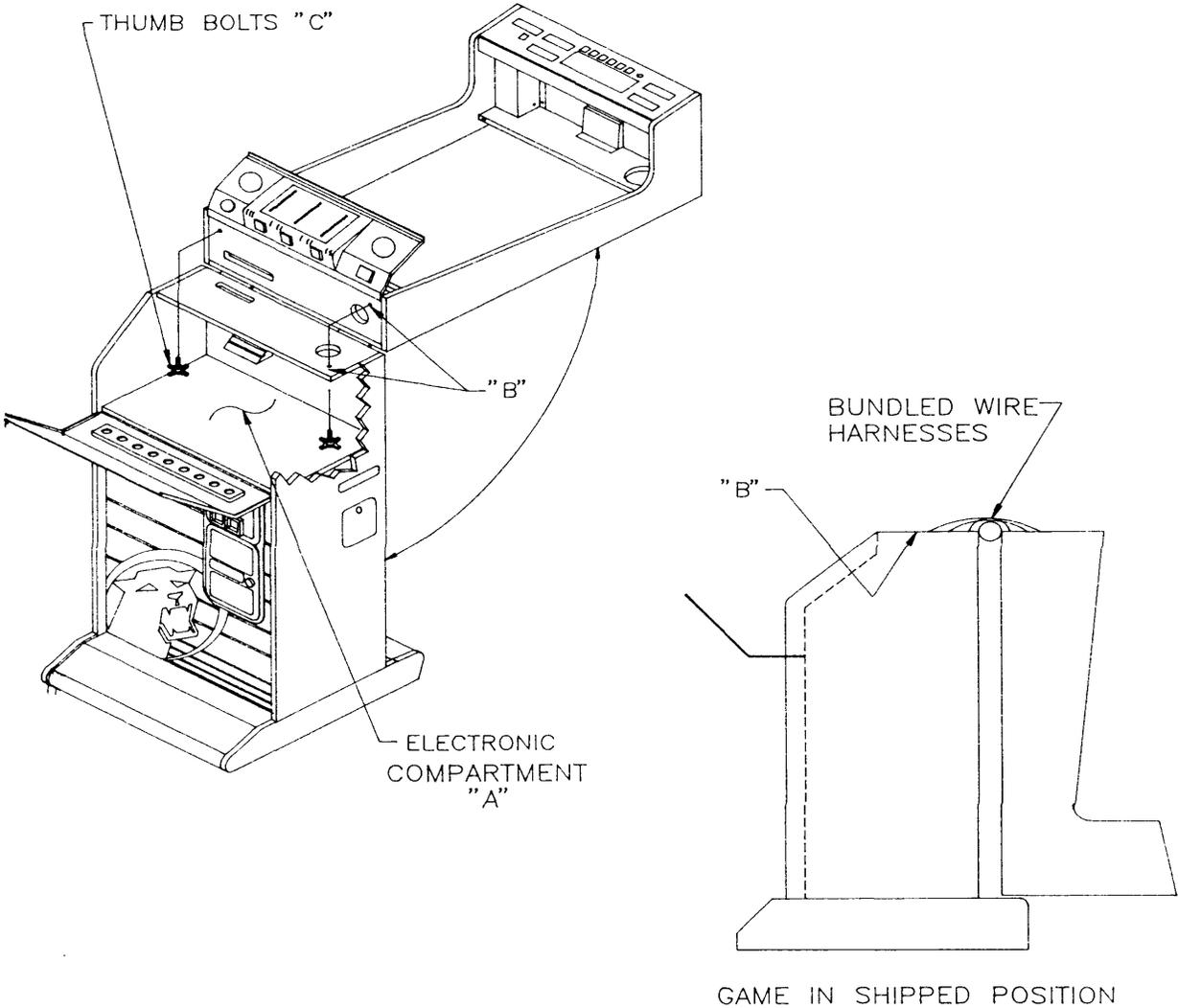
Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

To ensure safety, modification to any part of this game is prohibited.

The keys to this game should not be left in the locks or be accessible in any way to unauthorized service personnel.

This MANUAL is subject to change. Supplement will be available upon request.

CAUTION
To avoid possible injury, when the game is in the upright position, Please be sure the Thumb bolts 'C' are securely fastening the game halves together.



GAME SPECIFICATIONS AND INSTALLATION

SPECIFICATIONS

THIS GAME IS SUITABLE FOR INDOOR USE ONLY.

Height: 86" upright
Weight: 200 lbs.

Width: 24"
Voltage: 95-135V 60Hz

NOTE: A working area of approximately 6 ft. x 4 ft. with a 90 inch ceiling clearance is needed to install this game.

INSTALLATION

- 1) Unlock and open door "A" (see Figure 1) to access the electronics compartment.
- 2) Remove the washers and bolts "C" from the cashbox and set them aside within easy reach.
- 3) Slowly and carefully swing the upper section of the game upright, bracing the back until the game is securely fastened (step 4).
- 4) Verify that the wires are not pinched. Place the bolts "C" in the inside top of the electronics compartment and thread upward through holes "B" to secure the upper section of the game. Tighten the bolts.
- 5) This game is equipped with an easily replaceable power/line cord which is located inside the pedestal when shipped and must be routed through the opening at the back of the game prior to operation. Review top figure on page 12 before proceeding.
 - a) Open coin door.
 - b) Turn power cord cover latch counterclockwise until the power cord hole cover itself can be rotated counterclockwise. (See lower left figure on page 12.)
 - c) Turn power cord hole cover to expose opening. (See lower right figure on page 12.)
 - d) Locate power cord (inside pedestal) and route plug end through opening. Push the entire length of the cord through the opening.
 - e) If the cabinet top must be folded down for any reason, the power cord must be placed back inside the pedestal.
- 6) Move the game to its operation location without tilting it more than 10 degrees. Plug power cord into an appropriate outlet.

CAUTION

To ensure safety, it is recommended that the game be secured to the floor or to the wall using the Stability Assurance Kit provided. See instructions on the following pages.

Valley Cougar 8

MODEL EL-A-AA-EN8

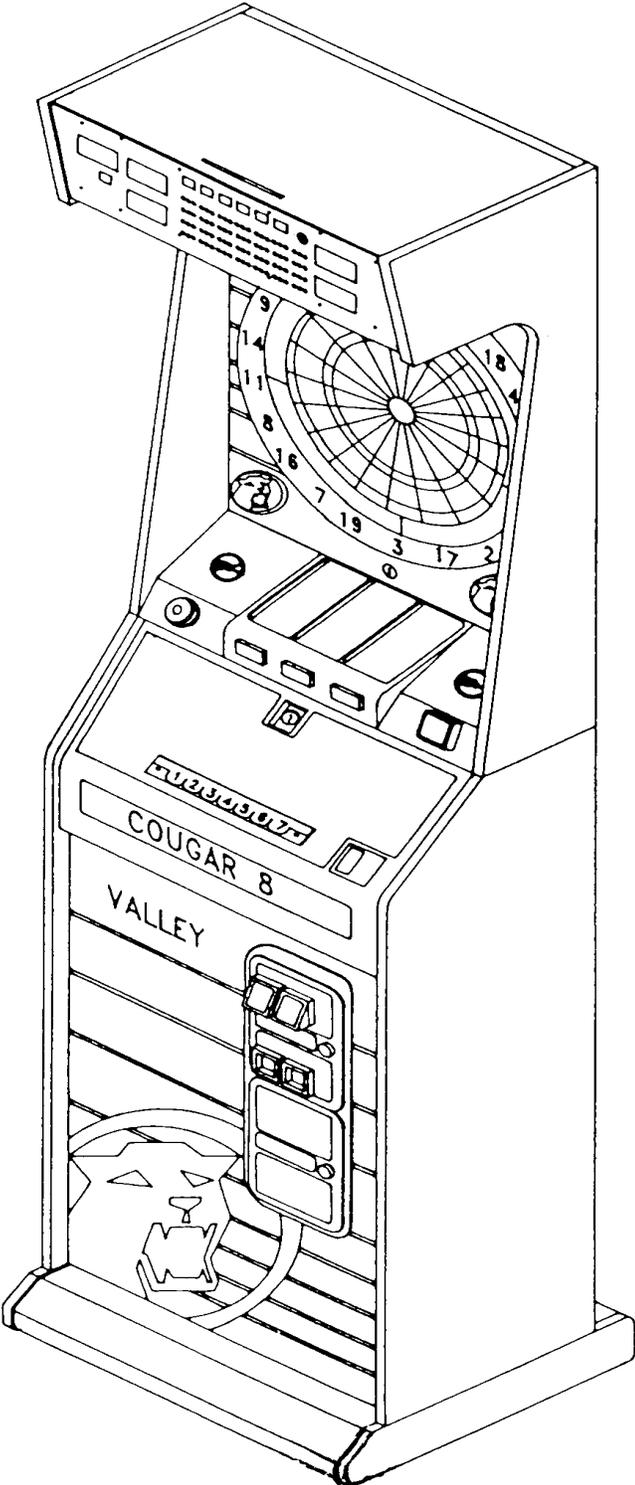
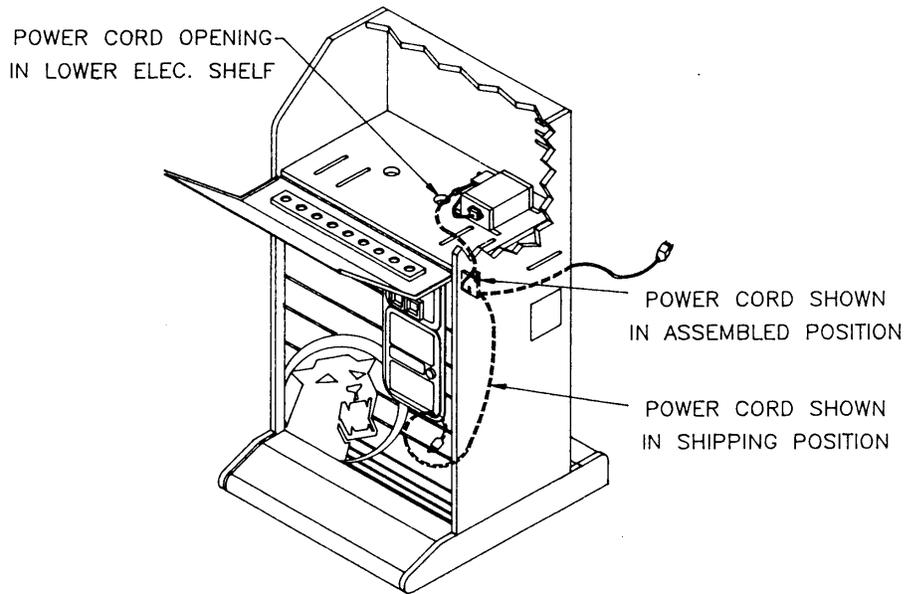
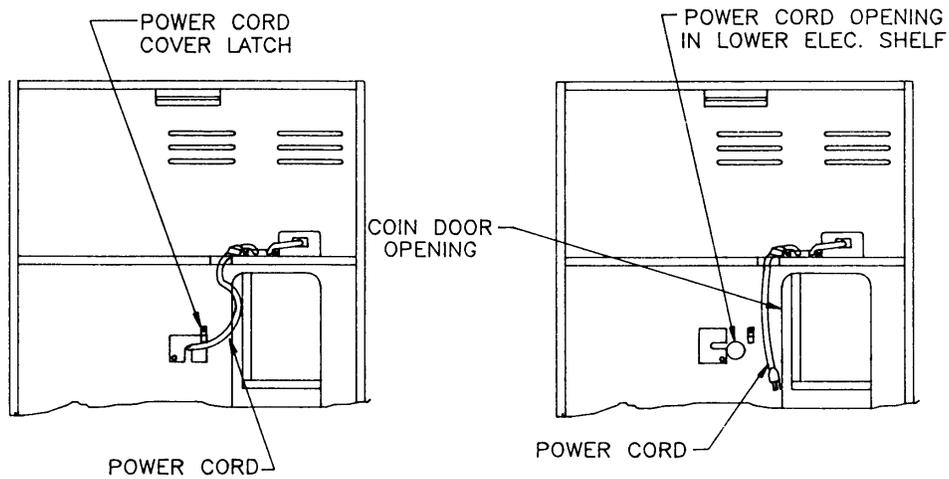


Figure 2. Cougar 8 Full front view

LINE CORD ROUTING FIGURES



3-D VIEW OF POWER CORD ROUTING



FRONT VIEW OF POWER CORD IN CLOSED POSITION

NOTE:
LOWER ELECTRONIC
AND PEDESTAL DOORS
NOT SHOWN.

FRONT VIEW OF POWER CORD IN OPEN POSITION

Figure 3. Line cord routing figures

STABILITY ASSURANCE KIT

(Shipped in Cash Box)

Parts List

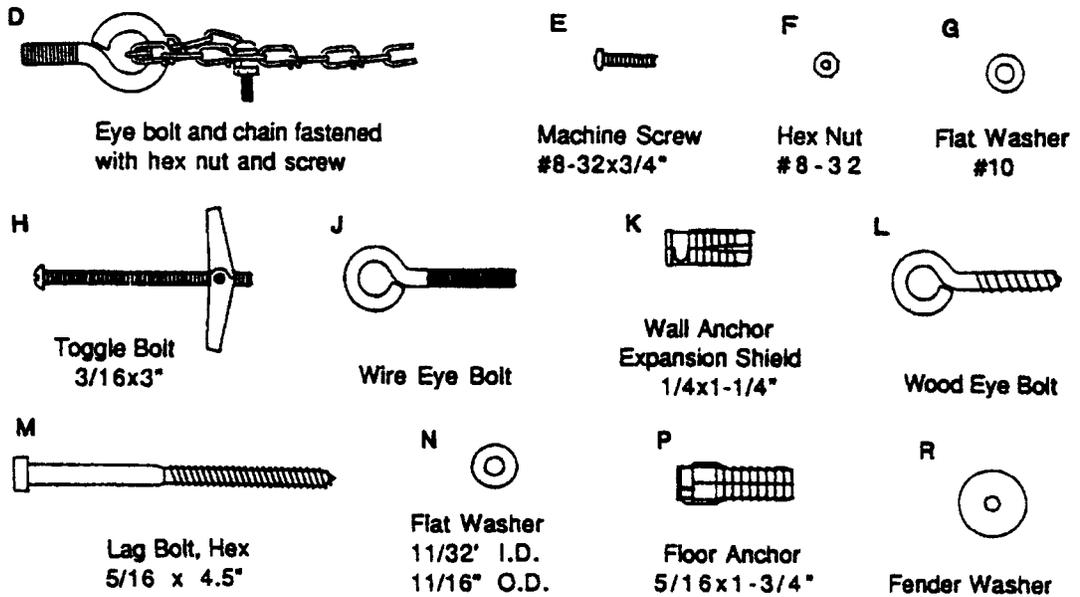


Figure 4. Stability Assurance Kit

Installation Instructions

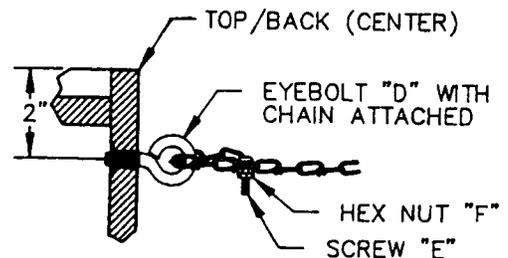
Tools Needed

- Measuring tape
- Small screwdriver (Phillips and Flathead)
- Pliers or Crescent wrench
- Drill with:
 - 12.5mm (1/2") bit to secure the game to a hollow wall.
 - 12.5mm (1/2") masonry bit to secure the game to a concrete, brick, or stone wall.

Attachment of the chain to the wall

Step 1: Fasten eye bolt and chain to the game

- Screw the eye bolt with chain (D) into the insert on the upper back wall of the game.



Step 2: Fasten to the wall according to the following instructions A, B, or C

A. Hollow wall: plaster, drywall, etc.

1. With the game in the position where it will be played, mark a spot on the wall directly in line with the eye bolt and chain attachment on the back of the game.
2. Drill a 12.5mm (1/2") diameter hole at the marked spot.
3. Unscrew the wings from the toggle bolt (H).
4. Place a flat washer (N) on the toggle bolt.
5. Place the toggle bolt (H) through a loop in the chain a few inches from the end of the chain. The toggle bolt (H) may have to be threaded through the loop in the chain.
6. Slide a fender washer (R) on the toggle bolt (H) and screw the wings back on.
7. Push the toggle bolt (H) into the drilled hole in the wall.
8. Fasten the toggle bolt (H) tightly until the wings are snug against the back of the wall as shown. Keep the chain as taut as possible to minimize slack.

Figure 5. Eye bolt and chain fastened to game

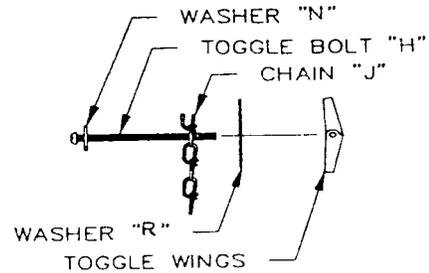


Figure 6. Fasten to hollow wall, plaster, drywall, etc.

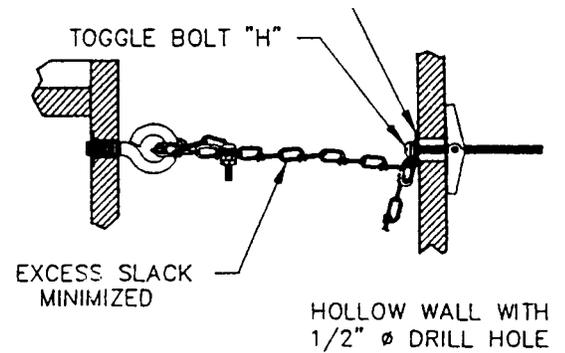


Figure 7. Close-up toggle bolt

B. Concrete, brick, stone wall

1. With the game in the position where it will be played, mark a spot on the wall directly in line with the eye bolt and chain attachment on the back of the game.

2. Drill a 12.5mm (1/2") diameter hole, 35mm (1-1/4") deep at the marked spot.

3. Pound the wall anchor (K) into the hole until it is flush with the wall surface.

4. Screw the eye bolt (J) into the wall anchor (K) until it is tight.

5. Thread the chain through the eye bolt and attach it to itself with the screw (E) and the two hex nuts (F) as shown. Keep the chain as taut as possible to minimize slack.

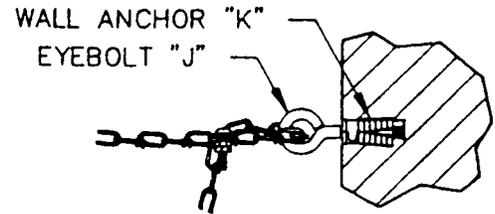


Figure 8. Fasten to concrete, brick, stone wall

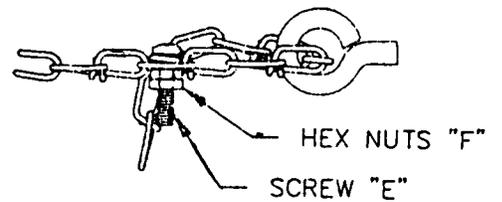


Figure 9. Close-up Hex nuts

C. Wood stud mounting

1. With the game in the position where it will be played, mark a spot on the wall directly in line with the eye bolt and chain attachment on the back of the game.

2. Screw the eye bolt into the stud at the marked spot.

3. Thread the chain through the eye bolt and attach it to itself with the screw (E) and the two hex nuts (F) as shown. Keep the chain as taut as possible to minimize slack.

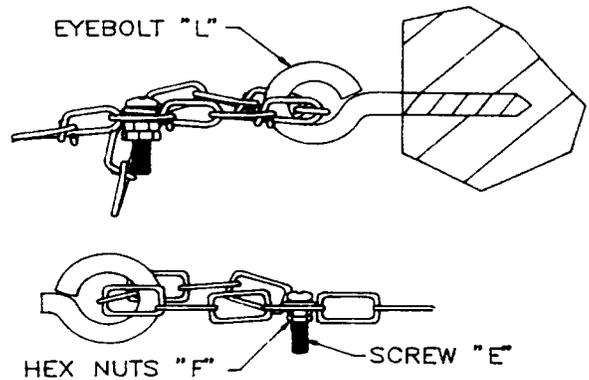


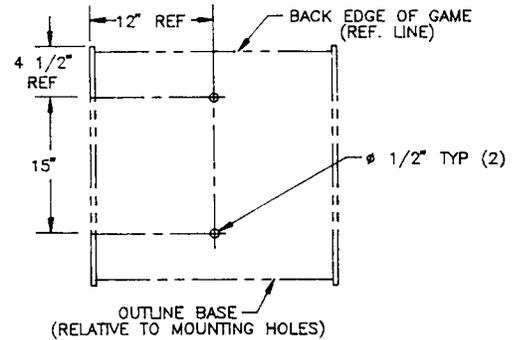
Figure 10. Wood stud mounting

Attachment to the floor

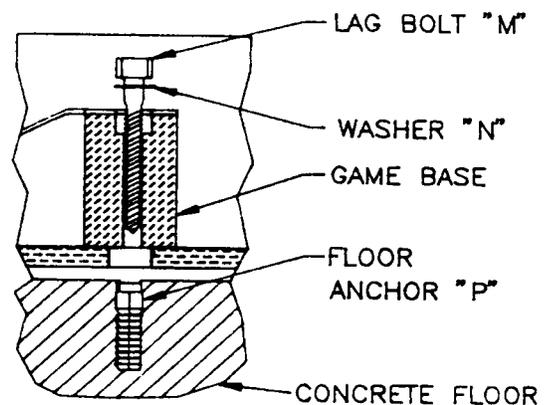
Fasten to floor according to instructions A or B.

Concrete floor

1. Mark two spots on the floor according to the diagram.
2. Drill the two holes at the marked spots 12.5mm (1/2") diameter X 45mm (1-3/4") deep each.
3. Pound in the floor anchors (P).



4. Align the holes in the base of the game with floor anchors (P).
5. Secure the game with the flat washers (N) and lag bolts (M).
6. Tighten the lag bolts until flush with the bottom of the counterbored holes in the base.



Wood floor

1. Position the game in its selected location.
2. Secure the game with the washers (N) and lag bolts (M).
NOTE: If desired, a 6mm (1/8") diameter pilot hole may be used to start the lag bolt.
3. Tighten the lag bolts (M) until flush with the bottom of the counterbored holes in the base.

Figure 11. Fasten to a concrete and wood floor

GAME FEATURES

- **NEW 'Back up' feature to erase thrown darts** - In the event of a error during the play of the game, players can 'back up' one dart at a time. Maximum of 12 darts in any one game can be backed up.
- **NEW Cancel game in progress** - Ability to cancel a game in progress prior to end of game.
- **NEW Operator selectable method of NDA handicapping** - Now either NDA points per dart (spot points) or NDA spot darts handicapping can be set for all applicable '01 and Cricket games. Also with points per dart style, adjustments are allowed to restrict the starting scores for handicapped players.
- **Programmable Dormant Time Out** - An inactive game may be programmed to end in 15 minute increments.
- **Menu-driven Game Select Panel.**
- **301/501/701/901 and Cricket Feats Readout**
- **Versatile Upper Display with Variable Cricket Segment Numbers.**
- **Player Programmable Bullseye switch.**
- **ADA Handicapping** - ADA handicapping method adjusts players' starting scores based on Points Per Dart or Marks Per Round averages. Also, feats may be retrieved and displayed before the next game has begun.
- **Diddle Time** - A 2 minute time allowance to practice or to establish starting positions. (See the General Playing Instructions section in this manual.)
- **Price Preview in Attract Mode.**
- **Tru-Score II-** Anti-Flighting Software and Missed Dart Detection.
- **Programmable Round Limit, Prices, and Bullseye Settings for Each Game.**
- **Bookkeeping** - Allows the operator to keep a record of total credits entered and credits entered per game.
- **NEW Programmable Features** - No Dip Switches, all features are software controlled.
- **Dart Catching Ring.**
- **Dart Alarm** - When being played on with no credits, the game will sound an alarm and turn off the overhead lamp for one minute.
- **Team Play** - Permits 301, 501, 701, 901, Cricket or Cut-Throat team play.
- **Ernie** - Your favorite cyber competitor ERNIE available for all games. Price and skill level programmable.

GAMES

Hi Score

Options for Hi Score

- New Time Handicap
- New Auto Adjust on
- New Auto Adjust off

Shanghai

301, 501, 701, 901

Options for 301/501/701/901

- Wipe Out™
- Double In
- Double Out
- Masters Out
- Double In/Double Out
- Double In/Masters Out
- Team Play
- New Time Handicap
- New Auto Adjust on
- New Auto Adjust off
- NDA Handicapping
- ADA Handicapping (301 only)

Cricket

Options for Cricket

- You Pick It and Chance It all with the additional options of Cut Throat, Masters Cricket
- Team Play
- NDA or ADA Handicapping
- New Split Score

New Rapid Fire™

Options for Rapid Fire™

- New Time Handicap
- New Auto Adjust on
- New Auto Adjust off

New Stop Watch™

GAME SELECT PANEL

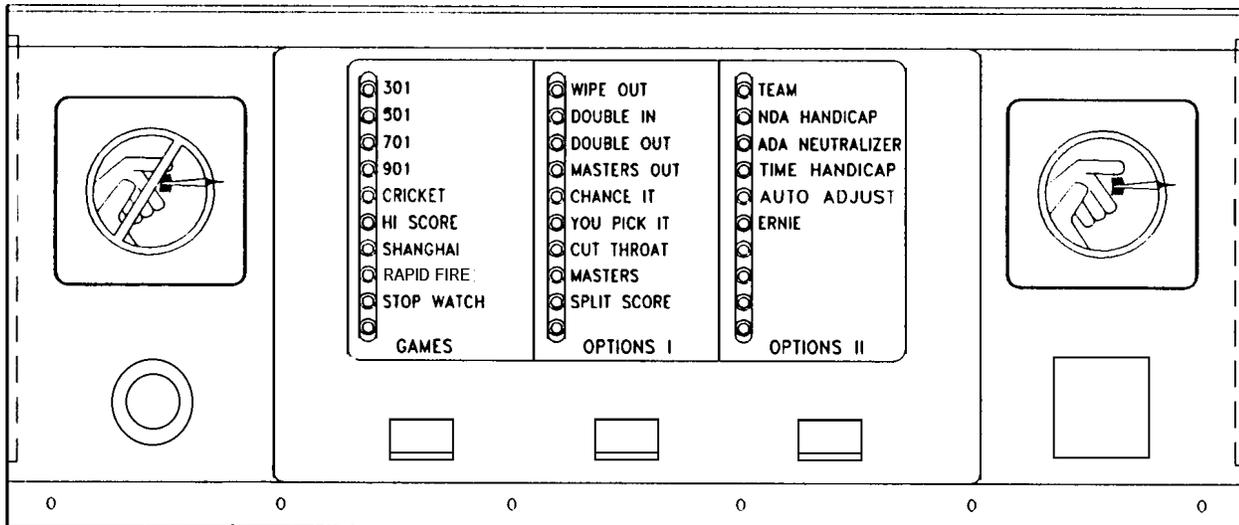


Figure 12. Game Select Panel

MISSED DART DETECTOR AND INFRARED BODY SENSOR

TRU-SCORE® AND TRU-SCORE® II

The Cougar 8 game is equipped with two specialized hardware and software systems. Tru-Score® accurately scores those darts which hit within a target segment. Tru-Score®II properly registers any hit outside the target with the help of an impact sensor to detect darts which bounce off the door or hit the dart catching ring. Missed darts are indicated by a short tone. Because the Cougar 8 registers every dart thrown, the game signals when to remove darts.

This feature is factory adjusted and ready to use. If further adjustments are necessary, refer to the Dart Sensor Adjustment Procedure in this manual.

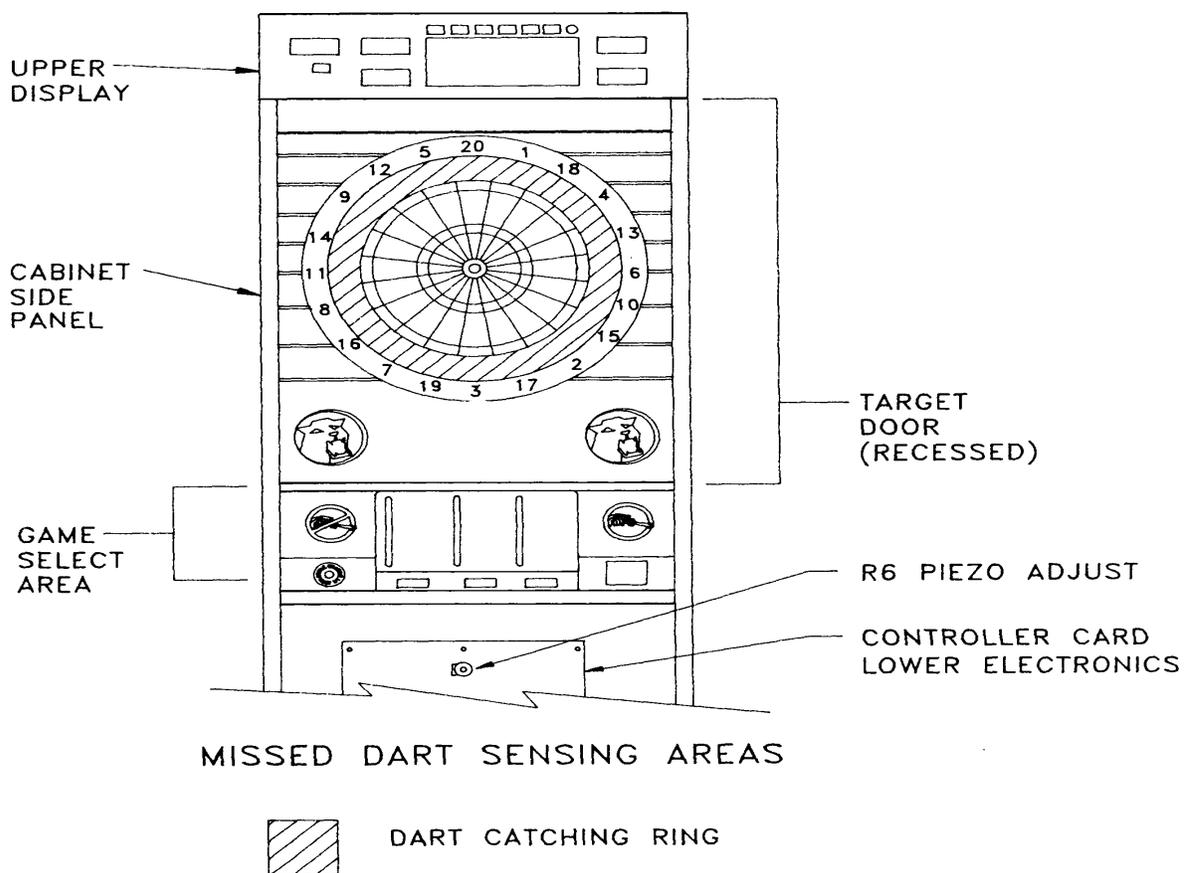


Figure 13. Missed dart sensing areas

AUTOMATIC PLAYER CHANGE / INFRARED BODY SENSOR

This dart game is equipped with an infrared sensor to detect a player removing darts from the target at the end of his turn.

The Infrared Sensor (IR) is activated after 3 darts have hit the target or the door and have been detected by the Tru-Score II Impact Sensor. Players do not need to push the Player Change button as the game will sense the player removing darts.

However, if all darts have not been counted, such as when a dart misses the game completely or when Tru-Score II is disengaged, the Infrared Body Sensor will not activate and it will be necessary to press the Player Change button.

NOTE: The Infrared Sensor's effectiveness may be reduced by a player wearing black clothing.

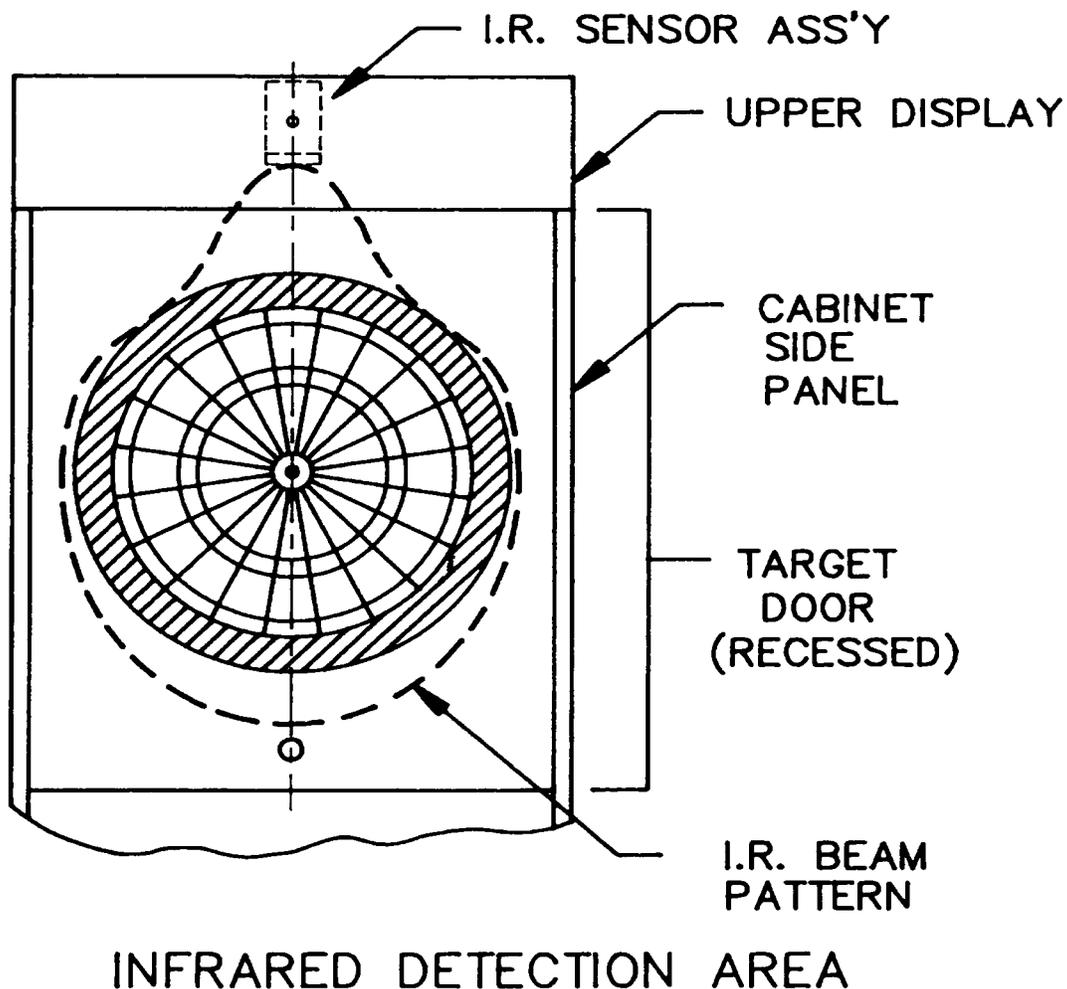


Figure 14. Infrared detection area

GENERAL PLAYING INSTRUCTIONS

- 1) Insert coins. Press the GAMES button until the red LED next to the desired game is lit. At this time, price per player will be displayed. The number of credits entered will be shown in ROUNDS display. Deposit the required number of credits for each player.
- 2) Select options (for example: Double In) by pressing the OPTIONS I or OPTIONS II button until desired option(s) is lit.

DIDDLE TIME

After coining up, **but before pressing Player Change button**, there will be two minutes for players to “diddle” for position without setting off the DART ALARM.

- 3) If Programmable Feature F14 is set to Automatic, the game distributes credits to the maximum number of players. If F14 is set to Manual, press the PLAYER CHANGE button for the desired number of players.
- 4) Wait for the green THROW DARTS lamp to light (about 5 seconds) before starting play. A dart thrown before THROW DARTS is lit will not receive a score.

TO START THE GAME

- Wait for “Throw” light to be lit.
 - Throw the first dart, or
 - Select a different game by pressing the GAMES button and then the PLAYER CHANGE button.
- 5) After 3 darts have been thrown the player can remove the darts. If the Infrared Sensor feature is engaged, the DON'T THROW lamp will light until the player moves away from the game. The game will automatically change players.

NOTE: If the 3 darts have not been registered, the player **must** press PLAYER CHANGE button **before** removing darts.

TO BACK UP THROWN DARTS

If it is necessary to ‘back up’ and erase thrown darts from the games memory during play of the game, the players may do so one dart at a time, provided the Back Up feature is enabled (see page 43, feature F17). At any time during the game, to back up one dart, press and hold the BULLSEYE SELECT button and then press PLAYER CHANGE. A maximum of 12 darts may be backed up in any one game. A warning tone will sound if an attempt is made to go past the limit or if an attempt is made to back up past the first dart of the game.

TO CANCEL A GAME IN PROGRESS

If it is desired to immediately end a game being played, press and **hold** the GAMES button, then press **both** the OPTIONS II and PLAYER CHANGE buttons. The current game will be ended and any credits remaining on the machine will be saved.

PLAYING INSTRUCTIONS FOR EACH GAME

301

- Beginning with a score of 301, player(s) must score down to exactly 0. The first player to reach 0 wins.
- Any points scored exceeding the point total needed to reach 0 will result in a BUST. The player forfeits any remaining darts in that round. Player's score will return to the score at the beginning of the round.

501/701/901

- Same game as 301 except that the starting score is 501, 701 or 901 points.

Traditional Cricket

Objective

In traditional Cricket, the object is to close numbered segments by hitting each one the equivalent of three times. [Example: To close segment #20, a player must throw 3 darts in the single, 1 dart in the single and 1 dart in the double, or 1 dart in the triple #20.]

- This game is played using segments 20, 19, 18, 17, 16, 15, and the Bullseye.
- The player who closes a segment may score on that segment until it is closed by all other players.
- On the upper display, the number of a closed segment will be replaced by dashes (--). If the Bullseye is closed, Bullseye LEDs will go out.
- The game ends when one player has closed out all the segments from 20 through the Bullseye and has the highest score or is tied for highest score.

Hi Score

- Each player throws three darts per round.
- Highest score at the end of ten rounds wins the game.

Shanghai

- Player(s) begin by throwing three darts per round.
- The object is to hit each segment in sequence beginning with segment #1, working up to segment #20, and ending with the Bullseye. The player with the highest score after 7 rounds or a Shanghai wins the game. Game will prompt player for next segment during each round.
- A "Shanghai" is an automatic win achieved by throwing 3 consecutive scoring darts consisting of a single, a double, and a triple segment in any order. [Example: Player is shooting for 4, 5, 6 in round 4 of a game. Player hits a triple 4 segment, then a single 5 segment, then a double 6 segment: this qualifies as a "Shanghai."]

Introducing Rapid Fire™

- Each player selects their own individual time handicap by pressing target segments. A Bullseye gives 21 "ticks" and is the maximum. The Cricket display shows the ticks selected.
- Each player begins by throwing at the first segment designated by the game. This number will be flashing in the Cricket display. The timer starts when the first dart hits the board.
- The second dart must be thrown at the next designated segment. Likewise, the third dart must be thrown at the last designated segment.
- The second and third darts must be thrown prior to the elapse of the timer.
- Only the flashing designated segment can be scored upon.
- Each segment hit is displayed in the left side of the Cricket display.
- Each sector of the target is designated once during the game.
- The highest score after 7 rounds wins.

Introducing Stop Watch™

- Each player begins the game with 21 "ticks" of time in which they may play the game.
- The adjustable timer automatically begins at the start of each player's turn based on the setting of Programmable Feature (F15).
- Each player throws 3 darts per round for the highest score. Player's timer continues ticking off time until the third and last dart of each player's turn. All unused time is carried over to the next round.
- The maximum time allowed for any round is determined by the operator. This time is set in the Programming Mode (P11) and may range from 2 to 9 ticks per round. Each player's round ends after the third dart is scored, or upon elapse of the timer—whichever occurs first.
- Play continues until each player has used all of his time. Players are eliminated as their time expires.
- When all players' times have expired, player with the highest score is the winner.

OPTIONS (1) FOR 301/501/701/901**Wipe Out™**

- Played the same way as other '01 games except that each player has the opportunity to send other players' scores back to the starting score or adds 103 points not to exceed starting score. This is **WIPE OUT™**. (Refer to Features Programming (P05), Feature (F12) for this setting.)
- Each player begins with 301, 501, 701, or 901.
- The first player to reach 0 exactly within the round limit or the player with the lowest score after the round limit is the winner.
- Each player can wipe out other players by matching their scores with any or all of the three darts thrown. [Example: Player 1 has a score of 80 points, Player 2 has a score of 40 points, Player 3 has a score of 70 points, Player 4 has a score of 10 points. Player 1 shoots a 10 with his first dart for a score of 70. This matches Player 3's score so Player 3's score returns to 301. Player 1 shoots again and hits a Double 15 for a score of 40. This matches Player 2's score, and sends her to 301. Player 1 shoots a third dart and hits another Double 15, bringing the score to 10 which matches Player 4's score. Player 4's score returns to 301. If **WIPE OUT™** 103 is set in the previous example, the players' scores will be as follows: Player 2 = 143, Player 3 = 173, and Player 4 = 113.]

Double In

- Each player must hit a double point value segment or an inner Bullseye to begin play.
Darts thrown prior to the first scoring throw will not score points.

Double Out

- A player must reach 0 exactly by scoring a double point value segment or an inner Bullseye. A score of 1 will automatically bust a player in this position.

Double In/Double Out

- This is a combination of the Double In and the Double Out games.

Masters Out

- This is played the same way as Double Out, but the player can also go out by hitting a triple point value segment or a Bullseye.

Double In/Masters Out

- This is a combination of the Double In and the Masters Out games.

OPTIONS (1) FOR TRADITIONAL CRICKET

Chance It Cricket

Objective: Same as Traditional Cricket.

- In this variation of Cricket, the dart game picks 6 segments at random (and the Bullseye) which players close as in a normal Cricket game.
- All the usual Cricket rules apply.

You Pick It Cricket

Objective: Same as Traditional Cricket.

- In this variation of Cricket, players pick 6 segments (and the Bullseye) which they then close as in a normal Cricket game.
- To pick segments, wait for flashing 0 to appear in the Cricket number display. Press 6 segments on the target. Once 6 segments have been chosen, the numbers will appear on the display in descending order.
- All the usual Cricket rules apply.

Cut Throat Cricket

Objective: Same as Cricket, except that players with closed numbers add points to opposing players with those numbers still open.

- The player who has closed all numbers and has the lowest score wins.

Masters Cricket

Objective: Same as Cricket, except that a player can only score points on darts when closing.

- After a player has closed all his numbers and the Bullseye, the player may then score points on any opponents' open numbers.
- The player who has closed all numbers and has the highest score wins.

PLAYING INSTRUCTIONS

Chance It / Cut Throat Cricket

- This is a combination of the Chance It and the Cut Throat games.

Chance It / Masters Cricket

- This is a combination of the Chance It and the Masters games.

You Pick It / Cut Throat Cricket

- This is a combination of the You Pick It and the Cut Throat games.

You Pick It / Masters Cricket

- This is a combination of the You Pick It and the Masters games.

Introducing Split Score™

- Each player begins with 40 points.
- Each player throws 3 darts per round at the segment designated by the game.
- Each time the designated segment is hit, the value of the segment is added to the score (including double or triple point values).
- If the designated segment is not hit at least once during the round, the player's score is split in half.
- The designated segments are 15, 16, any Double, 17, 18, any Triple, 19, 20 and Bullseye.
- Highest score at the end of 9 rounds wins the game.

OPTIONS (2)

TEAM OPTIONS FOR 301/501/701/901

- A player is "frozen" when the score of the other player on the team is greater than or equal to the combined score of the opposing team's players. A player cannot win the game if his partner's score is greater than the opposing team's **combined** score; this situation causes that player to be "frozen," i.e., if the partner's score is 50 and the opposing team players have 15 and 10 totaling 25 points.
- If a player is "frozen" and reaches 0, the game will cause this player to bust when feature F06 (frozen player) is set to 'BUST'. When feature F06 is set to 'LOSE', the game will cause the team to lose.
- NDA Handicap play available.

Team: 4 Player; 2 Position

- This option is only valid for 2 teams and can be chosen when there are enough credits for a 2 player game.
- Players 1 and 3 are Team "A" and their score appears on Player 1. Players 2 and 4 are Team "B" and their score appears on Player 2.
- After selecting an '01 game, press the gray OPTIONS II button until TEAM is lit.
- Use the red PLAYER CHANGE button to start the game.
- The display will automatically put up a 2 team, 4 player game.

Team: 4 Player; 4 Position

- This option can only be chosen when there are enough credits to start a 4 player game.

- Players 1 and 3 are Team "A." Players 2 and 4 are Team "B."
- After selecting an '01 game, press the gray OPTIONS II button until TEAM is lit.
- Use the red PLAYER CHANGE button to select all players for the teams (the game will automatically put up scores to make an even number of players).

WIPE OUT™ TEAM RULES

- Regular Team rules apply.
- Players cannot wipe out a team member if they match their team member's score.
- Players on one team may eliminate players on the other team by matching their score as described previously.

Warning: If both members of a team have the same score, an opposing team member could knock both players' scores back to the starting score should he match their score.

- The team with the first player to reach 0 before the round limit is the winner as long as cumulative score of winning team is less than the cumulative score of the other team. A team player reaching 0 without having the lowest cumulative team score could:
 1. cause the player to "Bust," and his score will return to that of the previous round **or**
 2. lose the game depending on how Feature F06 is set. (See Features Programming Section.)
- If the round limit is reached, the team with the lowest cumulative score is the winner.

TEAM OPTIONS FOR CRICKET

- NDA Handicap play available.
- For Cricket / Cut-Throat, scoring on a number can only begin when all players on a team have closed the number. Scoring only occurs against opposing team members who have not closed the segment. [Example: If Team B has #18 closed, and only Player 1 on Team A has #18 closed, Team B can score on #18 until Player 3 closes the number.]
- The game ends when the members on a team close all segments 20-15 and the Bullseye and have points according to each game's rules.

Team: 4 Player 2 Position

This option is only valid for 2 teams and can be chosen when there are enough credits for a 2 player game.

- Players 1 and 3 are Team "A" and their score appears on Player 1. Players 2 and 4 are Team "B" and their score appears on Player 2.
- After selecting a Cricket game, press the gray OPTIONS II button until TEAM is lit.
- Use the red PLAYER CHANGE button to start the game.

- The display will automatically put up a 2 team, 4 player game.

Team: 4 Player; 4 Positions

- This option can only be chosen when there are enough credits to start a 4 player game.
- Players 1 and 3 are Team "A." Players 2 and 4 are Team "B."
- After selecting a Cricket game (with or without options), press the gray OPTIONS II button until TEAM is lit.
- Use the red PLAYER CHANGE button to select the players for the game (the game will automatically put up scores for an even number of players).

NDA Handicapping

NDA handicapping (a method set by the National Dart Association) is available in '01 and Cricket games (all games, all options). The method NDA of handicapping used by the game depends on the Programmable Feature setting F16 (see page 43). Either the player's averages, (Points per Dart for '01 games and Marks per Round for Cricket) can be used to calculate starting points or mark values or the players can enter the number of spot darts to be thrown in the handicap round (round 0).

Entering Averages

- Deposit required number of credits.
- Select the '01 or Cricket game of your choice.
- Press the GRAY button in the OPTIONS II menu and highlight NDA. If you wish to play team rules, press GRAY button again to highlight TEAM.
- Press the red PLAYER CHANGE button to begin entering Points Per Dart (PPD) average for each player. The range for PPD is between 10 and 40.
- Press target segments 1-9 and Bullseye (for zero) to enter PPD average for each player. (An average less than 10 is automatically set to 10 and greater than 40 is set to 40.) When playing a game **without team rules**, you must press the PLAYER CHANGE button **twice** to enter Player 3 and Player 4 PPD averages.
- Press the red PLAYER CHANGE button to lock in averages and to start game OR to play team rules with 4 players on 4 positions, press the red PLAYER CHANGE button **TWICE**.
- The same procedure is used to enter Marks Per Round (MPR) for Cricket games.

NOTE: The range for MPR is between 0 and 9.0. If you assign a MPR value greater than 9.0, the system will automatically change it to the maximum allowable (9.0).

Entering Spot darts

- Deposit required number of credits.
- Select the '01 or Cricket game of your choice.
- Press the GRAY button in the OPTIONS II menu and highlight NDA. If you wish to play team rules, press GRAY button again to highlight TEAM.
- Press the red PLAYER CHANGE button to begin entering Spot darts. Player 1 display will flash (0).
- Press target segments 1, 2 or 3 to enter 1, 2 or 3 spot darts for Player 1. Press Player change again to enter the value for Player 1 and advance to Player 2 position.
- Repeat these steps to enter Spot darts for all players. Enter 0 spot darts for a player by either pressing the Bull's eye segment or PLAYER CHANGE button without pressing any target segments.
- When all players handicaps have been entered, press PLAYER CHANGE to begin the handicap round OR to play team rules with 4 players on 4 positions, press the red PLAYER CHANGE button **TWICE**.
- When all players have thrown their spot dart(s), the actual game will begin at round 1.

ADA Neutralizer

ADA Neutralizer handicapping (a method set by the American Darters Association) is **only** available in a **2 Player 301 game (no options) and 4 Player 2 position Traditional Cricket game (no options)**.

- Press the GRAY button in the OPTIONS II menu to highlight ADA NEUTRALIZER. (If Cricket was selected, TEAM is lit automatically.)
- Press the red PLAYER CHANGE button to begin entering Points Per Dart (PPD) average for each player.
NOTE: The range for PPD is between 10 and 30.
- Press target segments 1-9 and Bullseye (for zero) to enter PPD average for each player. (An average less than 10 is automatically set to 10 and greater than 30 is set to 30.)
- Press the red PLAYER CHANGE button to lock in averages and to start game.

Cricket

The game automatically calculates the cumulative team PPD average, and awards marks to the team with the lowest PPD average. Number of awarded marks will be displayed in Player 1 or Player 2 LED. Enter marks using the target. **Note: No more than 2 marks per segment allowed.**

301

The game automatically calculates a point advantage for the player with the lowest PPD average and will display adjusted starting scores.

INTRODUCING TIME HANDICAP

- This is the timer used in the Rapid Fire™ game. It is also available for '01 games and Hi Score.
- May be selected with any 301/501/701/901 or Hi Score game with any options (except Team play or Handicap round).
- Each player selects their own individual time handicap by pressing target segments. A Bullseye gives 21 “ticks” and is the maximum.
- The second and third darts must be thrown prior to the elapse of the timer.
- Each player’s round ends after the third dart is scored, or upon elapse of the timer - whichever occurs first.
- Normal game rules apply.

INTRODUCING AUTO ADJUST

- An additional option used only with “Time Handicap” in ‘01 games, Hi Score, and Rapid Fire.
- At the beginning of each round (after the first), each player’s “Time Handicap” value is adjusted by the game, based upon his ranking at the end of each round.
- One or more “ticks” may be added or subtracted depending on each player’s ranking. Adjustments are shown at the beginning of each round.

HONEST ERNIE

- “Play the Computer” feature.
- Ernie can be a player in any game (except Team Play; Rapid Fire; Stop Watch; and Time, NDA or ADA handicapped games).
- Ernie can play up to 3 opponents. He always throws last in the round.
- Ernie is chosen by pressing the gray OPTIONS II button **after** a game and its options have been selected.
- Ernie’s skill level can be changed by repeatedly pressing the gray OPTIONS II button. Skill levels 1 through 5 (novice to master) appear in the display.

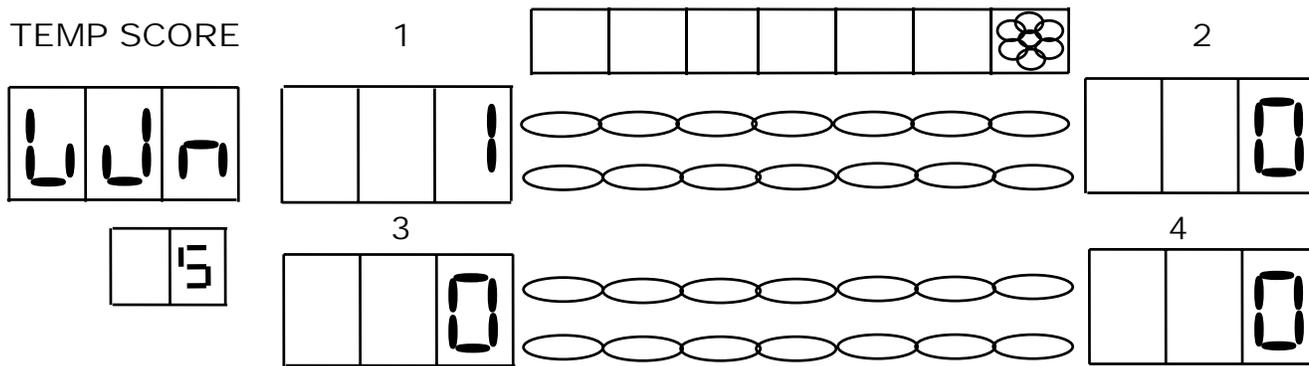
FEATS READOUT

Each feat will be displayed at the end of the game for a period of 6 seconds. Pressing the gray OPTIONS II button will speed the advance to the next feat. Feats will cycle for two minutes. The display will then return to the ATTRACT mode unless credits remain.

In the event the display of feats was accidentally canceled or the timer expired, the last game's feats may be displayed again. At any time **prior** to throwing the first dart of a new game, you may **press and hold** the red PLAYER CHANGE button, then press gray OPTIONS II button. These steps can be used during the GAME SELECT Mode or during the ATTRACT Mode to retrieve the previously played game's feats, provided 1) power was not interrupted or 2) the game was not put into SLEEP Mode since the last game was played. An error tone will sound if no feat data is found when the game is asked to retrieve it.

SAMPLE DISPLAY SHOWING A "WIN" FEAT

In the following example, four (4) players have completed a game of 301. Player 1 was the winner in the fifth round, and his "Win" feat appears as shown below.



301/501/701/901 Feats

FEAT	AS SHOWN ON TEMPORARY DISPLAY	DESCRIPTION
Points Remaining	P r	Points remaining at the end of the game.
Total Number of Darts Thrown	t d t	Count only darts which hit the target or are registered by the dart sensor.
Total Points	t P	Total points accumulated during the game.
Points per Dart	P P d	Shows average points per dart for each player.
Points per Round	P P r	Shows average points per dart for each player.
Win	W n	A win.
Assist	A S t	An assist while playing 'team' with a partner.
6 Dart Out	6 d o	A win in 6 darts.
7 Dart Out	7 d o	A win in 7 darts.
8 Dart Out	8 d o	A win in 8 darts.
9 Dart Out (301/501)	9 d o	A win in 9 darts.
10 Dart Out (501)	10 d	A win in 10 darts.
	11 d	

FEATS READOUT

11 Dart Out (501)		A win in 11 darts.
12 Dart Out (501)	12d	A win in 12 darts.
4 th Round Out (301)	4EH	A win in the 4 th round.
5 th Round Out (301)	5EH	A win in the 5 th round.
Hat Trick	HAE	3 Bullseyes in one turn.
TON	ton	A score of 100 to 150 in one turn.
High TON	HEn	A score of 151 or greater in one turn.

NOTE: A bust situation will cancel any feat obtained in that player's round. The Hat Trick can be accomplished on an inner or an outer Bullseye. When 100 or more points are accumulated in a Hat Trick, the Hat Trick will be the only feat recorded.

Cricket Feats

FEAT	AS SHOWN ON TEMPORARY DISPLAY	DESCRIPTION
Total Marks	T M M	Total marks accumulated during the game.
Total Number of Darts Thrown	T D T	Counts only darts which hit the target or are registered by the dart sensor.
Marks per Round	M M .	Average marks per round.
Win	L W M	A win.
Assist	A S T	An assist while playing 'team' with a partner.
8 Dart Out	8 D O	Finish in 8 darts.
9 Dart Out	9 D O	Finish in 9 darts.
Hat Trick	H A T	Marking 3 Bullseyes in one round.
White Horse	L W H	Marking 3 different unmarked triples in one round.
4 Mark	4 M M	4 marks in one round.
5 Mark	5 M M	5 marks in one round.
6 Mark	6 M M	6 marks in one round.

Cricket Feats

FEATS READOUT

7 Mark		7 marks in one round.
8 Mark		8 marks in one round.
9 Mark		9 marks in one round.

NOTE: Darts thrown which hit numbered segments closed by all players do not count as marks.

MAINTENANCE MODE

How to Enter a Maintenance Mode:

- Press Test Switch S1 on Controller Card (refer to Figure 15, page 57), **tSt** will show on the display.
- Scroll through options (**tSt**, **StA**, and **Prg**) using red GAMES button or blue OPTIONS I button until the desired mode appears in Temporary Score Display.
- Press gray OPTIONS II button to Enter.
- If using a security code (different from factory presetting), the game will prompt you for your code.
NOTE: Failure to enter your unique security code will result in game reset.

How to use buttons in a Maintenance Mode:

- GAME SELECT button:** moves forward through the menu.
- OPTIONS I button:** moves back through the menu.
- OPTIONS II button:** selects desired menu choice.
- BULLSEYE button:** acts as a **special function button**.
(Toggles display or activates multi-button press.)

Maintenance Mode Quick Reference Table

<i>TEST MODE (tSt)</i>		<i>PROGRAMMING MODE (Prg)</i>		<i>STATISTICS MODE (StA)</i>	
t01	Push button test.	P01	Game price, default Bullseye setting and round limit prgmg.	S01	Coin switch statistics.
t02	Upper display 7 segment LED test.	P02	Message language prgmg.	S02	Game play statistics.
t03	Audio test.	P03	Coin switch prgmg.		
t04	Target test.	P04	Security code prgmg.		
t05	Incandescent lamp test.	P05	Features prgmg.		
t06	Upper display discrete LED test.	F01	Single dart out indicator.		
t07	Production burn-in.	F02	Attract mode sounds.		
t08	IR sensor test.	F03	Dart alarm.		
t09	Missed dart sensor test.	F04	Power failure recovery.		
t10	Game select LED test.	F05	IR sensor enable.		
t11	Serial communication loop-back test.	F06	'01 Freeze rule.		
		F07	IR sensor delay time.		
		F08	Skip frozen cricket player.		
		F09	Single Bull double in/out.		
		F10	Player Change button function at game start.		
		F11	Free play mode.		
		F12	Wipe out setting.		
		F13	'Fast' player change.		
		F14	Player set up mode.		
		F15	Stop Watch™ game timer start.		
		F16	NDA handicap method (PPd or spot darts)		
		F17	Back up feature		
		P06	Real time clock prgmg.		
		P07	Dormant time out prgmg.		
		P08	Machine code prgmg.		
		P09	Data print transfer.		
		P10	Time handicap timer prgmg.		
		P11	Stop Watch™ prgmg. Time period of timer sweep & maximum number of ticks per round.		
		P12	NDA Handicap adjustments. 301 min. starting score 501 min. starting score percentage of PPd avg. used Cricket max. awarded marks.		

NOTE: Please refer to specific instructions on the following pages for more detail.

PROGRAMMING MODE

WHILE IN PROGRAMMING MODE, PRESS--

GAMES or **OPTIONS I** buttons to scroll through options.

OPTIONS II button to enter any changes.

BULLSEYE SELECT button to toggle between different modes. (The Bullseye Select button is located on the upper electronics door on the left side.)

PLAYER CHANGE button to exit present mode.

TO ENTER PROGRAMMING MODE

- Press Test Switch S1 on Controller (refer to Figure 15, page 56), **tSt** will show on the display.
- Scroll through options (**tSt**, **StA**, and **Prg**) using red **GAMES** Button or blue **OPTIONS I** Button until **Prg** appears in Temporary Score Display.
- Press gray **OPTIONS II** button to Enter.
- If using a security code (different from factory presetting), the game will prompt you for your code.

NOTE: Failure to enter your unique security code will result in game reset.

- Display will read **P01**, and new menu will be in effect. Use red **GAMES** button or light blue **OPTIONS I** button to scroll through options P01 through P11.

- | | |
|------------|---|
| P01 | SEL gA (GAMES) This mode allows you to change the number of credits per game, the Bullseye setting, and the round limit for any game. |
| P02 | SEL LAn (MESSAGE LANGUAGE) This mode allows you to change the language of the game, or to return to the factory language default setting. |
| P03 | SEL Cn (COIN) This mode allows you to change the number of credits per coin, and to program the counter advances value. |
| P04 | SEL SEC (SECURITY) This mode allows you to change the operator security code. |
| P05 | SEL FEA (FEATURES PROGRAMMING). This mode allows you to enable or disable all of the programmable features. |
| P06 | SEL RtC (REAL TIME CLOCK). This mode allows you to set the day, date, and time in the game. |
| P07 | SEL dor (DORMANT TIME-OUT). This mode allows you to set the dormant time out from 0 to 90 minutes. |
| P08 | SEL mC (MACHINE CODE). This mode allows you to program an 8-digit number to identify the game. |
| P09 | SEL dPR (DATA PRINT TRANSFER). This mode allows you to save or restore game settings to and from a Data Print 3000. |
| P10 | SEL rPd (TIME HANDICAP TIMER SETTING). This mode allows you to set the Time Handicap Timer between 2.0 and 9.0 seconds in half second increments. |
| P11 | SEL StP (STOP WATCH SWEEP SETTING). This mode allows the time period for the timer used in the "Stop Watch" game to be adjusted to run faster or slower and will determine the duration of the game. Additionally, the maximum number of ticks per round can be adjusted. |
| P12 | SEL Hnd (NDA HANDICAP SETTINGS). This mode allows the adjustment of the '01 games minimum starting scores of handicapped players. The percentage of the high PPd entry used to calculate the handicaps for '01 games is also adjustable. The maximum starting marks awarded for Cricket games may also be set. |

P01 - SEL gA: GAME PROGRAMMING MODE.

- Select **SEL gA** by scrolling through programming options using the red GAMES or the blue OPTIONS I button. Press the gray OPTIONS II button to enter.
- Use the red GAMES or the blue OPTIONS I button to select the game and options to program.
- To toggle between number of credits per game option and round limit option, use BULLSEYE SELECT button.
- To change number of credits per game (CPg). The number of credits per game will appear in the Player 2 score on upper display. To change current value, press any number from 1 to 9 on the target. The new value is shown in Temporary Score display. Press gray OPTIONS II button to save.
- The current setting (**bE/ dbE**) will be shown in the Player 4 display. To change Bullseye/Double Bullseye setting, press segment 20 on target. Press the gray OPTIONS II button to save.
- To change current round limit, press BULLSEYE SELECT button to change mode from Cpg to rL. Temporary Score will display game, Player 2 score will display the current round limit. Change round limit by pressing appropriate target segments using numbers 1-9 and Bullseye segment for 0. (Example: If rL = 20, press 2 and Bullseye segment.) Press gray OPTIONS II button to enter. To enter unlimited rounds, press Bullseye on the target. Temporary Score will display 0. Press OPTIONS II button to enter. Player 2 display will show **UL** for unlimited rounds.
- **NOTE: All games are programmed in the same way. Select another game by pressing GAMES or OPTIONS buttons until desired game is highlighted on Game Select Panel.**
- To program Ernie's price, select either Hi Score or Shanghai and press the blue OPTIONS I button. Current credit value to play Ernie is shown. Press any target segment to toggle the different available credit values (0, 1, 2 or 3). When desired value is shown, press the gray OPTIONS II button to enter.
- To exit GAMES programming, press red PLAYER CHANGE button.

FACTORY SETTINGS TABLE

Credit(s) per player, Bullseye, and Round limits

The Table at the right shows the factory set programming for your game.

The empty fields can be used to document your own settings.

For Reference:

BE = 50 points Bullseye (inner and outer)

dBE = 25 point outer Bullseye and 50 point inner Bullseye

* = These round limit settings cannot be changed.

Games	Bullseye	Round Limit	Credit
301	BE	12	2
301 Wipe Out™	BE	12	2
301 Double In	BE	15	2
301 Double Out	BE	15	2
301 Double In/Double Out	BE	15	2
301 Masters Out	BE	15	2
301 Double In/Masters Out	BE	15	2

501	BE	20	3
501 Wipe Out™	BE	20	3
501 Double In	BE	20	3
501 Double Out	BE	20	3
501 Double In/Double Out	BE	20	3
501 Masters Out	BE	20	3
501 Double In/Masters Out	BE	20	3

701	BE	25	4
701 Wipe Out™	BE	25	4
701 Double In	BE	25	4
701 Double Out	BE	25	4
701 Double In/Double Out	BE	25	4
701 Masters Out	BE	25	4
701 Double In/Masters Out	BE	25	4

901	BE	30	5
901 Wipe Out™	BE	30	5
901 Double In	BE	30	5
901 Double Out	BE	30	5
901 Double In/Double Out	BE	30	5
901 Masters Out	BE	30	5
901 Double In/Masters Out	BE	30	5

Continued:

The Table at the right shows the factory set programming for your game.

The empty fields can be used to document your own settings.

For Reference:

BE = 50 points Bullseye (inner and outer)

dBE = 25 point outer Bullseye and 50 point inner Bullseye

UL = Unlimited (rounds)

Games	Bullseye	Round Limit	Credit
Cricket	dBE	30	4
Cricket Chance It	dBE	30	4
Cricket You Pick It	dBE	30	4
Cricket Cut Throat	dBE	30	4
Cricket Masters	dBE	20	3
Cricket Chance It/Cut Throat	dBE	30	4
Cricket Chance It/Masters	dBE	20	3
Cricket You Pick It/ Cut Throat	dBE	30	4
Cricket You Pick It/Masters	dBE	20	3
Split Score™	dBE	*9	2
Hi Score	BE	10	1
Shanghai	BE	7	1
Rapid Fire	BE	*7	1
Stop Watch	BE	25	1
Ernie Cost	—	—	1

* = These round limit settings cannot be changed.

P02 - SEL LAn: MESSAGE LANGUAGE PROGRAMMING.

Note: Your game has an English language factory setting. If you wish to retain the English version, omit the instructions below. If you would like to use a German, French, Italian, or Spanish version, follow the steps below.

- Select **SEL LAn** by scrolling through programming options using the red GAMES button or the blue OPTIONS I button. Press gray OPTIONS II button to enter.
- Press the red GAMES button or the blue OPTIONS I button to scroll through language options. When desired language is displayed, press the gray OPTIONS II button to confirm change, and exit Language Programming mode.

- **To return to One Step Factory Default Settings, select desired language. Press and hold BULLSEYE SELECT button. Press OPTIONS II button.**
- **Factory defaults are reset and game exits language programming mode.**

- To exit message language programming mode without making changes, press red PLAYER CHANGE button.

P03 - SEL Cn: CREDIT PER COIN/COUNTER ADVANCES PROGRAMMING MODE.

- Select **SEL Cn** by scrolling through programming options using red GAMES button or blue OPTIONS I button. Press gray OPTIONS II button to enter.
- Display will read DRP Cn. Drop a coin to see current values. Player 2 display will show the number of credits per coin (Cr). Player 4 display will show coin channel number (CHn).
- To change the number of credits per coin, press a number from 1 to 9 on the target or Bullseye for zero (0). The new credits per coin value will appear in Temporary Score display. Press gray OPTIONS II button to save.
- To program counter advances, press BULLSEYE SELECT button.
- Player 2 display will show number of counter advances per coin (CA), and Player 4 display will show coin channel number (CHn).
- To change the number of counter advances per coin, press a number from 1 to 9 on the target or Bullseye for zero (0). Press gray OPTIONS II button to save.
- To exit credit per coin/counter advances programming mode, press red PLAYER CHANGE button.

P04 - SEL SEC: SECURITY CODE PROGRAMMING.

- Select **SEL SEC** by scrolling through programming options using the red GAMES button or the blue OPTIONS I button. Press gray OPTIONS II button to enter.
 - Press and **hold BULLSEYE SELECT** button.
 - **While holding BULLSEYE SELECT button**, enter current security code using target segments. If the correct current security code has been entered, upper display will read ENT. Release the BULLSEYE SELECT button.
 - Enter new security code using target segments. As segments are pressed, new code will appear in Player scores on upper display.
- NOTE: New security code must consist of four numbers.**
- The default factory setting for the security code is four (4) Bullseyes. If you have set your own security code and wish to reprogram, press the Bullseye segment four (4) times.
 - Press gray OPTIONS II button to save new security code, and exit from security code programming mode.
 - To exit security code programming mode without making any changes, press red PLAYER CHANGE button.

P05 - SEL FEA: FEATURES PROGRAMMING.

- Select **SEL FEA** by scrolling through the programming options using the red GAMES button or blue OPTIONS I button. Press gray OPTIONS II button to enter.
- Each feature is set by using the red GAMES button or blue OPTIONS I button to scroll through to the desired feature (F01 - F16).
- Use the gray OPTIONS II button to toggle the feature setting on or off. Player 2 display indicates the

PROGRAMMING MODE

numeric setting, either 1 or 0.

- Press the red PLAYER CHANGE button to exit the features programming.

DESCRIPTION OF PROGRAMMABLE FEATURES

FEA.	Name	On Game Display	Setting (Numeric)	Description of Feature
F01	One Dart Out	Odo	* ON (1) OFF (0)	Display the segments to hit in order to win in one (1) dart. Does not calculate what is needed to go out with one (1) dart.
F02	Attract Mode Sounds	aTTRaC	* ON (1) OFF (0)	Tones are enabled during attract mode. Tones are disabled during attract mode.
F03	Dart Alarm	ALArm	* ON (1) OFF (0)	Alarm sounds & overhead lamp turns off, if game is used before money is deposited. No alarm.
F04	Power Fail Recovery	PoFAIL	* ON (1) OFF (0)	Game will resume after an interruption in power. Game is lost after a power interruption.
F05	Automatic Player Change	IR SEn	* ON (1) OFF (0)	Infra-red player change sensor enabled. Infra-red player change sensor disabled.
F06	'01 Freeze Rule	FroSEn	* LOSE (1) BUST (0)	A frozen player reaching "0" during team play will lose the game. A frozen player reaching "0" during team play will "bust" and the game will continue.
F07	Delay Time (IR Sensor)	dELAY	SLOW (1) * FAST (0)	Time between players set at three (3) seconds. Time between players set at two (2) seconds.
F08	Skip Frozen Player	SCIP	ON (1) * OFF (0)	In team Cricket, a frozen player is automatically skipped. In team Cricket, a frozen player is not skipped.
F09	Single Bullseye Start/Finish for Double In or Double Out	SingLE	YES (1) * NO (0)	May start or finish Double In or Double Out games on a single (50 point only) Bullseye. Cannot start or finish Double In or Double Out games on a single (50 point only) Bullseye.

* Indicates factory setting.

DESCRIPTION OF PROGRAMMABLE FEATURES (Continued):

FEA.	Name	On Game Display	Setting (Numeric)	Description of Feature
F10	Starting a Game using the Player Change Button	PCstART	YES (1) * NO (0)	The Player Change button allows starting position to be changed. The Player Change button can only be used to change the number of players.
F11	Free Play	FrEE	ON (1) * OFF (0)	All games are free. Signified by “FP” in Round Limit display. Normal mode.
F12	Wipe Out™ ('01 Games)	wIPE	103 (1) * ALL (0)	Adds 103 points to a “wiped out” player’s score. Sends the “wiped out” player back to the starting score (301, 501, 701, 901).
F13	Fast Player Change	FAStPC	ON (1) * OFF (0)	Set to immediately change to the next player. If not activated, uses time delay setting from F07, either 2 or 3 seconds.
F14	Player Setup Mode	PSEtUP	* MAN. (1) AUTO (0)	Player distributes credits to specific number of players using red PLAYER CHANGE button. Game distributes credits to maximum possible players.
F15	Stopwatch Game Timer Start	StStArt	GAME (1) * DART (0)	Game timer initiates stopwatch clock. Stopwatch clock initiates with first darts thrown.
F16	NDA Handicap method	HAndI	* PPd (0) SPot (1)	Uses NDA spot points (calculated from Points per Dart). Uses NDA spot darts.
F17	Back up feature	bAC UP	* OFF (0) ON (1)	Back up feature is disabled Back up feature is enabled

* Indicates factory setting.

P06 - SEL rtC: DATE AND TIME PROGRAMMING.

- Select **SEL rtC** by scrolling through programming options using the red GAMES button or the blue OPTIONS I button. Press gray OPTIONS II button to enter.
- Use the red GAMES button or blue OPTIONS I button to cycle through: R01 - year (Yr), R02 - month (nnO), R03 - date (dat), R04 - day of the week (day), R05 - hours (Hr), and R06 - minutes (mi). (**Note:** “Day of the Week”, Monday = 1.)
- Use the target segments to enter a new value (as shown in the Temporary Score).
- Press OPTIONS II button to save the new value. The cricket digits will automatically update with the new value.
- Use the red PLAYER CHANGE button to exit date/time programming mode.

P07 - SEL dor: DORMANT TIME-OUT PROGRAMMING.

- Dormant time out refers to the amount of time that a game in progress can be idle (no darts thrown) before the dart game will reset itself so that a new game may be started. This feature can be set from 15 to 90 minutes in 15 minute intervals. The default Dormant Time-out is 30 minutes.
- Select **SEL dor** by scrolling through programming using the red GAMES button and the blue OPTIONS I button until P07 shows in the Temporary Score.
- Press the gray OPTIONS II button to enter.
- The current time value will be shown in the player 2 score. Use the red GAMES and the blue OPTIONS I buttons to scroll through the values - (0 - 15 - 30 - 45 - 60 - 75 - 90). The new value will be shown in Temporary Score. A setting of "0" will disable the dormant time-out.
- Press the gray OPTIONS II button to save the new value.
- Press the red PLAYER CHANGE BUTTON to exit.

P08 - SEL mC: MACHINE CODE.

The Machine Code is an 8-digit number that is unique to each game. The game is shipped with an 8-digit machine code of all zeroes. This number can be programmed to any number desired, and will appear on any printout from the Data Print.

- Select **SEL mC** by scrolling through programming using the red GAMES button and the blue OPTIONS I button until P08 shows in the Temporary Score.
- Press the gray OPTIONS II button to enter this mode.
- Use targets 1-9 and Bullseye (0) to enter the machine code numbers. Numbers will appear in the Cricket display digits.
- Press the gray OPTIONS II button to save the new value.
- Press the red PLAYER CHANGE button to exit this mode.

P09 - SEL dPR: DATA PRINT TRANSFER.

This mode allows you to save or restore game settings to and from a Data Print 3000.

P10 - SEL rPd: TIME HANDICAP PROGRAMMING.

The timer is used for the “Time Handicap” feature. The value entered will represent the time required, in seconds, to “tick” down all 21 LEDs. The default time is 5.0 seconds.

- Select **SEL rPd** by scrolling through programming using the red GAMES button and the blue OPTIONS I button until P10 shows in the Temporary Score.
- Press the gray OPTIONS II button to enter.
- The current time value will be shown in the Player 2 score. Use the red GAMES and the blue OPTIONS I buttons to scroll through the values - (2.0 - 9.0). The new value will be shown in the Temporary Score.
- Press the gray OPTIONS II button to save the new value.
- Press the red PLAYER CHANGE button to exit.

P11 - SEL StP: STOP WATCH™ TIMER PROGRAMMING.

The time period for the timer used in the Stop Watch™ game can be adjusted to run faster or slower. This will determine the duration of the game. The default time period is 1.0 seconds. Additionally, the maximum number of ticks per round can be adjusted. The default maximum is 5 ticks per round.

- Select **SEL StP** by scrolling through programming using the red GAMES button and the blue OPTIONS I button until P11 shows in the Temporary Score.
- Press the gray OPTIONS II button to enter. “**PEr**” is now displayed.
- The current time period (in seconds) will be shown in the Player 2 score. Use the red GAMES and the blue OPTIONS I button to scroll through the values - (.8 - 2.5). The new value will be shown in the Temporary Score. Press the gray OPTIONS II button to enter the new value.
- To change the value of the maximum number of “ticks” per round, press the Bullseye Select button to toggle to “**tPr**”. The current maximum number of ticks allowed per round is shown in the Player 2 Score. Use the red GAMES and the blue OPTIONS I button to scroll through the values (2-9). The new value will be shown in the Temporary Score. Press the gray OPTIONS II button to enter the new value.
- Press the red PLAYER CHANGE button to exit.

P12 - SEL Hnd: NDA Handicap Settings.

When ‘spot points’ style NDA handicapping is selected (see Programmable Feature F16), operator may adjust the minimum starting score (‘01 games) and the maximum number of awarded marks (Cricket games). Furthermore in ‘01 games the percentage of handicap allowed may be selected. See below for details;

- Select **SEL Hnd** by scrolling through programming using the red GAMES button and the blue OPTIONS I button until P12 shows in the Temporary Score.
- Press the gray OPTIONS II button to enter. “**StS 301**” is now displayed. The current minimum starting score for 301 games is displayed in the player 2 display.
- NDA 301 games have a minimum starting score setting of between 121 and 201 (in increments of 10 and a default of 121). Use the red GAMES and the blue OPTIONS I button to scroll through the values. The new value will be shown in Temporary Score. Press the gray OPTIONS II button to enter the new value.
- Press the Bullseye select button to enter 501 game adjustment. “**StS 501**” is now displayed. The current minimum starting score for 501 games is displayed in the player 2 display.
- NDA 501 games have a minimum starting score setting of between 181 and 401 (in increments of 10 and a default of 201). Use the red GAMES and the blue OPTIONS I button to scroll through the values. The new value will be shown in Temporary Score. Press the gray OPTIONS II button to enter the new value.
- Press the Bullseye select button to enter percentage adjustment. “**PEr**” is now displayed. The current percentage of the maximum PPD entry used to calculate the handicaps for ‘01 games is displayed in the player 2 display.
- The percentage of the Points per Dart average used to calculate the starting scores for NDA handicapped games is between 50% and 100% (in increments of 5% and a default of 100%). Use the red GAMES and the blue OPTIONS I button to scroll through the values. The new value will be shown in Temporary Score. Press the gray OPTIONS II button to enter the new value.

PROGRAMMING MODE

- Press the Bullseye select button to enter the maximum starting marks awarded for Cricket games. “**Crt**” is now displayed. The current maximum starting score for Cricket games is displayed in the player 2 display.
- NDA Cricket games have a maximum starting score setting of between 7 and 14 marks (in increments of 1 and a default of 14). Use the red GAMES and the blue OPTIONS I button to scroll through the values. The new value will be shown in Temporary Score. Press the gray OPTIONS II button to enter the new value.

STATISTICS MODE

To Enter Statistics Mode

- Press Test Switch (S1) on Controller.
- Scroll through programming options using red GAMES Button or blue OPTIONS I Button until **STA** appears in Temporary Score display.
- Press gray OPTIONS II button to enter Statistics Mode.
- If using a security code (different from factory presetting), the game will prompt you for your code.
NOTE: Failure to enter your unique security code will result in game reset.
- Display will read **SEL Cn**, and new menu will be in effect. Use the red GAMES button or the blue OPTIONS I button to scroll through statistics options. Press gray OPTIONS II button to enter.
 - S01:** **SEL Cn** (COIN STATISTICS) This mode allows you to view number of coins deposited per channel, and total number of coins deposited for all channels.
 - S02:** **SEL gA** (GAMES STATISTICS) This mode allows you to view game statistics.

S01 - SEL Cn: To View Coin Statistics

- Scroll through using the red GAMES button and the blue OPTIONS I button until **S01** is shown in the Temporary Score.
- Press the gray OPTIONS II button to enter.
- Upper display will appear as follows:

CHn 1.XX XXX
 2.XX XXX

X = number of coins per channel, with 65535 being the maximum.

- Use red GAMES button to cycle through all programmed channels. Channel numbers will appear in upper display.
- To see the total (tOt) count of coins for ALL channels, press blue OPTIONS I button.
- To zero coin totals, press Test Switch (S1) on controller. Upper display will return to **SEL Cn**.
- Press red PLAYER CHANGE button to exit.
- OR
- To exit without clearing coin totals, press the red PLAYER CHANGE button to exit.

S02 - SEL gA: To View Games Statistics

- Scroll through using the red GAMES button and the blue OPTIONS I button until **S02** is shown in the Temporary Score.
- Press the gray OPTIONS II button to enter Game Statistics Mode.
- Press red GAMES button until desired game is highlighted on GAMES Panel. Press the blue OPTIONS I button to select options for the chosen game. Statistics for GAMES with OPTIONS will appear in upper display.
 Example: If 701 is selected, display will appear as follows:

PXX XXX
 CXX XXX
 P = number of players.
 C = number of credits used, with 65535 as maximum.

- Continue selecting GAMES and OPTIONS with the red GAMES button and the blue OPTIONS I button. The display will update automatically to show the number of players and credits for that game.
- To zero game totals, press Test Switch (S1) on controller. Upper display will return to **SEL gA**.
- Press red PLAYER CHANGE button to exit.
- OR
- To exit without clearing game totals, press the red PLAYER CHANGE button to exit.

SELF-CHECKING SOFTWARE

The following self-checking tests are done automatically by the software in the game.

Power Up Switch Test Software

Used to check the five (5) front panel switches. If a switch is stuck closed, the three (3) character identification will be displayed and a tone will sound (see the next page for abbreviations).

Target Watch Dog Software

Used to check target switches. If a segment is stuck closed, a "beep" will be heard while "StUC dArt" flashes in the display. The location of the stuck segment is shown in the temporary score display. Front panel lamps will also flash.

Power Up Ram Test Software

Used to test RAM for valid data on power-up. If a problem with the data is found, the RAM will be reprogrammed with factory settings. In the attract mode, decimal points in the displays will indicate a reprogrammed RAM. If this condition occurs replacing the RAM / battery is recommended.

Power Up Real Time Clock Test Software

Used to test the real time clock circuitry. If a problem is found, the game will display "RTC" in the Temporary Score Display and the game will sound a failure tone. Otherwise, a single 'beep' is sounded.

Power Up Coin Switch Test Software

Used to check the coin switch inputs. If any of these inputs are stuck closed, its location will be displayed and a tone will sound. "CH1" indicates coin channel 1 is stuck, "CH2" indicates coin channel 2.

Power Up Software Version Display Software

Used to display the version of software currently in use.

DIAGNOSTIC ROUTINES

Each game has built-in diagnostic software. The scope of this software is to test the electronic hardware, to verify that the game is functioning properly, and to indicate problem areas.

There are two push button switches located on the upper right corner of the Controller board inside the electronics compartment (Refer to Figure 15 on page 57.):

S2 - top switch is a RESET button. Pressing this switch resets the game.

S1 - bottom switch is the TEST button. Pressing this switch puts the game in self-diagnostic mode.

TO ENTER TEST MODE

Press the test switch (S1) on the controller card. Press the red GAMES or the blue OPTIONS I button until 'tSt' is displayed in Temporary Score. Press the gray OPTIONS II button to enter test mode.

11 TESTS PERFORMED WHILE IN TEST MODE (tSt)

Test One - t01 Push Button Switch Test

Once in Test Mode, press the test switch once more to enter the T01 mode.

Temporary Score will display **t01** until the first switch is pressed. This test checks the operation of all the front panel switches. As each switch is pressed, Temporary Score will display three (3) characters to identify it.

BULLSEYE SELECT	bUL
GAMES	gSL
OPTIONS I	oP1
OPTIONS II	oP2
PLAYER CHANGE	PLC

Press the test switch (S1) again to exit this test.

Test Two - t02 7-Segment Display and LED Test

To activate, press the red GAMES button or the blue OPTIONS I button until **t02** appears in Temporary Score display. Press the gray Options II button. Each display will cycle through digits 0-9, and the decimal point. After all segments and LEDs have been checked, the game will automatically return to the TEST mode (tSt). To exit this test, press the red PLAYER CHANGE button.

Test Three - t03 Audio Test

To activate, press the red GAMES button or the blue OPTIONS I button until **t03** appears in Temporary Score display. Press the gray OPTIONS II button. A tone will be generated to check and adjust the volume of the audio circuit. The volume adjustment is located on the Controller board in the bottom left corner at location R30. To exit this test, press the red PLAYER CHANGE button.

Test Four - t04 Target Segment Test

To activate, press the red GAMES button or the blue OPTIONS I button until **t04** appears in Temporary Score Display. Press the gray OPTIONS II button. This test checks that each segment of the target will register darts thrown at it. As each segment is depressed, its value or designation will be shown in the Temporary Score Display. A double or triple will be shown as a “d” or “t” preceding the number of the segment [Example: A double 20 is d20]. To exit this test, press the red PLAYER CHANGE button.

Test Five - t05 Lamp Test

To activate, press the red GAMES button or the blue OPTIONS I button until **t05** appears in Temporary Score Display. Press the gray OPTIONS II button. First, the overhead light will extinguish, then each lamp will light individually in the following order: Bullseye Select, Don't Throw, Throw, Player Change and then the overhead light will go back on. After each lamp has been checked, this test will automatically return to the TEST mode with 't05' displayed in the Temporary Score Display.

Test Six - t06 Cricket Display Test

To activate, press the red GAMES button or the blue OPTIONS I button until **t06** appears in Temporary Score Display. Press the gray OPTIONS II button to begin test. The LEDs will cycle through Cricket LEDs, Bullseye LEDs, Player Indicator lamps, and Dart LEDs. After each LED has been checked, this test will automatically return to the TEST mode with 't06' displayed in the Temporary Score Display.

Test Seven - t07 Burn-In Test

To activate, press the red GAMES button or the blue OPTIONS I button until **t07** appears in Temporary Score Display. Press the gray OPTIONS II button. This test is a production burn-in test used to cycle through all the LEDs and their associated circuitry. Press the red PLAYER CHANGE button. All player indicator lamps continue to cycle. All other LEDs should be off. Press the red PLAYER CHANGE button again. All Cricket LEDs, Game Select LEDs, and seven segment displays will light. Press the red PLAYER CHANGE button once again to return automatically to the TEST mode with 't07' displayed in the Temporary Score Display.

NOTE: For Tests Eight and Nine to function properly, be sure that Feature 05 is set to ON and that the jumper at JP1 is in the correct position to enable the circuitry. We suggest that Test Three and Test Five be completed before attempting these tests.

Your game is shipped to you with the Tru-Score II (Dart Sensor) and Infrared Sensor engaged.

The Dart Sensor selection jumper is located on the Controller board at location JP1. (Refer to Figure 15 on page 56.) To disengage it, move the jumper clip to the right covering the middle and right pins.

NOTE: Always disengage the Dart Sensor feature at the jumper clip and the Infrared Sensor in programming.

DO NOT disengage by unplugging the cords or ribbon cable - unplugging **WILL NOT** fully disengage the circuits.

Test Eight - t08 IR Sensor Test

To activate, press the red GAMES button or the blue OPTIONS I button until **t08** appears in Temporary Score Display. Press the gray OPTIONS II button to begin test. **t08** appears in the Temporary Score Display and the THROW DARTS lamp will light signifying the test is active. The programming feature F05 must be engaged for this test to function (see Programming section).

To test the IR Sensor, stand in front of the game at arm's length. The THROW DARTS lamp should be lit. Move your hand slowly upward towards the target. As your hand enters the IR sensor detection area (a few inches below the lower part of the dart catching ring), the THROW DARTS lamp should go out and the DON'T THROW lamp should light. Remove your hand and ensure that the DON'T THROW lamp goes out and the THROW DARTS lamp lights. If adjustments are necessary, refer to the Infrared Sensor Adjustment Procedure.

To exit this test, press the red PLAYER CHANGE button.

Test Nine - t09 Dart Sensor Test

To activate, press the red GAMES button or the blue OPTIONS I button until **t09** appears in Temporary Score Display. Press the gray OPTIONS II button to begin test. **t09** will appear in the Temporary Score display and the THROW DARTS lamp will flash signifying the test is active. To test the dart sensor and its circuitry, tap the target door and listen for an audible "Beep" from the speaker. The DON'T THROW lamp will flash as the "Beep" is sounded.

If no "Beep" is heard, an increase to the sensitivity may alleviate the problem. The sensitivity adjustment is located on the Controller Card at R6. (See Dart Sensor Adjustment Procedure.)

To exit this test, press the red PLAYER CHANGE button.

Test Ten - t10 Game Select Panel Test

To activate, press the red GAMES button or the blue OPTIONS I button until **t10** appears in Temporary Score Display. Press gray Options II button to begin test.

The LEDs on the Game Select Board will flash on in sequence, by columns from left to right.

To exit this test, press the red PLAYER CHANGE button.

Test Eleven - t11 Serial Loopback Test (factory use only)

To activate, press the red GAMES button or the blue OPTIONS I button until **t11** appears in Temporary Score Display. Press gray Options II button to begin test. Cricket digits will display "Loop Fail". Player 2 will show the channel (0-3) that is being tested. Channel numbers correspond to the following connectors:

Chn0 = J17 (Data Print)

Chn1 = J18 (RS-232-1)

Chn2 = J21 (RS-232-2)

Chn3 = J23 (Card Reader)

To test the loop, put a jumper across the TXD and RXD pins of the connector to be tested. The Cricket displays will now show "Loop good."

To exit this test, press the red PLAYER CHANGE button.

TO RETURN TO ATTRACT MODE

Press the "RESET" button on the Controller Board or the red PLAYER CHANGE button twice to return to the ATTRACT mode.

GENERAL MAINTENANCE

INFRARED SENSOR ADJUSTMENT PROCEDURE

- 1) Put the game in the TEST mode by pressing Test Switch on the inside of Controller Card.
- 2) Select Test 8 (**t08**) using GAMES or OPTIONS I buttons. Press OPTIONS II button to enter.
- 3) Access the potentiometer through the hole on the right side of the IR sensor housing with a small blade screwdriver. The sensitivity is decreased by turning the screwdriver in a clockwise direction and is increased by turning in a counter-clockwise direction.

NOTE

Stand to the side of the game when performing the following steps. Be sure there are no darts in the target or dart catching ring and the target door is in place.

- 4) Turn the potentiometer back and forth to find the sensitivity threshold of the sensor. This is the point at which the "THROW DARTS" lamp goes out and the "DON'T THROW DARTS" lamp lights.
- 5) Slowly turn the potentiometer until the "THROW DARTS" lamp comes on.
- 6) Verify the adjustment:
Stand in front of the game at arm's length from the target. Starting at the Game Select buttons, move your hand upward towards the IR Sensor. The threshold point should be at a level where the hand passes between the dart catching ring and the bottom of the door. If your hand reaches the point where the number "3" appears on the target and the "DON'T THROW" lamp has not lit, then the sensitivity is set too low.
- 7) Repeat steps 3 through 5 until IR is properly adjusted.

DART SENSOR ADJUSTMENT PROCEDURE

NOTE: Set up and test should be done on site.

- Put the game in the TEST mode by pressing TEST Switch on Controller Board.
- Select Test 9 (t09) using red GAMES or blue OPTIONS I buttons. Press OPTIONS II button to enter.
- Open lower electronics door to expose the Controller Card.
- Start with the lowest sensitivity setting on the potentiometer, R6 on the Controller Card,

by turning fully clockwise to 7 o'clock. (Refer to Figure 15 on page 56.)

- Turn the potentiometer, R6, counterclockwise to 6 o'clock setting.
- Tap darts on target door or throw bar darts at all areas on the door. (Bar darts have the lightest weight.) Dart detection is indicated by a short tone and a flashing DON'T THROW lamp.

NOTE: Upper right corner of target door is least sensitive. Test here first, and then test rest of target door.

- Repeat this procedure, using small increments to turn up the potentiometer R6, counter-clockwise until all darts thrown with reasonable force at the door are detected by the Missed Dart Sensor.
- This unit may subtract darts due to electrostatic discharge.

CAUTION: DO NOT OVERSENSITIZE!

An oversensitive Dart Sensor may result in darts being taken away accidentally. In addition, loud music may cause an oversensitive Dart Sensor to deduct darts. However, when properly adjusted, the Dart Sensor can operate correctly up to 110 decibel sound level.

NOTE: If you choose to disengage the Dart Sensor, LEAVE THE DART SENSOR PLUGGED IN and disengage the circuit by moving JP1 to the LOCKOUT position (the clip will cover the middle and right pins of JP1). If this method of disengaging this feature is not followed, the potential for game performance problems exists.

MATRIX SWITCH

This troubleshooting section provides quick solutions to game problems and guides the more inexperienced technician in pinpointing possible trouble areas. This section is not intended to be a service guide.

Definition and Purpose

The Matrix Switch consists of two square pieces of Mylar separated by a specific pattern of lines (called traces) and dots (called pads) of conductive, silver ink. This pattern registers and transmits dart hits in any segment of the target to the microprocessor on the Controller Board. Each segment is assigned to one of four quadrants. Both, segments and quadrants, are associated with connector pins on the Matrix Switch. These connector pins terminate at the traces on the Matrix Switch.

Location

The Matrix Switch is located in the upper cabinet and inside the target door. To access the Matrix Switch flip down the latches on the Spider/DCR Assembly and lift the rubber sheet.

Analysis

- First, identify the segments which are not registering dart hits.
- Locate the target segments on the table shown below.
- The far left column is one pin, and the bottom row is the other pin.
- To ensure all non-scoring segments have been identified, test remaining three segments in the same column and several segments in the same row.

Reading the Table for Multiple Non-Scoring Segments

- Identify all non-scoring segments.
- If all affected segments are found in a single row, then the affected pin is found in the far left column of that row. (One quadrant is not scoring properly.)
- If all affected segments are found in a single column, then the affected pin is found in the bottom row of that column.

Matrix Switch Pin Assignments

Pin No. ↓	Target Segments															
	↔↔↔↔↔↔↔↔↔↔↔↔↔↔↔↔↔↔↔↔															
1	d12	12	d9	9	d14	14	d11	11	d8	8	----	t12	t9	t14	t11	t8
2	d16	16	d7	7	d19	19	d3	3	d17	17	dbe	t16	t7	t19	t3	t17
19	d2	2	d15	15	d10	10	d6	6	d13	13	be	t2	t15	t10	t6	t13
20	d4	4	d18	18	d1	1	d20	20	d5	5	----	t4	t18	t1	t20	t5
Pin No. ⇒	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

<p><u>KEY</u></p> <p>be = Bullseye dbe = Double Bullseye d = double t = triple</p>
--

SLEEP SWITCH

WARNING: The “Sleep Switch” located in the rear of the cabinet DOES NOT remove power from the game. To ensure safety while servicing this game, remove power cord from wall outlet to remove the presence of 120V AC from this game prior to servicing.

Note that a pilot light will be lit on both the Power Supply and the Controller Board whenever the game is plugged in. The game is designed to remain powered at all times. The “Sleep Switch,” when in the ‘OPEN’ position, will cause both display boards to blank and the overhead light to turn off.

REMOVE DEBRIS AND TIPS FROM THE TARGET

- **Turn the game off.** (See Sleep Switch Warning above.)
- Open the lock on the Cabinet Top Dart Door.
- Remove the door.
- Flip down the right and left latches in the upper corners of the Spider DCR Board.
- Carefully lower the Spider DCR Board and remove tips by pushing out through the front of the target. Clear any remaining debris inside the target assembly (especially lower areas).

CONTROLLER CARD - AA3 QUICK REFERENCE

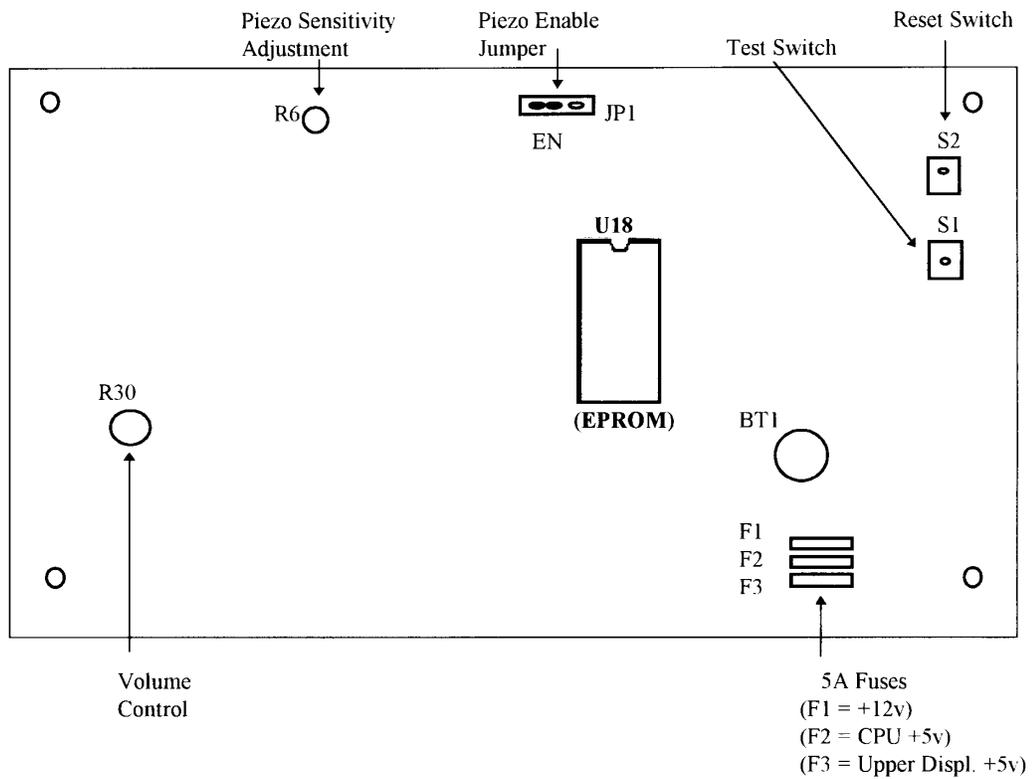
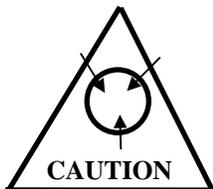


Figure 15. Controller Card AA3

INSTALLATION OF EPROM

The EPROM is an integrated circuit which contains revisions to your programmed software. Updating the software in your Cougar 8 game consists of installing a new EPROM in the Controller card. Follow the instructions listed below, in addition to those included with your updated software.



CAUTION: The EPROM is static sensitive. To avoid electric shock and damage to this device, exercise care in handling. The preferred technique is to use an anti-static wrist strap connected to ground. If this is not available, be certain to touch a grounded metal surface before handling the EPROM and avoid touching its legs.

Sensitive Electronic Devices

- Turn the power off by removing line cord from wall outlet.
- Access the Controller Card and using a suitable tool (e.g., IC extractor, small flat-bladed screwdriver, etc.) carefully remove the EPROM from IC location “U18”.
- Note location of Pin 1 indicated on both the Controller Card and on the EPROM. (Identified by a dot or notch on the EPROM nearest to Pin 1, the notch shown on the Controller Card, and the socket at location “U18”.)
- Fully insert and seat EPROM in socket ensuring that none of the pins are bent during installation.
- Verify the installation by powering up the game. Note “Pop Up” software version shown on Upper Display.
- Installation is complete.
- Return the obsolete EPROM (in its original packaging) to Shelti, Inc. for exchange.

REPLACING FUSES

Type of Fuse

Autofuse
231-0006

Location

Controller Board F1,F2,
and F3

Replace With

Autofuse (Tan)
32v 5Amp

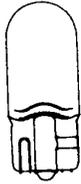
REPLACING LAMPS IN THE UPPER DISPLAY

To replace lamps in the Upper Display

- Unplug from the wall outlet.
- Tools needed:
 - #1 Phillips screwdriver
 - #2 Phillips screwdriver
- Remove the four corner screws holding the Marquee and Display sub-assembly.
- Slowly pull the Marquee and Display sub-assembly and turn it over.
- Disconnect the in-line power connector and the ribbon cable.
- Remove the eight screws holding the Marquee.
- Replace lamps as necessary.
- Reassemble Display in the opposite order.

REPLACEMENT LAMP INFORMATION

LAMPS: Replace only with the same type and rating.



WEDGE BASE
14V, 80mA, Type 658

Valley Part #223-1006
(Game Switches)



WEDGE BASE
14V 270mA, T31/4
Type 194
Valley Part #223-0014
(Throw/Don't Throw)



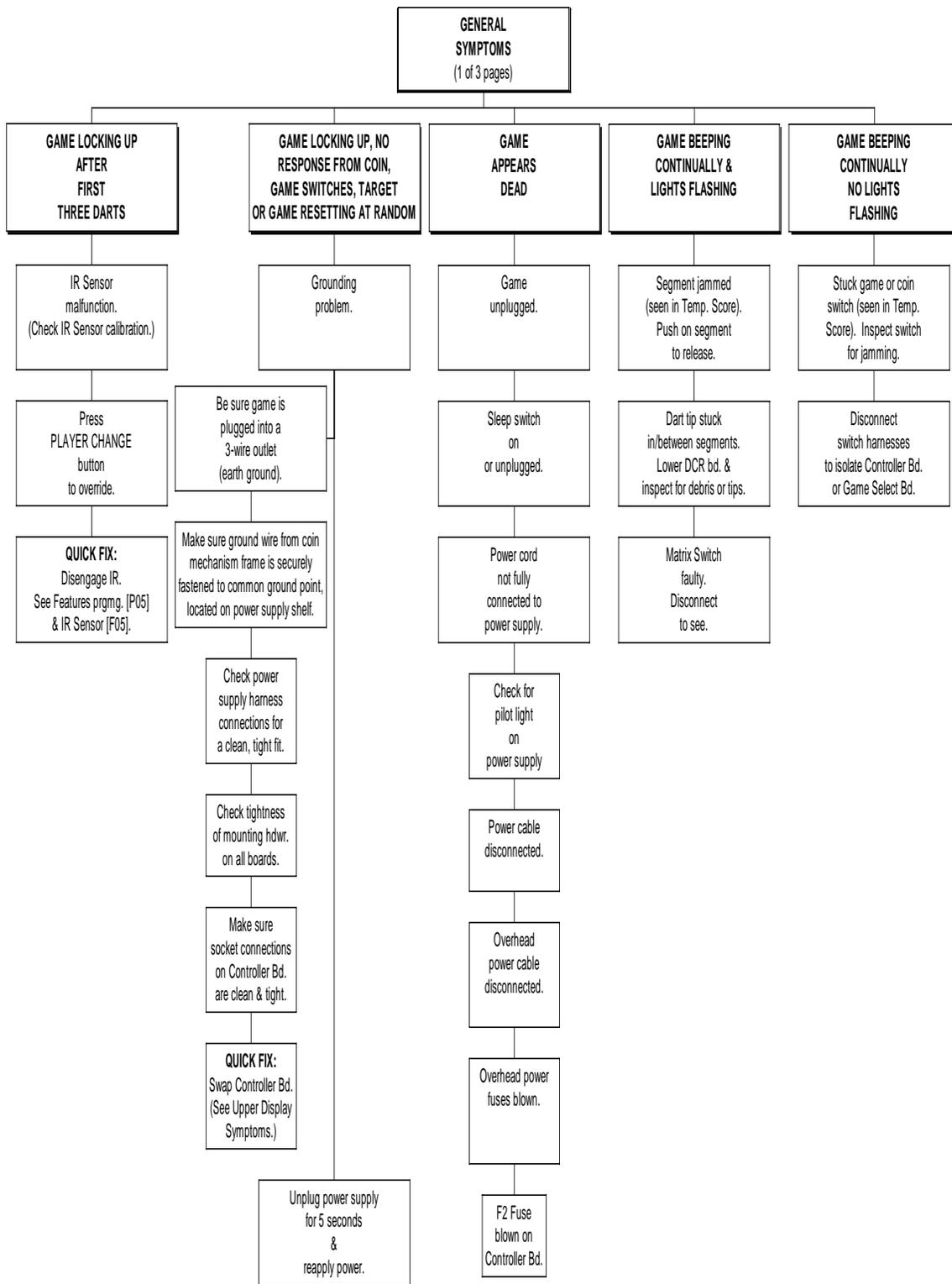
BI-PIN
14V 80mA, Type 5810
Valley part #223-0006
(Upper Display)



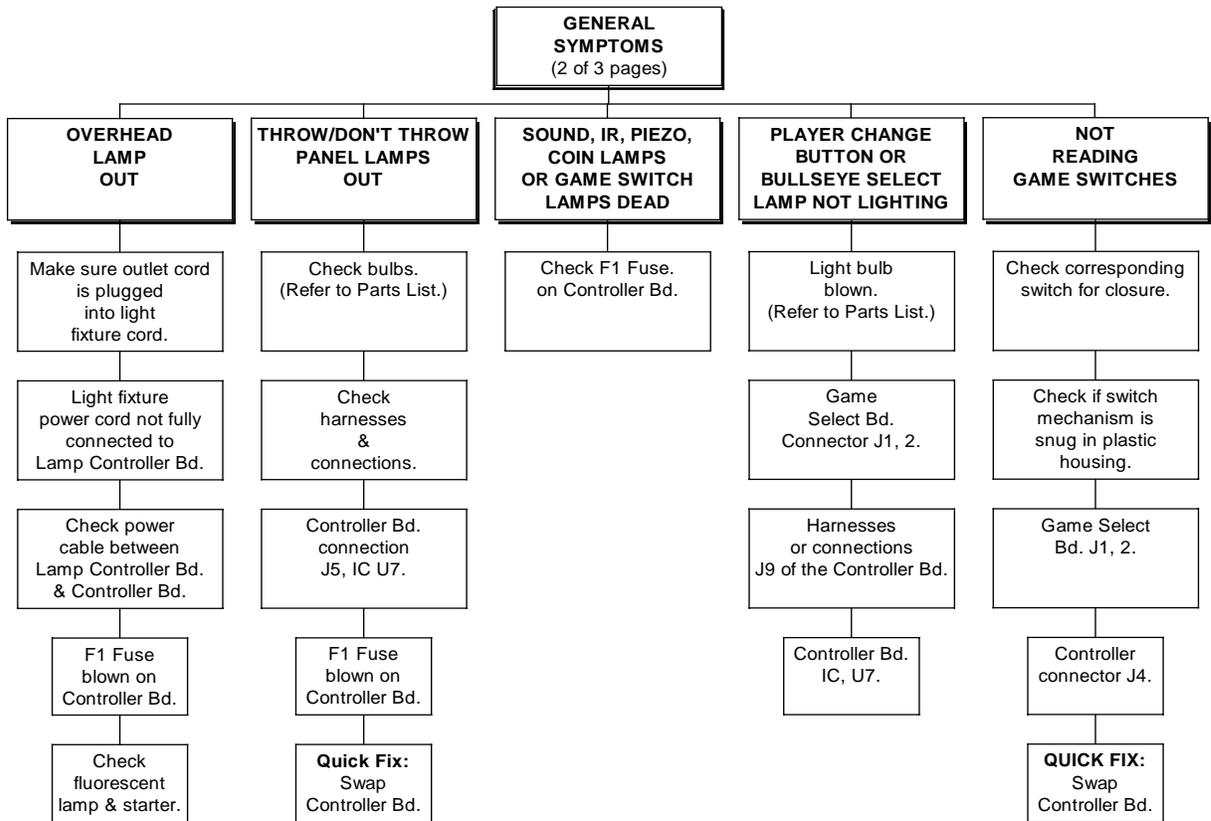
WEDGE BASE
28V, 60mA Type 656
Valley Part #223-1008
(Coin Door)

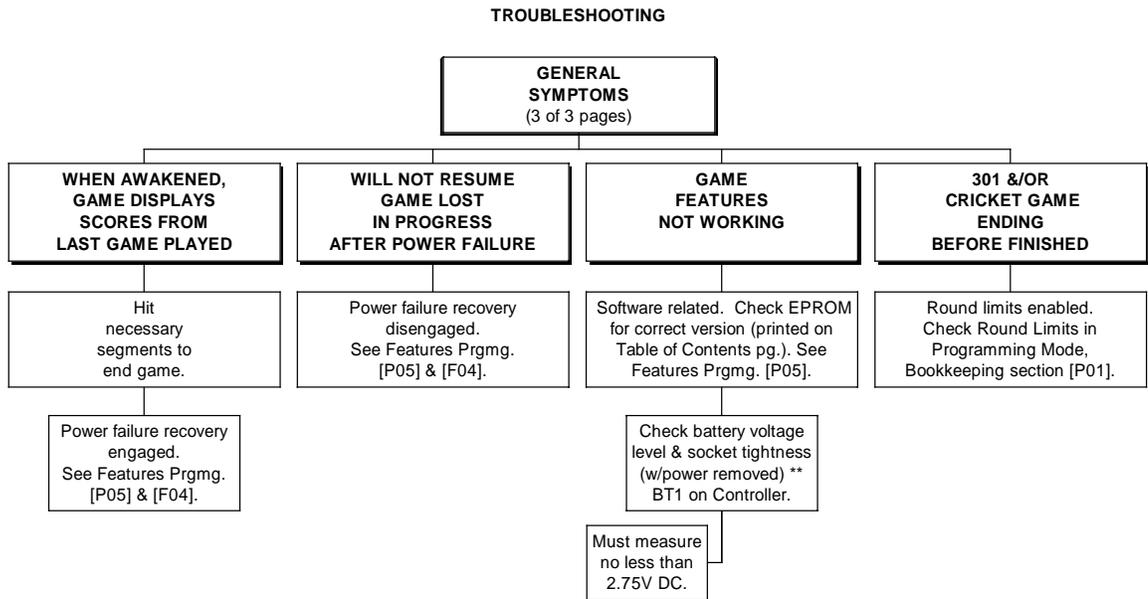
TROUBLESHOOTING GUIDE

TROUBLESHOOTING



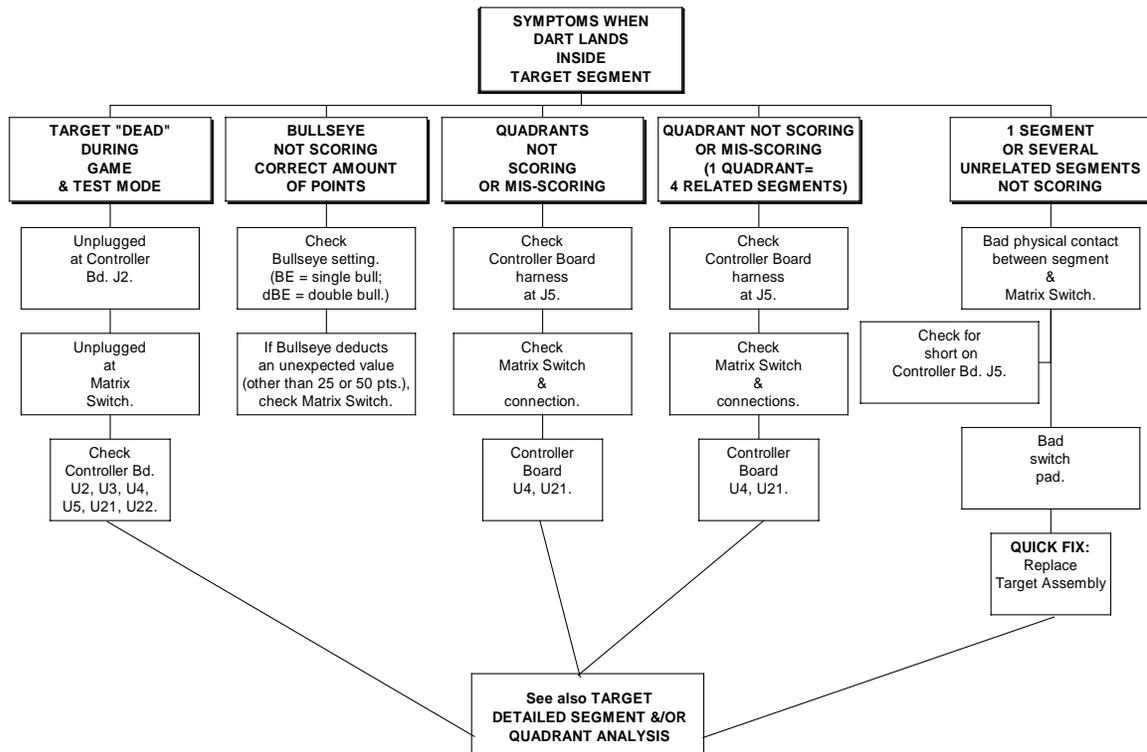
TROUBLESHOOTING



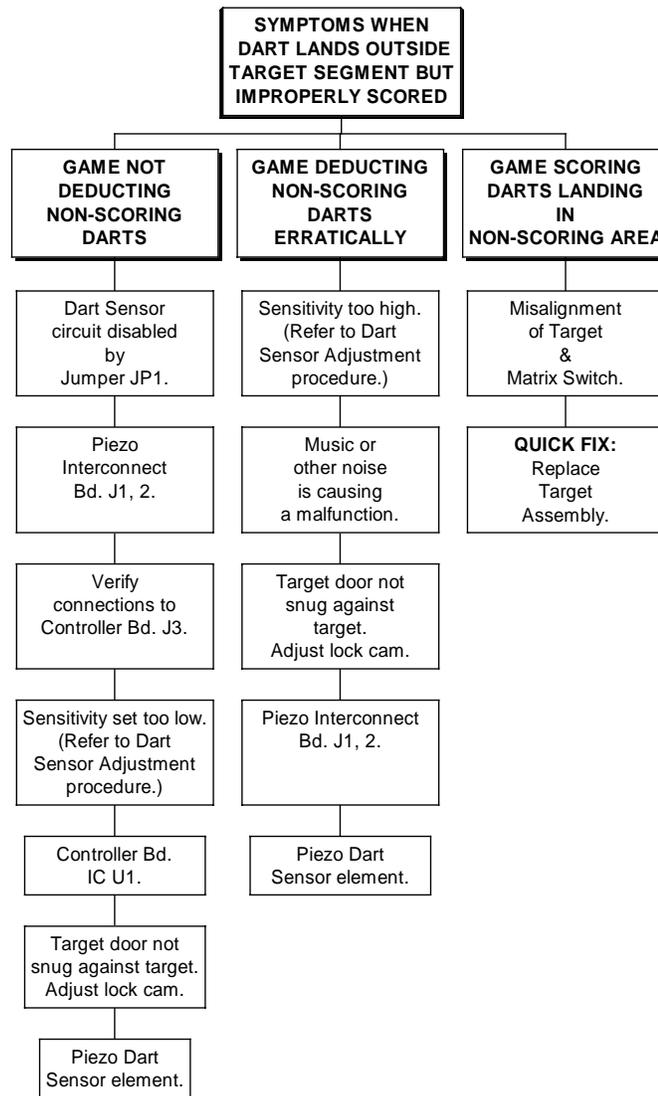


**** WARNING: Removing battery backup voltage while main power is off will clear all Cash/Play programming settings, Features, and Bookkeeping data.**

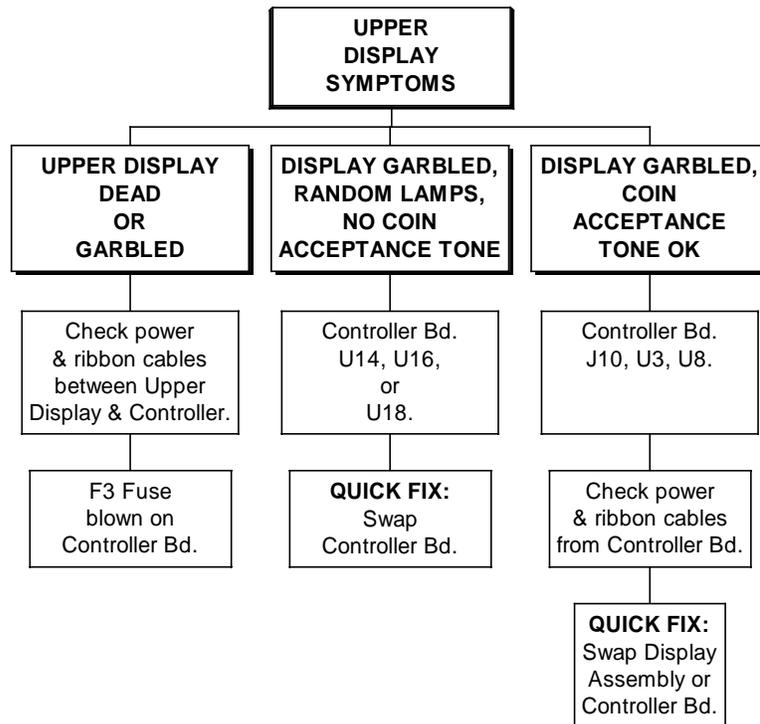
TROUBLESHOOTING

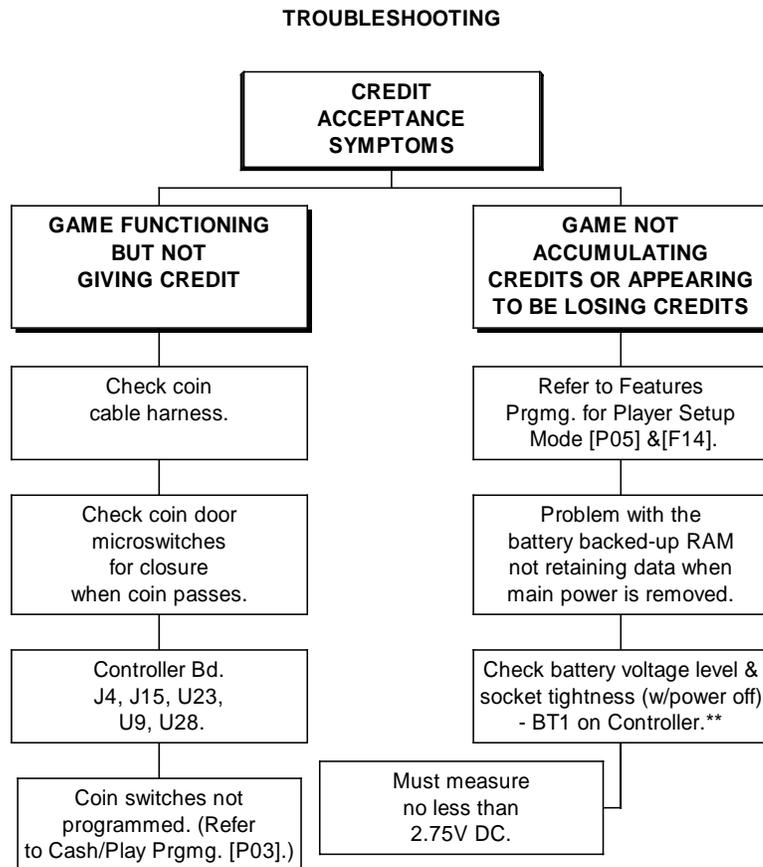


TROUBLESHOOTING



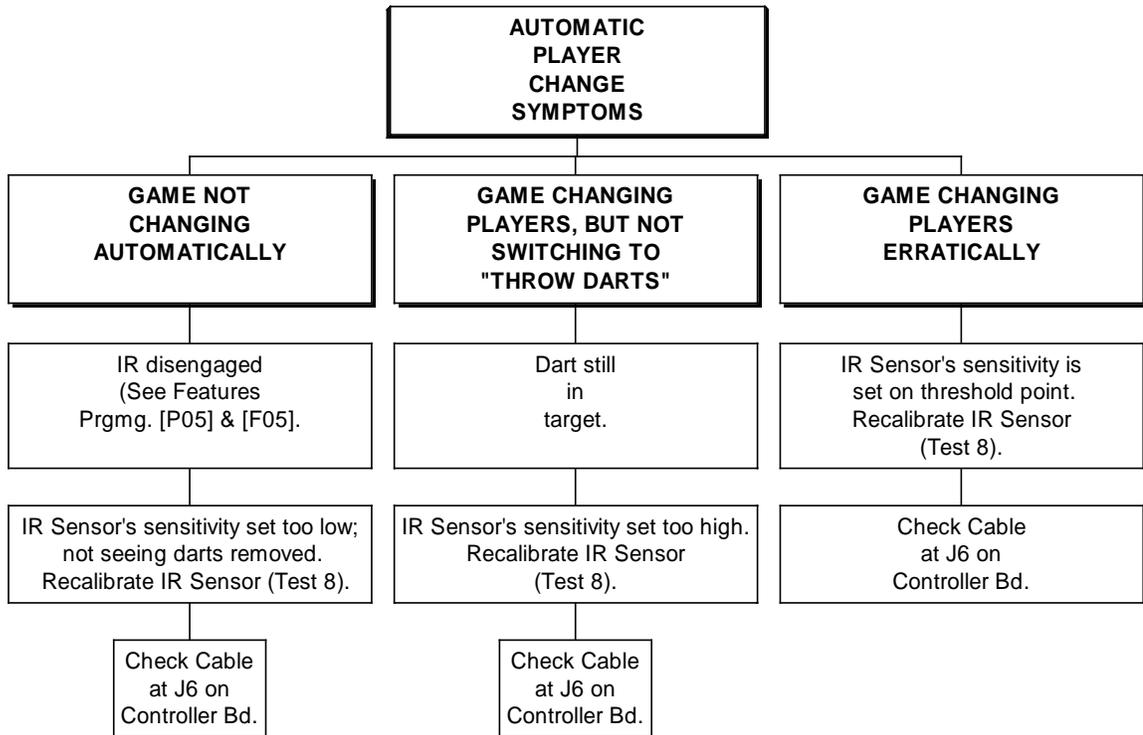
TROUBLESHOOTING

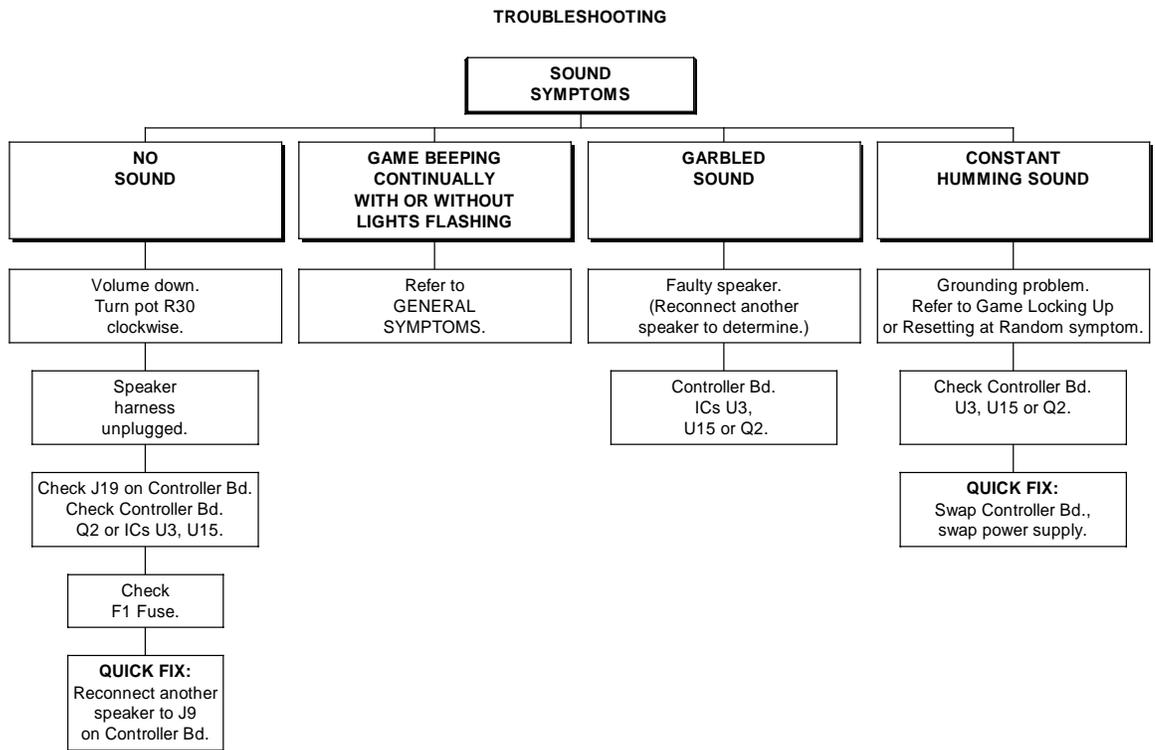


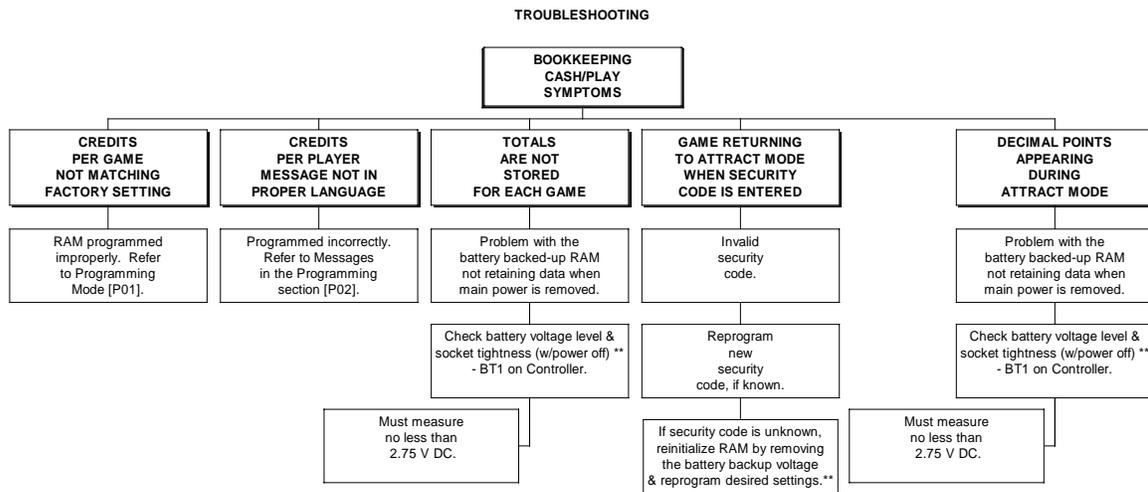


**** WARNING: Removing battery backup voltage while main power is off will clear all Cash/Play programming settings, Features, and Bookkeeping data.**

TROUBLESHOOTING







**** WARNING: Removing battery backup voltage while main power is off will clear all Cash/Play settings, Features and Bookkeeping data.**

PARTS' LIST

SCHEMATICS

DIAGRAMS

NOTE: ALL PART LIST DRAWINGS ARE SHOWN WITHOUT HARNESESSES. See page 79 for harness connection routings and part numbers.

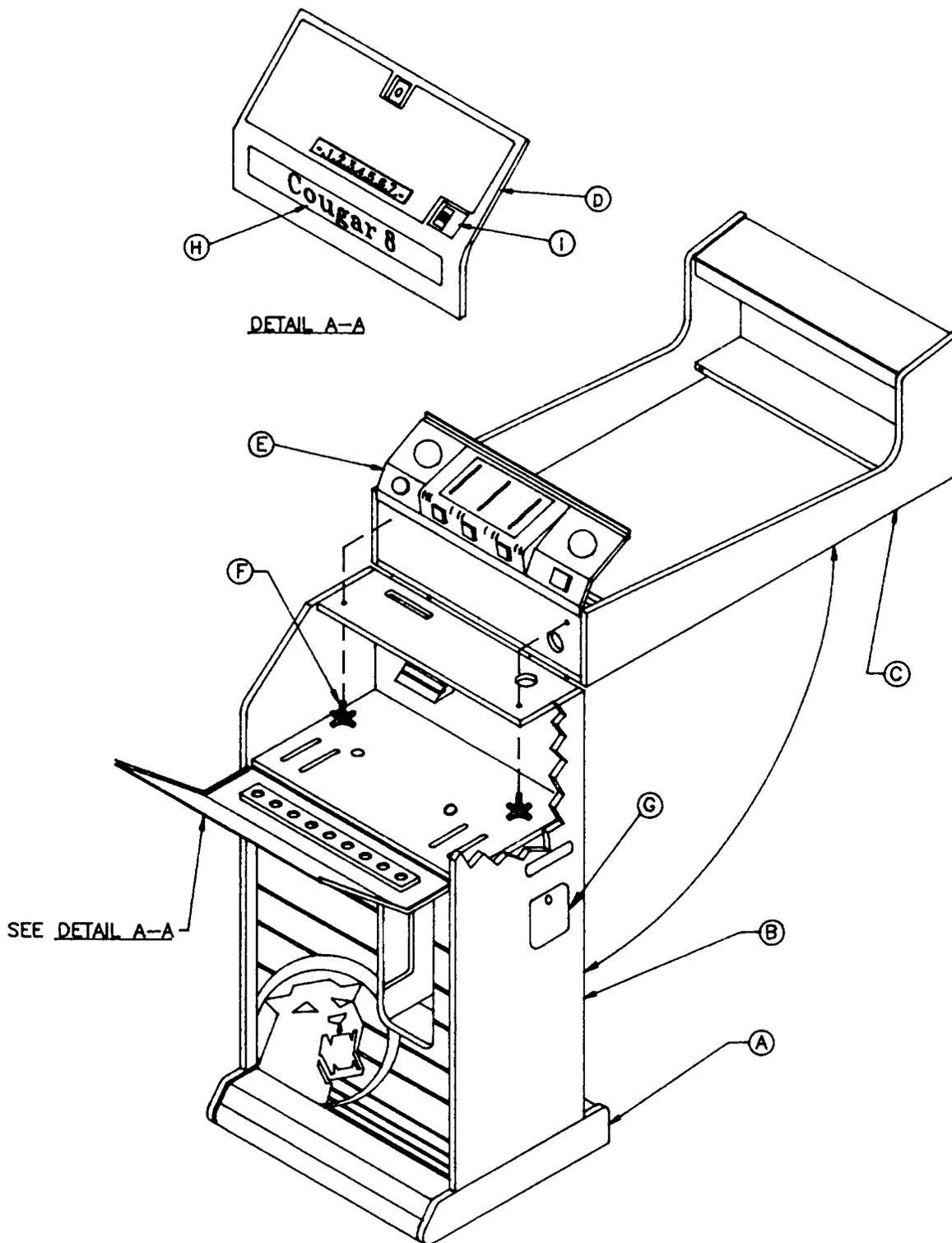


Figure 16. Spare parts list

PARTS' LIST / SCHEMATICS / DIAGRAMS***COUGAR 8 SPARE PARTS LIST***

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
A.	AEL-2-00-00	Base, Universal
B.	AGE-0-00-00	Pedestal Assembly, C8.
C.	AGD-0-00-00	Cabinet Top Assembly, C8.
D.	AGH-0-09-01	Pedestal Electronics Cover, C8.
	205-0923	Instructional Panel, English.
	212-0023	Lock.
	212-0024	3-Point Lock Bar w/Cam.
E.	AGF-0-01-01	Cabinet Top Upper Cover, C8.
F.	201-0112	Thumb-screw.
G.	AGM-0-01-01	Pedestal Storage Door, C8.
PANELS:		
H.	205-1582	Cougar 8 Panel
I.	205-1581	Score Panel

NOTE: Target Door shown on page 77 of Parts List.

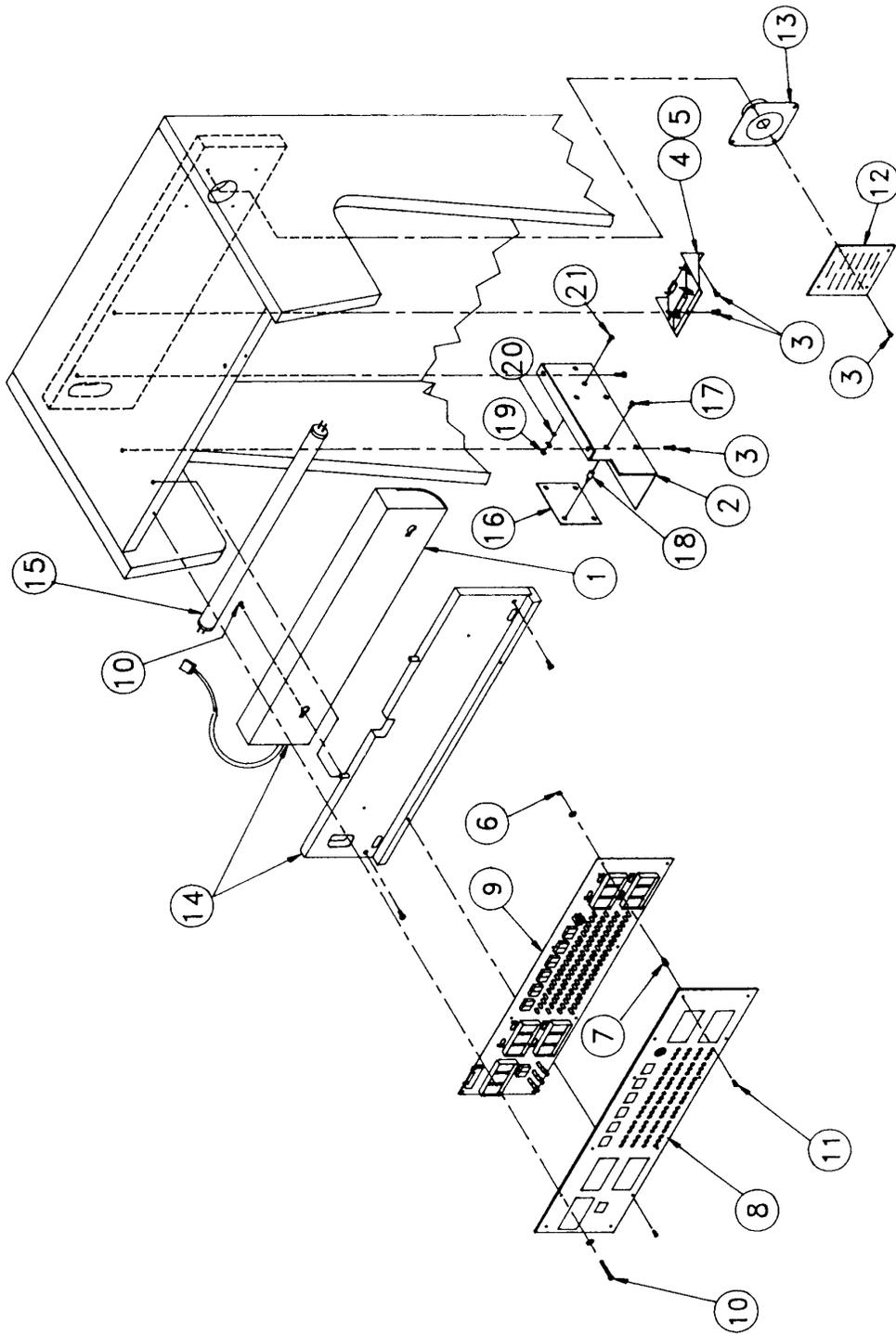


Figure 17. Lighthouse assembly

COUGAR 8 LIGHTHOOD ASSEMBLY PARTS LIST

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	J66	Light Fixture, Fluorescent Assy., C8.
2	J67	Wire Cover Assy., With Lamp Controller PCB Assy.
3	201-0213	#8 X 1/2" Particle Bd. Screw, Black
4	R11	IR Sensor
5	A98	IR Sensor PCB Assy.
6	203-1001	4-40 Kep Nut
7	206-0253	4-40 X 3/8" Standoff
8	205-0805	4 Player Marquee Panel
9	A93	Upper Display Marquee PCB Assy.
10	201-0056	8-32 X 5/8" Machine Screw, Black
11	201-0114	4-40 X 3/8" Machine Screw, Black
12	206-0593	Speaker Grill
13	GE1	Speaker Assy.
14	J65	Fluorescent/Marquee Support Assy.
15	223-1009	Lamp, Fluorescent, 18", 15W
16	AA7	Lamp Controller PCB Assy.
17	201-0126	#6 X 5/16" Sheet Metal Screw, Type B, Black
18	205-0895	Circuit Bd. Support, 3/8", Flame Retard
19	203-1009	6-32 Kep Nut
20	243-0036	Twin Tab Quick Disconnect, 1/4"
21	201-0118	6-32x3/8" Machine Screw, Black

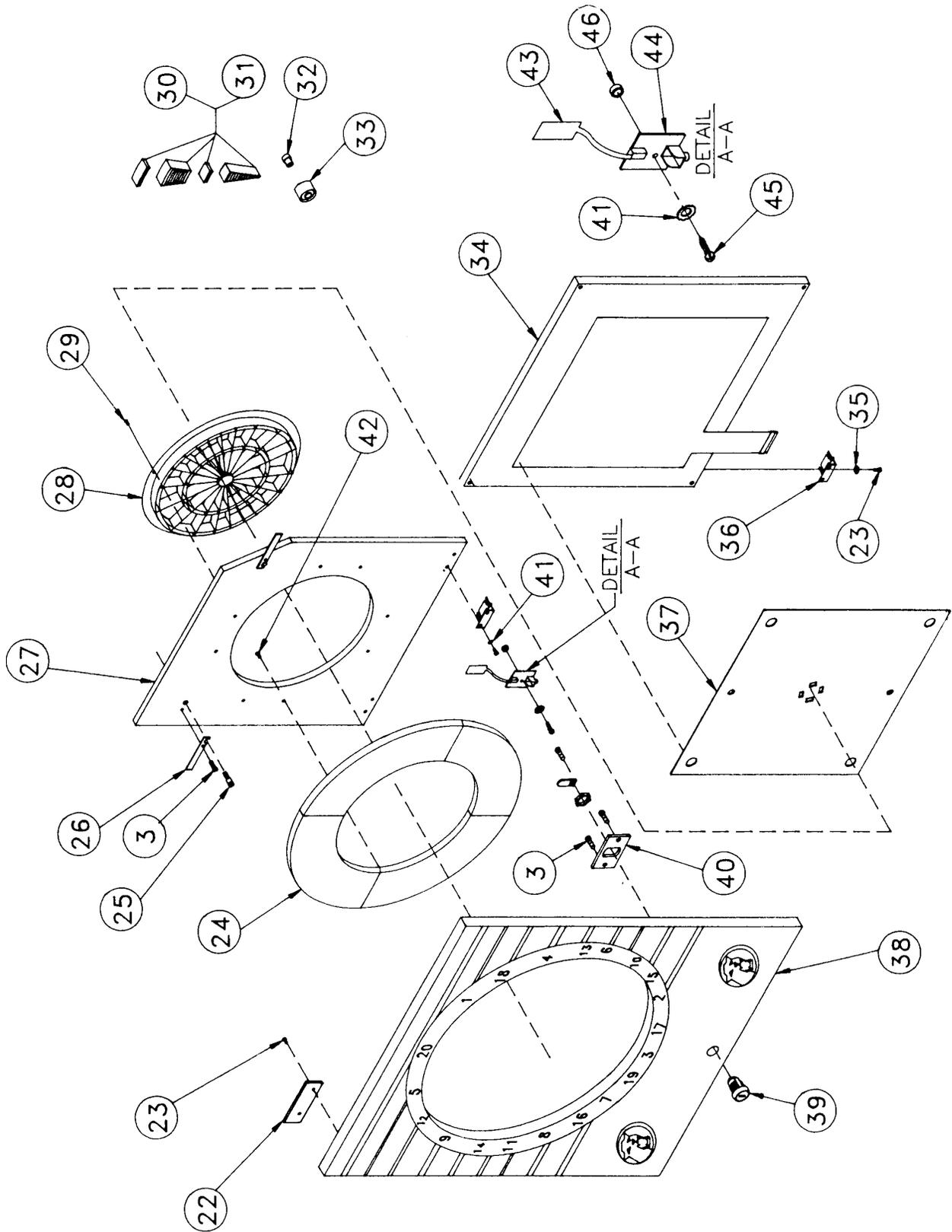


Figure 18. Target assembly

COUGAR 8 TARGET ASSEMBLY

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
22	206-0274	Dart Door Finger
23	201-1046	8-32 x 1/2 Machine Screw
24	205-1022	Dart Catching Ring, Amer. T-R (1 of 4)
25	201-0111	1/4-20, 1-9/32 Adj. Screw Coated Adhesive
26	206-0279	Latch, Matrix Switch
27	ADF-0-03-01	DCR Bd. Assy.
	Q51	Target Assy., T-R Amer. (Kit N73)
	Q17	Segment Set, 82 Pc. T-R Amer. Red & Blue
28	205-1222-8	Spider, Amer. T-R
29	201-1052	8-32 x 3/8 Machine Screw
30	Q28	Segment Set, 4 Pcs., T-R Amer., Red
31	Q29	Segment Set, 4 Pcs., T-R Amer., Blue
32	205-1221	Bullseye, Inner, T-R, Red
33	205-0340	Bullseye, Outer, T-R, Amer., Blue
34	Q52	Matrix Switch Assy., T-R Amer., (Kit N65)
35	204-1003	#10 Washer
36	206-0272	Hinge Target
37	207-0048	Rubber Sheet, T-R Amer.
38	F08	Dart Door Assy.
39	212-0031	Lock
40	206-0008	Lock Anchor Plate
41	204-0034	#8 Star Lock Washer
42	201-0100	8 X 7/8" Sheet Metal Screw
43	217-0273	Piezo Film
44	AA4	C8/HB8 Piezo Interface PCB Assy.
45	201-1066	#8 X 5/8" Sheet Metal Screw, Zinc
46	205-0868	1/8" Nylon Spacer

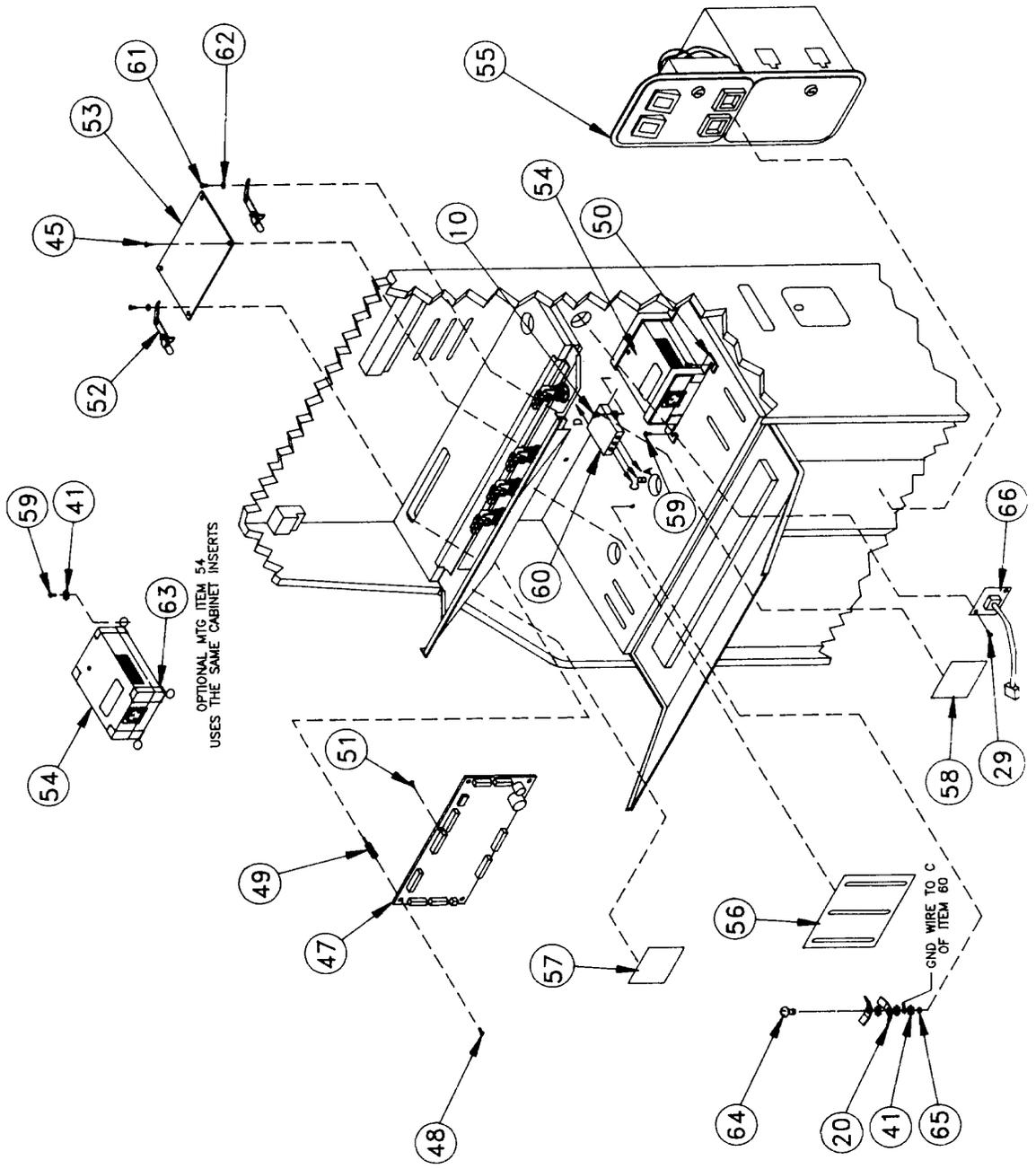


Figure 19. Lower cabinet assembly

COUGAR 8 LOWER CABINET ASSEMBLY

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
47	AA3	PCB Assy., Controller, Cougar 8
48	201-1004	8-32 x 1/4 Machine Screw
49	206-1092	8-32 x 3/8 Standoff
50	206-0655	Bracket Power Supply Sht. Metal, C8/HB8, Black
51	205-0419	3/8 Circuit Bd. Support
52	GD9 (NE1)	Throw/Don't Throw Harness & Bracket Assy.
53	AA5	PCB Assy., Game Select Display
54	217-0640	Power Supply
55	GD8	Coin Door Assy., C8, Dom 25¢
56	205-1583	Game Options Panel, C8
57	205-0855	No Throw Panel
58	205-0856	Throw Panel
59	201-1046	Screw, #8 x 1/2 Machine
60	242-0152	3-Way Cable/Power Supply/Lamp/AC Input
	A	Connect to Input Line Cord
	B	Connect to Power Supply Input
	C	Connect to GND Screw
	D	To Lamp Controller in Lighthood
61	201-0261	10 x 3/8" Plastic Screw
62	204-0092	#10 Ext. Tooth Lockwasher
63	206-0652	Bracket Power Supply, Wire Form (Optional)
64	201-0066	Screw, 8-32 x 1 Machine
65	204-1014	#8 Flat Washer
66	GG4	Sleep Switch Assy.

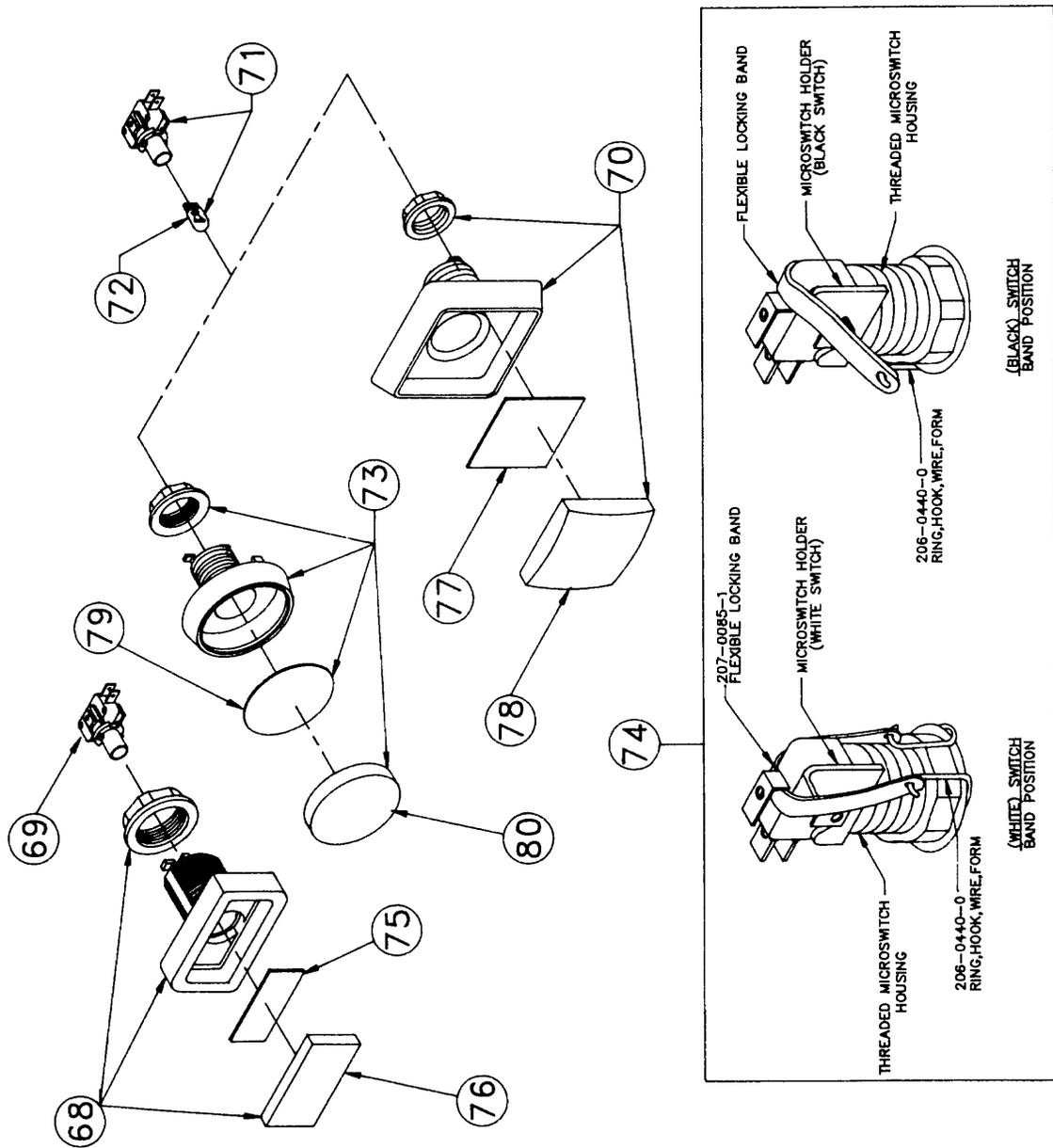


Figure 20. Game select button/switch assembly

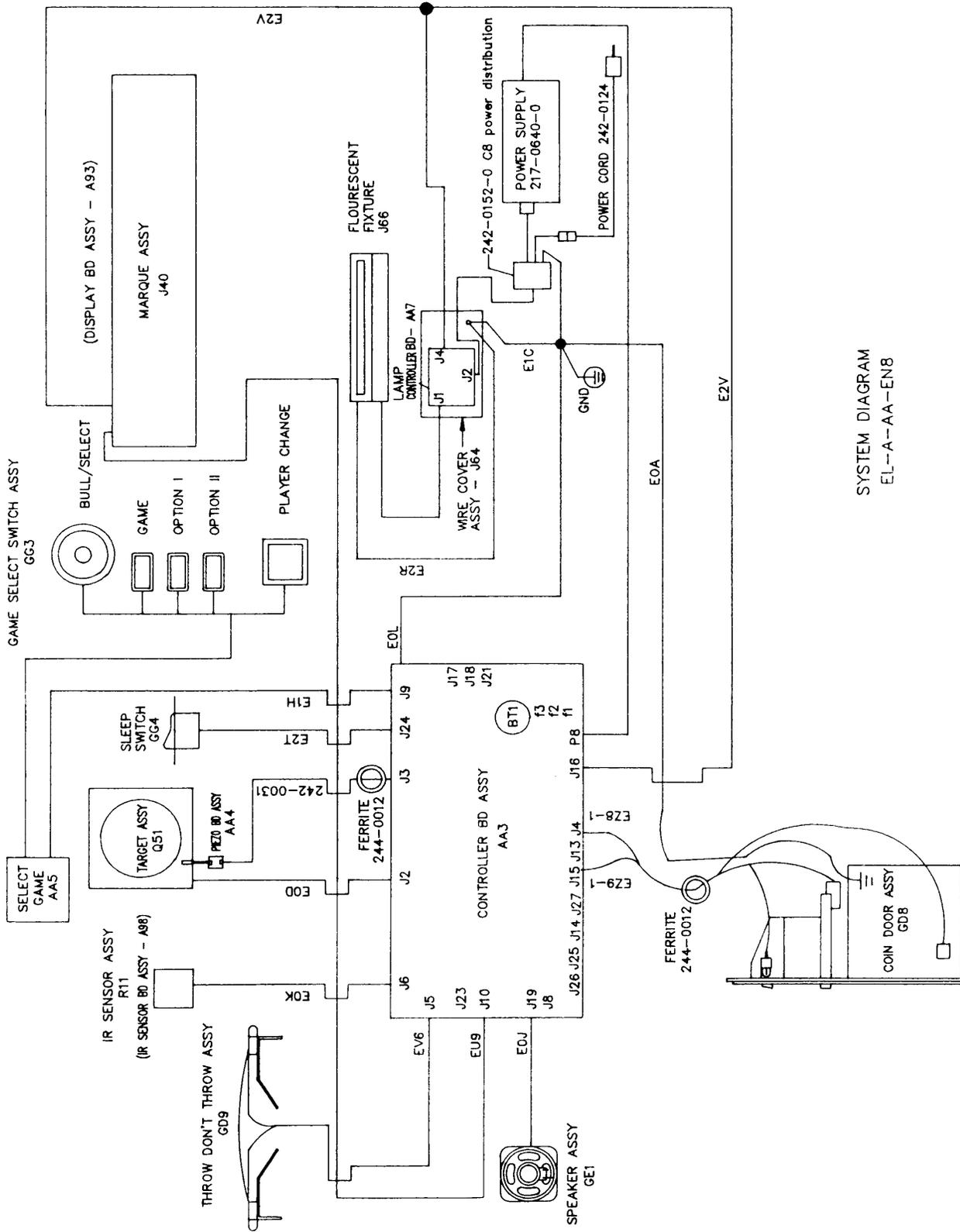
COUGAR 8 GAME SELECT BUTTON/SWITCH ASSEMBLY

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
68	205-0893	Button Housing, Rect., w/Lens Cover
69	227-0046	Microswitch w/o Lamp
70	205-0863	Button Housing, 2" Sq. w/Lens Cover
71	227-0016	Microswitch w/#658 Lamp
72	223-1006	Lamp (GE658)
73	205-0929	Button Housing, 2" RND, w/Lens Cover
74	J35	Player Change Retainer Assy.
	207-0085	Die Cut Urethane Band
	206-0440	Wire, Form, Ring Hook
75	205-0889	Legend, Red, Pantone, 485C
	205-0890	Legend, Blue, Pantone, 285C
	205-0925	Legend, Gray, Pantone, 431C
76	205-0892	Lens Cover, Clear Plastic, Rect.
77	205-0296	Legend, Player Change
78	205-0833	Lens Cover, 2" Sq.
79	205-0927	Legend 2" RND, Bull/Select
80	205-0931	Lens Cover, 2" RND

COUGAR 8 CABLES AND HARNESSSES PARTS LIST

<u>PART NO.</u>	<u>DESCRIPTION</u>
E2T	Sleep Switch Harness
EOK	Cable, Ribbon IR
242-0031	Cable, Phono-Jack
EZ7-1	Harness, Coin Door, Cougar 8
*EZ8-1	Harness, Coin Meter, Cougar 8
*EZ9-1	Coin Mech/Door Lamp, Cougar 8
*EOA	Ground, Coin Door
E0J	Harness, Speaker
EU9	Cable, Ribbon, Upper Display
E2V	Harness, Power Upper Display
E1H	Harness, Game Select
E0D	Harness, Target
GG3	Harness, Game Switch Assembly
GD9 (NE1)	Bracket Assy., Throw/Don't Throw
EOL	Ground, Controller
J66	Fluorescent Light
E1C	Ground, Wire Cover
E2R	Ground, Wire Cover To Light Fixture
242-0152	Cable, Power Distribution 3-way

(*) Part of the EZ7-1 assembly.



SYSTEM DIAGRAM
EL-A-AA-ENB

List of Diagrams

<u>NAME</u>	<u>PART NUMBER</u>
Controller Board Schematic Diagram	AA3-0-00-00
Controller Board Component Layout	AA3-6-00-00
Upper Display Schematic Diagram	A93-1-00-00
Upper Display Component Layout	A93-1-00-00
Game Select Board Schematic Diagram	AA5-0-00-00
Game Select Board Component Layout	AA5-0
Infra-red Body Sensor Schematic Diagram	A98-2-00-00
Infra-red Body Sensor Component Layout	A98-2-00-00
Lamp Controller Schematic Diagram	AA6-0, AA7-0
Lamp Controller Component Layout	AA6, AA7
Piezo Sensor Interface Schematic Diagram	AA4-0-00-00
Piezo Sensor PCB Assembly Component Layout	AA4-0-00-00

List of Figures

FIGURE 1. GAME IN SHIPPED POSITION	9
FIGURE 2. COUGAR 8 FULL FRONT VIEW	11
FIGURE 3. LINE CORD ROUTING FIGURES.....	12
FIGURE 4. STABILITY ASSURANCE KIT	13
FIGURE 5. EYE BOLT AND CHAIN FASTENED TO GAME	14
FIGURE 6. FASTEN TO HOLLOW WALL, PLASTER, DRYWALL, ETC.	14
FIGURE 7. CLOSE-UP TOGGLE BOLT	14
FIGURE 8. FASTEN TO CONCRETE, BRICK, STONE WALL	15
FIGURE 9. CLOSE-UP HEX NUTS	15
FIGURE 10. WOOD STUD MOUNTING	15
FIGURE 11. FASTEN TO A CONCRETE AND WOOD FLOOR	16
FIGURE 12. GAME SELECT PANEL	19
FIGURE 13. MISSED DART SENSING AREAS.....	20
FIGURE 14. INFRARED DETECTION AREA	21
FIGURE 15. CONTROLLER CARD AA3	57
FIGURE 16. SPARE PARTS LIST	72
FIGURE 17. LIGHTHOOD ASSEMBLY	74
FIGURE 18. TARGET ASSEMBLY	76
FIGURE 19. LOWER CABINET ASSEMBLY	79
FIGURE 20. GAME SELECT BUTTON/SWITCH ASSEMBLY	81
FIGURE 21. SYSTEM DIAGRAM	84

Index

A

ADA Neutralizer29
 Adjustment Procedure
 Dart Sensor54
 Infrared Sensor54
 Attract Mode
 To return53
 Automatic Player Change
 Infrared Body Sensor21
 IR Sensor21

B

Battery
 Disposal ii

C

Controller Card - AA3
 Quick Reference57
 Copyright, manuali

D

Development, manuali
 Diagnostic49
 Diagnostic Routines
 Audio Test51
 Burn-In Test51
 Cricket Display Test51
 Dart Sensor Test52
 Game Select Panel Test52
 IR Sensor52
 Lamp Test51
 Push Button Switch Test50
 Segment Display and LED Test51
 Serial Loopback Test52
 Target Segment Test51
 Diagrams71
 Diddle time22
 Duplication ii

E

Entering Averages
 For 301 and Cricket28
 Entering NDA Averages
 MPR for Cricket28
 PPD for 30128
 EPROM
 Exchange of58
 Installation of58

Precautions 58

F

Feats Readout 30
 301/501/701/901 31
 Cricket 33
 Sample "Win" Feat 30

G

Game Features 17
 Game Instructions
 Auto Adjust 29
 General 22
 Honest Ernie 29
 How to play 23
 How to play 301 23
 How to play 301, 501, 701, 901 with Options I ... 24, 25
 How to play 301, 501, 701, 901 with Options II ... 26, 27
 How to play 501, 701, & 901 23
 How to play Cricket 23
 How to play Cricket with 2 player teams 28
 How to play Cricket with 4 player 2 position teams ... 27
 How to play Cricket with 4 player, 2 position teams ... 26
 How to play Cricket with Options I 25, 26
 How to play Cricket with Options II 27, 28
 How to play Teams with WIPE OUT™ 27
 How to play Hi Score 23
 How to play Rapid Fire™ 24
 How to play Shanghai 23
 How to play Stop Watch™ 24
 How to play with 2 player teams 27
 How to play with Options II 26, 29
 Time Handicap 29
 Game Select Panel 19
 Game Specifications 10
 Area requirements 10
 Dimensions 10
 Voltage 10
 Weight 10
 Games 18
 301, 501, 701, 901 18
 Cricket 18
 Hi Score 18
 Rapid Fire™ 18
 Shanghai 18
 Stop Watch™ 18
 General Maintenance 54
 Dart Sensor Adjustment Procedure 54

INDEX

EPROM Installation.....	58	Cables and Harnesses	82
IR Sensor Adjustment Procedure.....	54	Game Select Button/Switch Assembly.....	81
Matrix Switch.....	55	Lighthood Assembly	75
Removal of debris and tips.....	56	Lower Cabinet Assembly	79
Replacement Lamp Information	60	Target Assembly.....	77
Replacing fuses	58	Parts' List	71
Replacing Lamps in Upper Display	59	Spare Parts.....	73
Sleep Switch.....	56	Precaution	
H		Sleep Switch.....	56
Handicapping		Programming Mode.....	37
ADA Neutralizer.....	29	Data Print Transfer	37, 44
NDA.....	28	Description of Programmable Features Table	42
I		Dormant Time Out	37, 44
Infrared Body Sensor	20	Factory Settings Table.....	39
Installation	10	Features Programming.....	37, 41
Tools	13	Games.....	37
Installation Instructions		Machine Code.....	37, 44
Floor.....	16	Message Language	37, 41
General.....	13	P01.....	37, 38
Wall.....	14	P02.....	37, 41
IR Sensor.....	21	P03.....	37, 41
K		P04.....	37, 41
Kit		P05.....	37, 41
Stability Assurance	13	P06.....	37, 44
L		P07.....	37, 44
Limited Warranty	vii	P08.....	37, 44
List of Diagrams	84	P09.....	37, 44
List of Figures	85	P10.....	37, 45
M		P11.....	37, 45
Maintenance Mode.....	35	P12.....	37, 45
How to enter.....	35	Real Time Clock.....	37, 44
How to use buttons	35	Security.....	37, 41
Programming Mode	36	Stop Watch Sweep Setting	37, 45
Quick Reference Table	36	Time Handicap Timer Setting	45
Statistics Mode.....	36	Time Setting	45
Test Mode	36	To enter	37
Manual		To exit	37
Supplement	viii	R	
Manual part number.....	i	Routing	
Manual revision number	i	Power/line cord	12
Missed Dart Detector	20	S	
Model number.....	11	Safety	
N		Access.....	ii, viii
NDA Handicapping	28	Alterations	ii
Notice		Game location.....	ii
FCC compliance.....	viii	Modifications.....	viii
P		Power cord.....	ii
Parts List		Vent holes.....	ii
		While servicing	ii
		Schematics.....	71
		Self-Checking.....	49
		Serial number	vii
		Service	

Fax number..... vii
Phone number..... vii
Sleep Switch
 Safety..... ii, 56
Statistics47, 48

T

Troubleshooting Guide 61
Tru-Score® 20
Tru-Score® II 20