PIT BOSS SUPERSTAR 30
with Video Billboard

for CRT-250/256 board

Program No. 9233-XX

PM8924
OWNER'S MANUAL
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PAGE	REVISION DATE	PAGE	REVISION DATE
i	07/16/93	4-3	07/16/93
ii	07/16/93	4-4	07/16/93
iii	07/16/93	4-5	07/16/93
iv	07/16/93	4-6	07/16/93
iv	07/16/93	4-7	07/16/93
vi	07/16/93	4-8	07/16/93
1-1	07/16/93	5-1	07/16/93
1-2	07/16/93	6-1	07/16/93
1-3	07/16/93	6-2	07/16/93
1-4	07/16/93	7-1	07/16/93
1-5	07/16/93	8-1	07/16/93
1-6	07/16/93	8-2	07/16/93
1-7	07/16/93	8-3	07/16/93
1-8	07/16/93	A-1	07/16/93
1-9	07/16/93	A-2	07/16/93
2-1	07/16/93	A-3	07/16/93
2-2	07/16/93	A-4	07/16/93
3-1	07/16/93	A-5	07/16/93
3-2	07/16/93	A-6	07/16/93
4-1	07/16/93	A-7	07/16/93
4-2	07/16/93		

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Table of Contents

INTRODUCTION . . . . . **v**

PROPRIETARY v

DOCUMENT STATUS v

FCC WARNING v

MERIT VIDEO COUNTERTOP LIMITED WARRANTY vi

SECTION 1 - OVERVIEW **1-1**

1.1 Site Preparation 1-1

1.2 Qualified Servicing 1-1

1.3 Game Description 1-1

1.3.1 The 9" Countertop Cabinet 1-1

1.3.2 The 13" Countertop Cabinet 1-2

1.3.3 The 19" Upright Cabinet 1-2

SECTION 2 - SETUP AND INSTALLATION **2-1**

2.1 Unpacking and Initial Setup of 9" and 13" Cabinets 2-1

2.2 Unpacking and Initial Setup of 19" Upright Cabinet 2-1

2.3 Adjusting the Monitor Controls 2-2

2.4 Adjusting the Volume Control 2-2

2.5 Connecting the Video Billboard Keyboard (Optional) 2-2

Table of Contents (cont.)

SECTION 3 - GAME OPERATION 3-1

3.1 Idle Mode 3-1

3.2 Front Panel Controls 3-1

3.3 Selecting a Game 31

3.4 Entering Your Name in the Hall of Fame 3-2

3.5 Clearing Hall of Fame High Scores and Names 3-2

3.6 Bookkeeping 3-2

SECTION 4 - GAME DESCRIPTIONS AND RULES 4-1

4.1 Casino Games/Rules 4-1

4.1.1 Super Poker 4-1

4.1.2 Super '7' Stud 4-1

4.1.3 Bonus Blackjack 4-2

4.1.4 Off To The Races (Foto Finish) 4-2

4.1.5 Roll Them Bones (Dice Game) 4-3

4.2 Quiz Games/Rules 4-3

4.2.1 Super Trivia 4-3

4.2.2 Tic Tac Trivia 4-4

4.2.3 Super Phraze Craze 4-4

4.3 Action Games/Rules 4-5

4.3.1 Pit Pong 4-5

4.3.2 Wipeout 4-5

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Table of Contents (cont.)

SECTION 4 - GAME DESCRIPTIONS AND RULES (cont.) 4-1

4.3.3 Breakin' Bricks 4-6

4.3.4 Invasion Force 4-7

4.3.5 Reacto 4-7

4.3.6 Four Score 4-8

SECTION 5 - MAINTENANCE 5-1

5.1 Warranty and Service 5-1

5.2 Cleaning the Cabinet 5-1

SECTION 6 - DIP SWITCH SETTINGS 6-1

6.1 Standard Program Settings 6-1

6.2 Custom Program Versions 6-2

SECTION 7 - TROUBLESHOOTING 7-1

7.1 Power Up Error Codes 7-1

7.2 Coin Jam 7-1

7.3 Clearing Credits or Game Video Lockup 7-1

8.0 PARTS LIST 8-1

APPENDIX A - VIDEO BILLBOARD KEYBOARD USER'S GUIDE A-1

Table of Contents (cont.)

LIST OF FIGURES AND TABLES

Figure 1.1 - The Control Panel Section - 9" Cabinet 1-3

Figure 1.2 - The CPU Section - 9" Cabinet 1-4

Figure 1.3 - The Coin Box Section - 9" Cabinet 1-5

Figure 1.4 - The Control Panel Section - 13" Cabinet 1-6

Figure 1.5 - The CPU,Coin Box,and Power Supply Sections - 13" Cabinet 1-7

Figure 1.6 - The Control Panel & Coin Box Sections - 19" Upright Cabinet 1-8

Figure 1.7 - The Monitor Section - 19" Upright Cabinet 1-9

Figure A.1 - Location of Video Billboard & Memory Module - 9"Cabinet A-5

Figure A.2 - Location of Video Billboard & Memory Module - 13" Cabinet A-6

Figure A.3 - Location of Video Billboard & Memory Module - 19" Cabinet A-7

Table 6.1 - Custom Program Versions 6-2

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INTRODUCTION

Merit Industries' PIT BOSS SUPERSTAR 30 provides players with a wide variety of games, as listed below. A player can optionally challenge the machine or another player.

Super Poker	**Super '7' Stud**	**Bonus Blackjack**
Foto Finish *(Off to the Races)*	**Dice Game** *(Roll Them Bones)*	**Super Trivia** *Super Sexy*
Super Trivia *Grab Bag*	**Super Trivia** *Classic Rock*	**Super Trivia** *Country,Rock,Pop*
Super Trivia *People & Places*	**Super Trivia** *Weird Science*	**Super Trivia** *Television*
Super Trivia *Movies*	**Super Trivia** *Sports*	**Super Trivia** *The Way It Was*
Tic Tac Trivia	**Super Phraze Craze** *General*	**Super Phraze Craze** *Entertainment*
Super Phraze Craze *Music*	**Super Phraze Craze** *Sports*	**Super Phraze Craze** *Sex*
Solo Pong	**Pit Pong**	**Wipeout**
Breakin'Bricks I	**Breakin'Bricks II**	**Breakin'Bricks III**
Invasion Force	**Reacto**	**Four Score**

Some of the features of the Pit Boss Superstar 30 include the following:

- Full bookkeeping and diagnostics
- 5 player high scores for each game
- Optional 12 screens of custom advertising, with keyboard
- Custom programming for special requirements
- Easy service access (slide-out printed circuit board)
- Swivel base - 360 degrees (9" and 13" cabinets)
- Security hasp (9" and 13" cabinets)
- Clean, crisp graphics

PROPRIETARY

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DOCUMENT STATUS

This official release of the Pit Boss Superstar 30 Technical Manual refers to Program series 9233-xx.

This manual provides the owner/operator with all the information to install, test and maintain the unit.

The contents of this manual are subject to revision without notice.

Although designed to be trouble-free, additional assistance is available from your distributor or from MERIT INDUSTRIES, INC. (1-800-445-9353 or in PA 215-639-4700).

FCC WARNING

THIS EQUIPMENT COMPLIES WITH THE REQUIREMENTS IN PART 15 OF FCC RULES FOR A CLASS A COMPUTING DEVICE. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA MAY CAUSE INTERFERENCE TO RADIO AND TV RECEPTION REQUIRING THE OPERATOR TO TAKE WHATEVER STEPS ARE NECESSARY TO CORRECT THE INTERFERENCE.

MERIT VIDEO COUNTERTOP LIMITED WARRANTY

Merit Industries, Inc. warrants its video countertop and upright machines to be free from defects in material and workmanship for a period of six months form the date of delivery or seven months from the date of shipment from its facilities, whichever occurs first. The warranty covers all electrical components (except fuses and light bulbs) and printed circuit boards. Other items are covered by warranty time periods offered by the original equipment manufacturers (power supplies - 90 days; video monitors - 90 days).

Failure due to misuse, vandalism, excessive or intentional abuse, operation outside specified conditions (including but not limited to improper electrical power source), fire, water damage, acts of God, acts of war and civil unrest, are specifically excluded.

Merit products are carefully inspected and thoroughly tested prior to packing and shipment. Any damage discovered upon receipt of goods, whether obvious or concealed, must be reported immediately to the delivering carrier and claims made directly to them. Merit assumes no responsibility for damages once the product has left its facilities, and any disputes regarding transportation damage must be resolved with the shipping company(s).

Merit will repair or replace, at its option, any component, part or subassembly that fails under warranty, provided that the failed item is returned, shipping charges prepaid, to Merit's repair facility and Merit is notified of the failure within the warranty period. Merit reserves the right to request the serial numbers of the item and/or game which has failed, and copies of sales invoices, bills of lading or other documents as required to determine the validity of the warranty coverage. Merit will return or replace warranty items, as specified above, shipping charges prepaid by ground transportation.

Merit's obligation shall be limited to repair or replacement, as stated above, and shall specifically exclude any liability for consequential damage or loss of earnings.

Merit may, at its discretion, provide replacement parts under warranty prior to receiving defective items without incurring any ongoing obligation to extend such accommodations.

In certain instances, due to geographical or other considerations, Merit may offer PCB warranty service on an extended time basis as follows:

(a) User notifies Merit in writing (or FAX) of PCB failure, providing dates of failure, serial numbers and brief description of failure symptoms.

(b) Failed PCBs are accumulated for a time period or quantity accumulation, as designated by Merit and sent in one shipment to save shipping expenses.

(c) Merit honors warranty as per dates of failure notification.

The above terms and conditions constitute the sole obligation, written or implied, of Merit Industries under its warranty coverage.

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SECTION 1 - OVERVIEW

1.1 Site Preparation

In determining the location for your Pit Boss Superstar 30 video game, consideration should be given to the location of a suitable electrical outlet. Since the game is a computerized device, it should have a separate circuit if at all possible. If a circuit is not available, care should be taken to provide a clean and constant voltage. As a basic guideline, never connect the unit to a circuit that also supplies power to freezers, coolers or other high power consuming and electrical noise generating equipment.

The area should be prominently located to attract attention.

1.2 Qualified Servicing

REPAIRS OR ADJUSTMENTS SHOULD ONLY BE PERFORMED BY QUALIFIED SERVICE PERSONNEL. OTHERWISE, DAMAGE TO THE MACHINE AND/OR PERSONAL INJURY MAY RESULT.

1.3 Game Description

The Pit Boss Superstar 30 can be housed in a 9" or 13"countertop cabinet or a 19" upright cabinet.

1.3.1 The 9" Countertop Cabinet

The 9" countertop is made up of three key-locked compartments: the control panel section, the CPU section, and the coin box section. A CRT is used to display all information. The cabinet has one coin mechanism that accepts quarters.

The Control Panel Section

The Control Panel Section houses 7 external push-button switches and two internal buttons: CLEAR HIGH SCORES and BOOKS. The function of each of the 7 external push-button switches varies depending upon the game being played. The switches and buttons are described in further detail in Section 3. See Figure 1.1.

The CPU Section

The CPU section (as shown in Figure 1.2) is located on the rear of the machine. It houses the motherboard (CRT-250), the CRT-256 memory expansion board, the 120V switching power supply, the main harness, the CRT, and the video billboard assembly (if purchased).

- The CRT-250 board contains the "brains" of the machine. Located on the CRT-250 board are the program option EPROMs, the DIP switch, the volume control dial, and the CRT-254 data security module.
- The CRT-256 memory expansion board contains the question EPROM set.
- The main harness is used to connect the CPU board to the memory expansion board, the power supply, the game control buttons and the optional video billboard module.

The Coin Box Section

The Coin Box Section is also located on the rear of the machine. A large, sturdy coin box holds all coins deposited into the machine. This section is keyed-locked for security purposes. See Figure 1.3.

1.3.2 The 13" Countertop Cabinet

The 13" countertop is made up of four key-locked compartments: the control panel section, the CPU section, the coin box section and the power supply section. A CRT is used to display all information. The cabinet has one coin mechanism that accepts quarters.

The Control Panel Section

The control panel section on the 13" differs from the 9" in that it houses 9 external push-button switches instead of 7. The video billboard (if purchased) is also located in this section. Refer to Section 3 for further details regarding the controls. See Figure 1.4.

The CPU Section

The CPU section (as shown in Figure 1.5) is located on the rear of the machine. It houses the motherboard (CRT-250), the CRT-256 memory expansion board and the main harness.

- The CRT-250 board contains the "brains" of the machine. Located on the CRT-250 board are the program option EPROMs, the DIP switch, the volume control dial, and the CRT-254 data security module.
- The CRT-256 memory expansion board contains the question EPROM set.
- The main harness is used to connect the CPU board to the memory expansion board, the power supply, the game control buttons and the optional video billboard module.

The Coin Box Section

The Coin Box Section is also located on the rear of the machine. A large, sturdy coin box holds all coins deposited into the machine. This section is keyed-locked for security purposes. See Figure 1.5.

The Power Supply Section

The power supply section is located on the top of the cabinet. It houses the 120V switching power supply, the monitor controls and the CRT. See Figure 1.5.

1.3.3 The 19" Upright Cabinet

The 19" upright cabinet is made up of three key-locked compartments: the control panel section, the coin box section and the monitor section. A CRT is used to display all information. The cabinet has one coin mechanism that accepts quarters.

The Control Panel Section

The control panel section consists of 9 external push-button switches and two internal switches: BOOKS and RESET. The external buttons are described in Section 3 of this manual. The interior view of the control panel is shown in Figure 1.6.

Located inside the control panel section are the CPU (CRT-250), the memory expansion board (CRT-256), the 120V switching power supply, the main harness, and the video billboard assembly (if purchased).

- The CRT-250 board contains the "brains" of the machine. Located on the CRT-250 board are the program option EPROMs, the DIP switch, the volume control dial, and the CRT-254 data security module.
- The CRT-256 memory expansion board contains the question EPROM set.
- The main harness is used to connect the CPU board to the memory expansion board, the power supply, the game control buttons and the optional video billboard module.

The Coin Box Section

The coin box section is located on the lower front side of the machine. A large, sturdy coin box holds all coins deposited into the machine. This section is keyed-locked for security purposes. See Figure 1.6.

The Monitor Section

The monitor section houses the CRT and the monitor controls. It is located on the top, rear side of the machine. See Figure 1.7.

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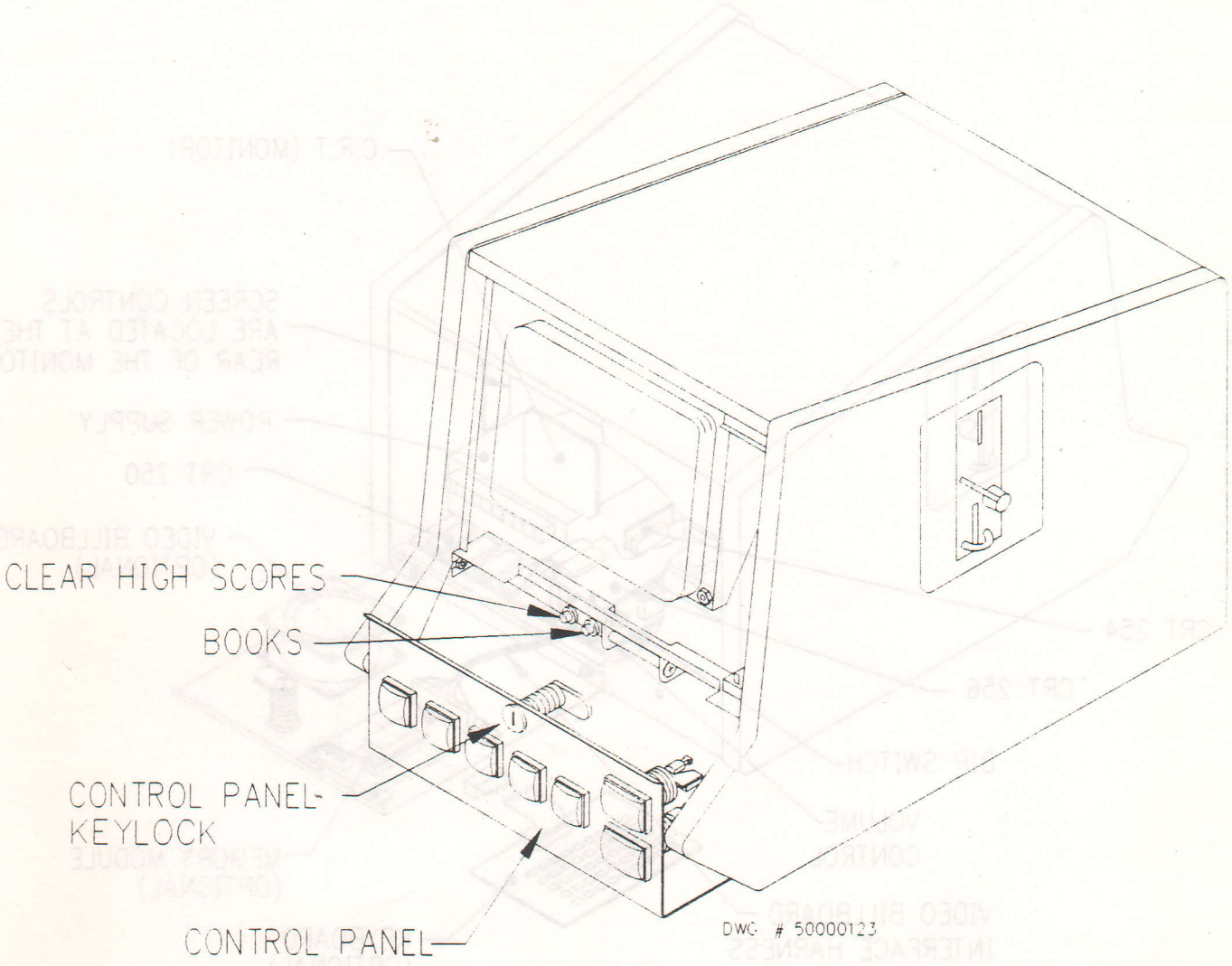
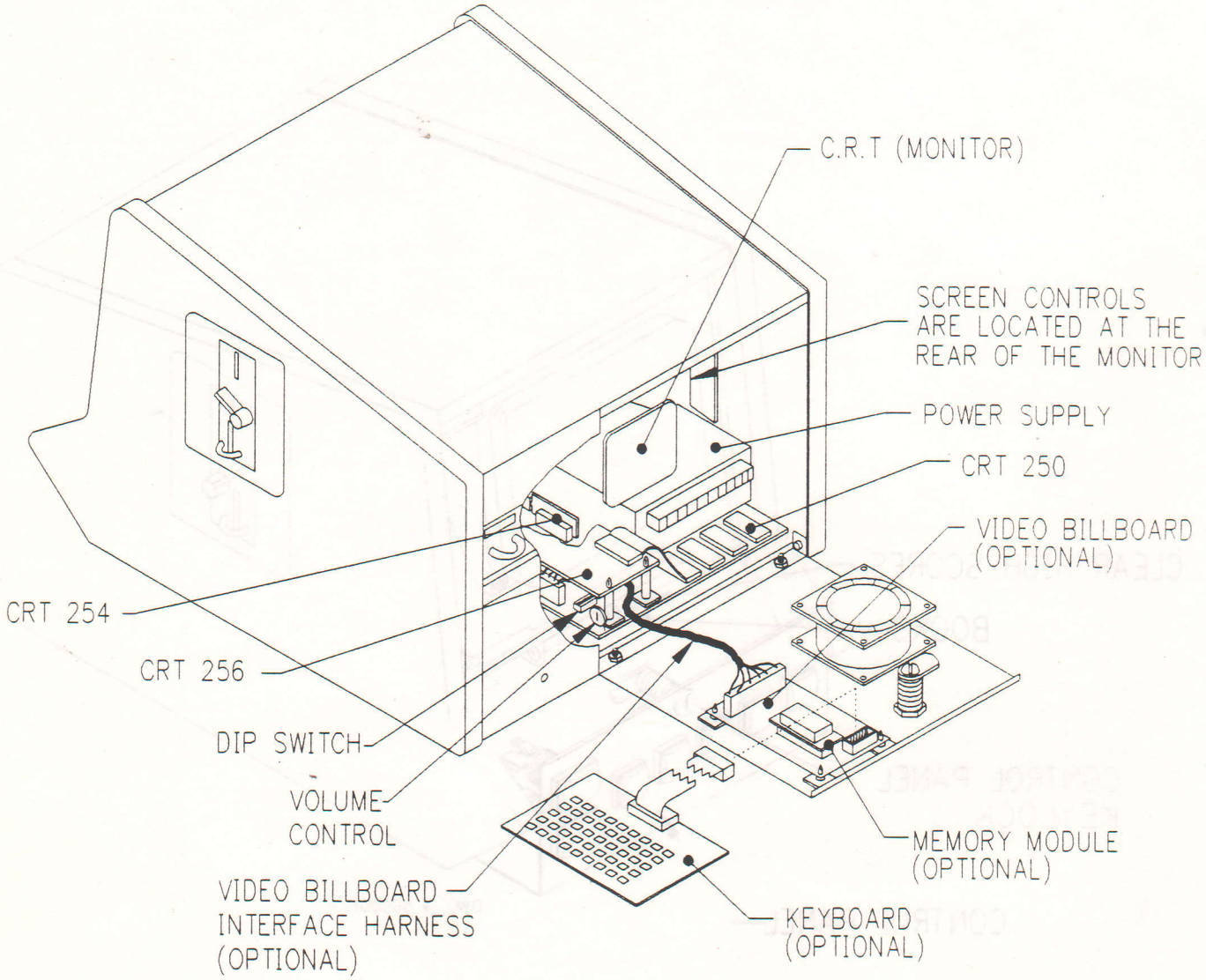


FIGURE 1.1 - THE CONTROL PANEL SECTION - 9" CABINET



DWG # 5000/0124

FIGURE 1.2 - THE CPU SECTION - 9" CABINET

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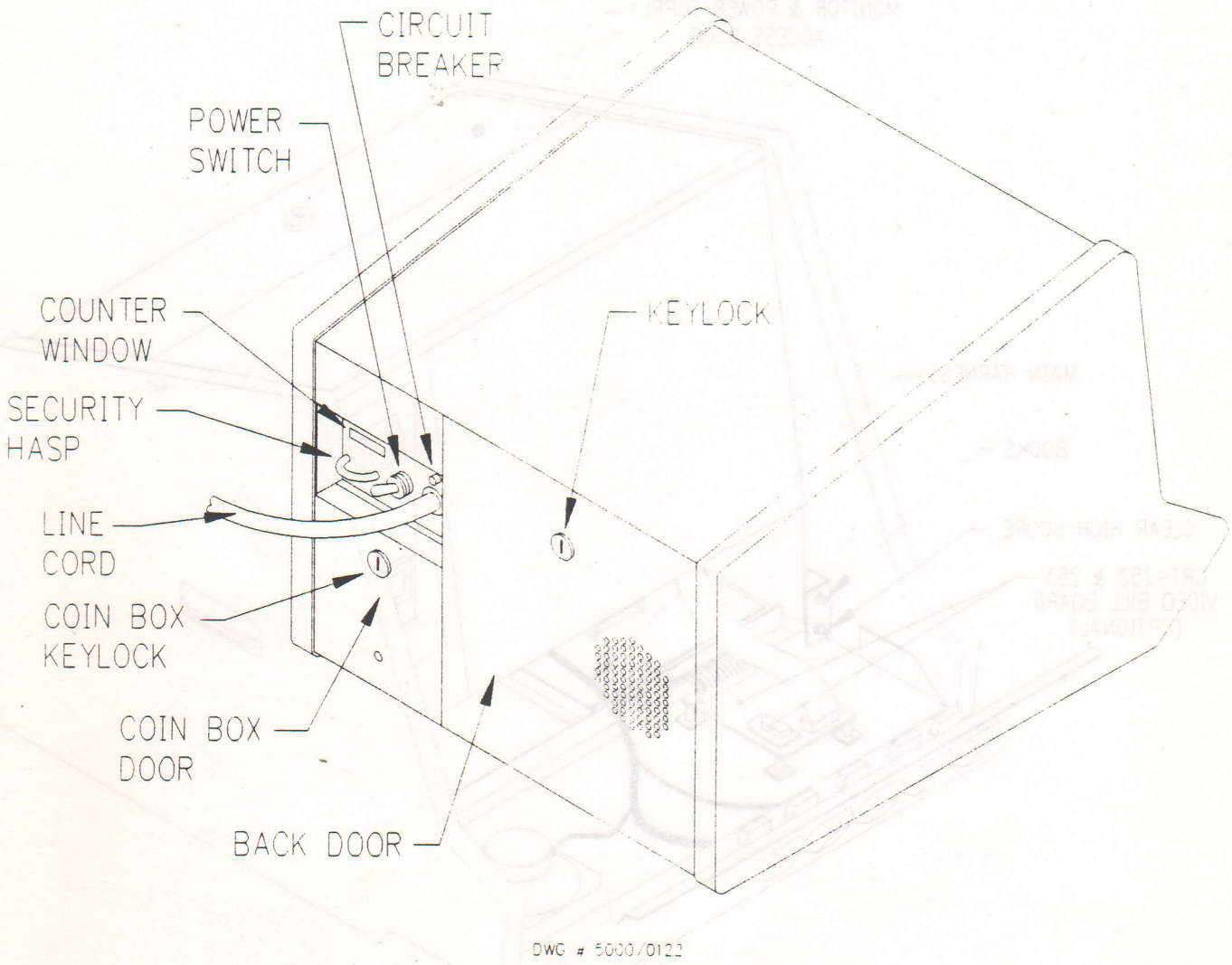


FIGURE 1.3 - THE COIN BOX SECTION - 9" CABINET

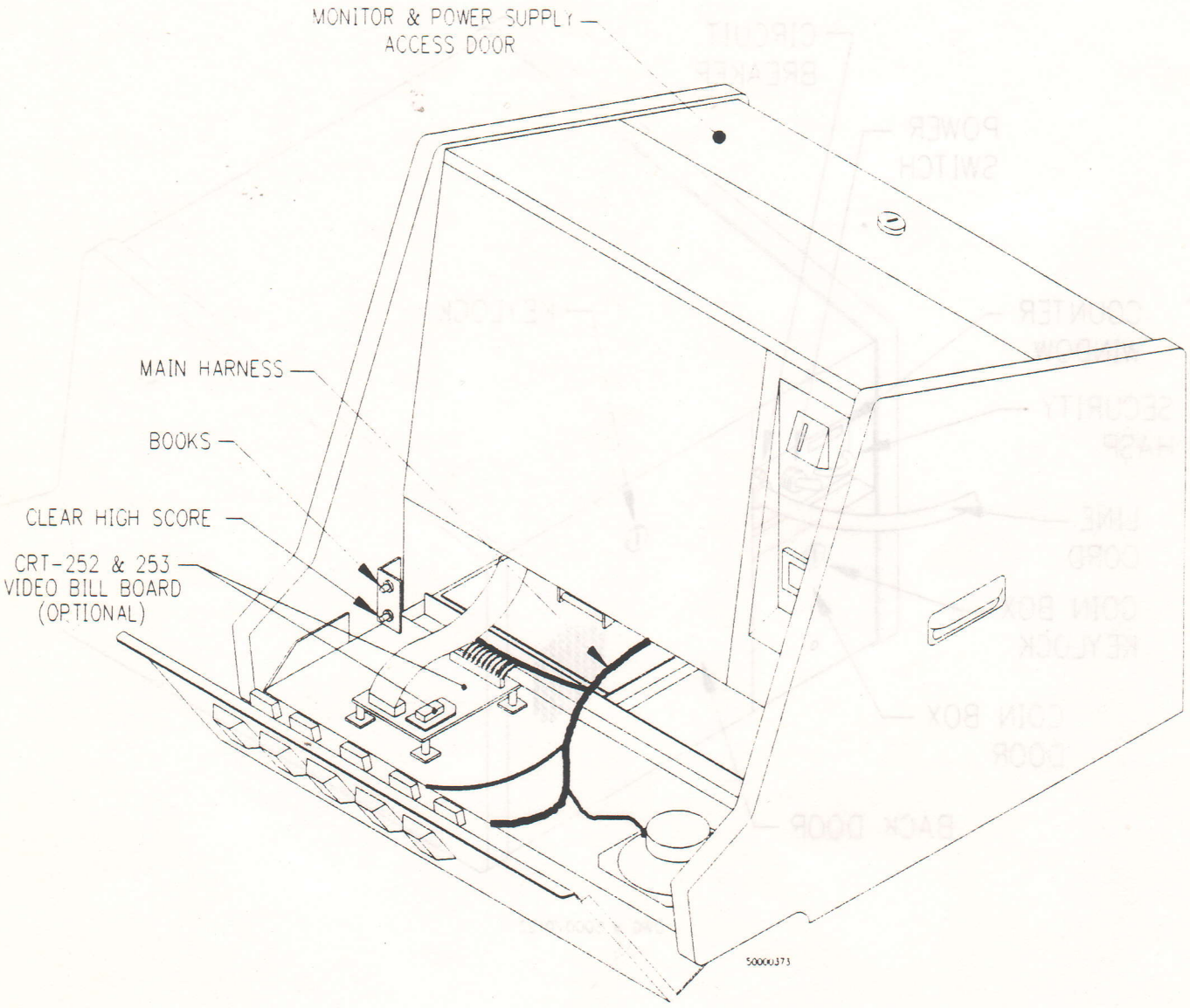


FIGURE 1.4 - THE CONTROL PANEL SECTION - 13" CABINET

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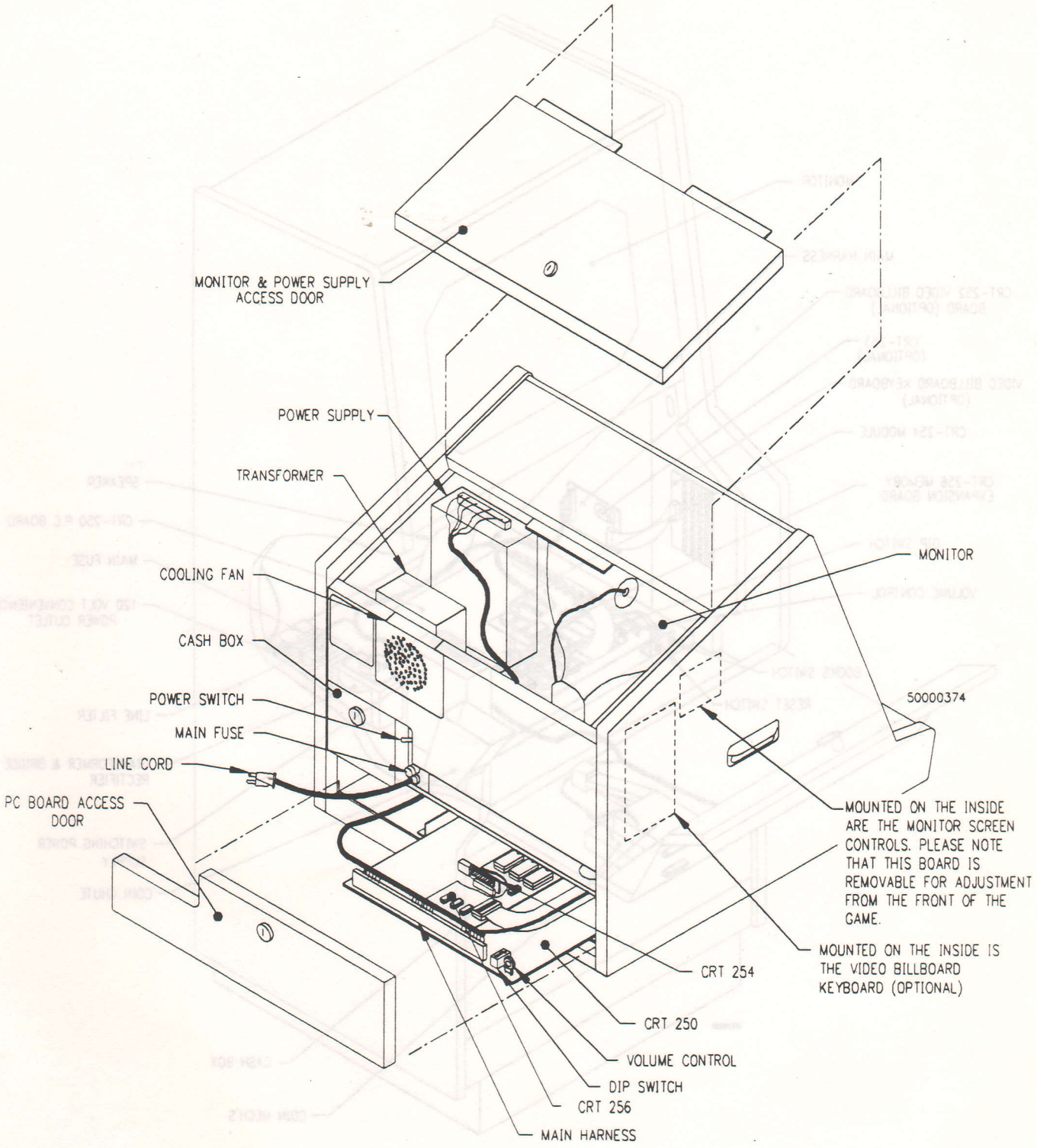


FIGURE 1.5 - THE CPU, COIN BOX, AND POWER SUPPLY SECTIONS - 13" CABINET

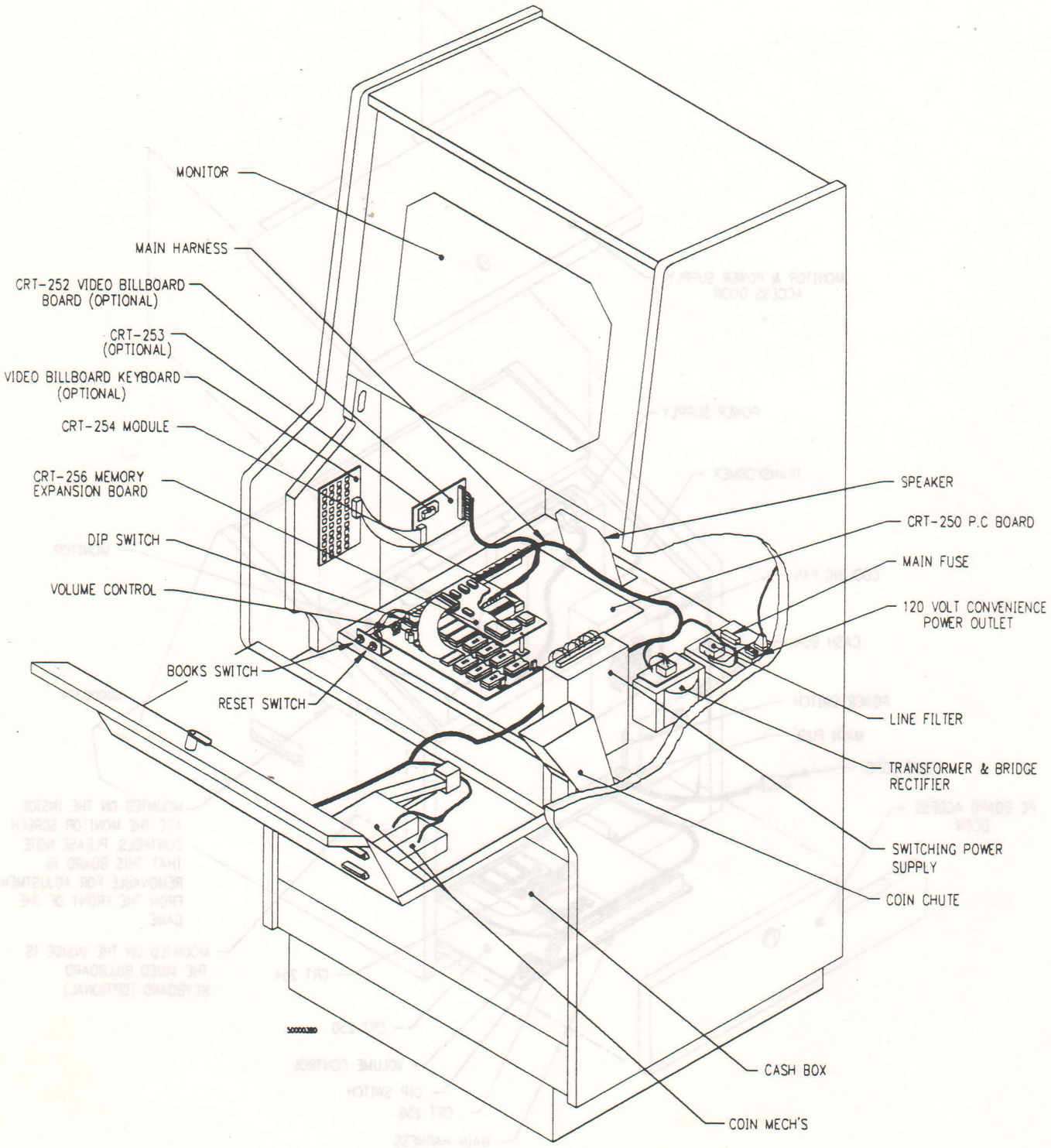


FIGURE 1.6 - THE CONTROL PANEL AND COIN BOX SECTIONS - 19" UPRIGHT CABINET

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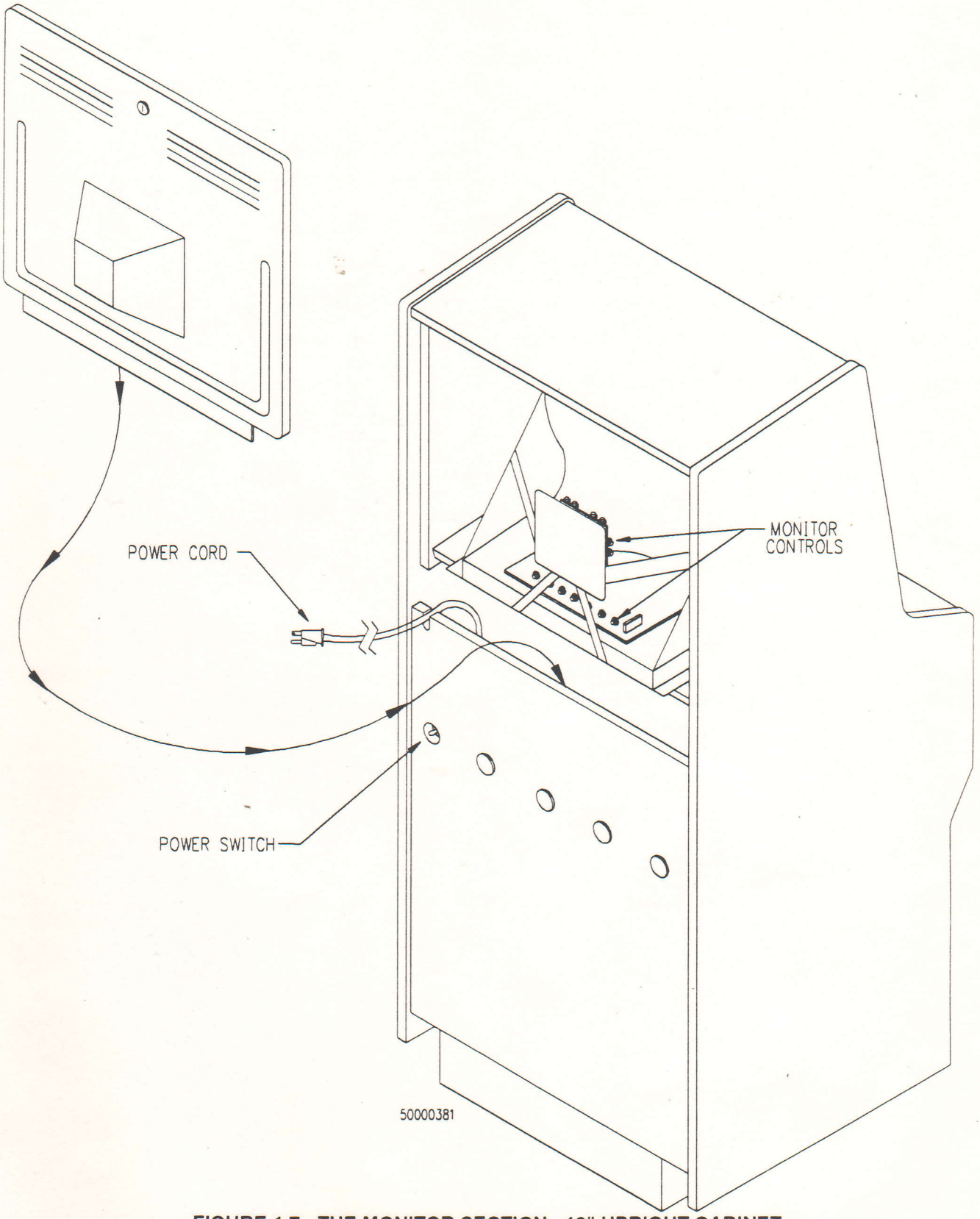


FIGURE 1.7 - THE MONITOR SECTION - 19" UPRIGHT CABINET

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SECTION 2 - SETUP AND INSTALLATION

2.1 Unpacking and Initial Setup of 9" and 13" Cabinets

1. Open the shipping carton and remove the foam packing materials.

2. Remove the vinyl sheet holder containing the manual, warranty sheet and promotional brochures from the plastic bag. Put it aside for future use.

3. Lift the countertop game out of the box and remove it from the plastic bag.

4. Place the countertop on a sturdy, level surface. Locate the plastic bag protruding from the control panel door. Gently pull the bag from the control panel door. In the plastic bag are three (9" cabinet) or four (13" cabinet) sets of keys. There is a set of keys for the coin box door, the control panel door, the main CPU (rear) door, and on 13" cabinets, the power supply door. The #564 keys unlock the control panel door and the main CPU (rear) door. The other set of keys unlock the coin box door.

5. If you wish to secure the machine to its location (bar, wall, table,etc.), a security hasp is provided on the rear of the 9" machine above the coin box door. (A security hasp may be purchased separately for the 13" machines.) Using a chain or lock, secure the game to the desired location.

6. Install the sign holder and sign on top of the game.

   (a) Remove the adhesive paper from the sign holder.
   (b) Place the sign holder just behind the black glass bracket on top of your machine.
   (c) Slide the sign between the folds of the plastic.

7. Plug the power cord into an AC outlet.

8. Turn "ON"the power switch located above the coin box door on the rear of the machine. Wait for a beep. (23 second delay) The message "WAIT TESTING" will be displayed while the game goes through a diagnostic self-test sequence. At the completion of the self-test, the game will display the idle screen.

Your game is now ready to accept coins!

2.2 Unpacking and Initial Setup of 19" Upright Cabinet

1. Open the shipping carton and remove the cardboard packing materials.

2. Slide the box upwards and lift it off of the game. Remove the foam packing materials and the plastic bag.

3. Place the game on a sturdy, level surface. Locate the vinyl sheet holder on on the top of the game. Remove the vinyl sheet holder . Inside the sheet holder is the game manual and three sets of keys. There is a set of keys for the control panel door, the coin box door, and the monitor (rear) door. The #564 keys unlock the control panel door and the monitor (rear) door. The other set of keys unlock the coin box door. Place the manual and keys aside for future use.

4. Clean any adhesive residue that may be on the top of your game after removing the vinyl sheet holder.

5. Install the sign holder and sign on top of the game.

   (a) Remove the adhesive paper from the sign holder.
   (b) Place the sign holder just behind the black glass bracket on top of your machine.
   (c) Slide the sign between the folds of the plastic.

6. Plug the power cord into an AC outlet.

7. Turn "ON" the power switch located below the monitor section on the rear of the machine. Wait for a beep. (23 second delay) The message 'WAIT TESTING" will be displayed while the game goes through a diagnostic self-test sequence. At the completion of the self-test, the game will display the idle screen.

Your game is now ready to accept coins!

2.3 Adjusting the Monitor Controls

Each Merit game is carefully tested and adjusted before it leaves the factory. However, due to variations in line voltage and ambient lighting conditions, the video monitor should be given a final adjustment when the game is installed. The video monitor will also need to be re-adjusted as the picture tube ages. Refer to Figures 1.2, 1.5 and 1.7 in Section 1 of this manual for the exact location of the monitor controls on the 9", 13" and 19" cabinets, respectively.

Horizontal Video Shift

This control centers the information displayed on the screen. A screen with a large field will aid you in making this adjustment. Adjust the control so that the field is centered on the screen.

Vertical Size & Vertical Position

Adjust the vertical size control so that all information at the top of the screen is visible. Then, adjust the vertical position control so that the information is centered on the screen.

Black Level

Make this adjustment using a screen with a black background and text that must be read, such as game instructions or statistics. Turn the black level adjustment until the black background area starts to turn gray. Then turn the control in the opposite direction just until the background is black.

Focus Control

Rock this control back and forth until you find a point where the text information appears the sharpest.

Screen Control

Set this control to a point where white text on a black background does not appear "fuzzy", yet the colors are as bright as possible.

Horizontal Width

Some monitors may require that the horizontal width coil be adjusted to reduce the width of the display to allow all information to be visible and centered on the screen. It is important to use the proper adjustment tool for this. It is easy to break the slug in the coil. **DO NOT USE A SCREW DRIVER.** Use a standard radio/TV plastic hex tuning wand available from most electronic parts stores.

2.4 Adjusting the Volume Control

The volume control dial is located on the CRT-250 board. To increase the volume, turn the dial clockwise (to the right). To decrease the volume, turn the dial counter-clockwise (to the left). Refer to Figures 1.2, 1.5, and 1.6 in Section 1 of the manual for the exact location of the volume control dial on the 9", 13" and 19" cabinets, respectively.

2.5 Connecting the Video Billboard Keyboard (Optional)

If your machine has the video billboard option, the printed circuit board assembly will already be mounted in the cabinet. You simply have to connect the keyboard.

1. Power down and unplug the machine. Locate the keyboard.
   - **On 9" cabinets**, the keyboard can be found in the cash box.
   - **On 13" cabinets**, the keyboard is attached with velcro to the inside, top section of the cabinet, next to the monitor adjustments.
   - **On 19" cabinets**, the keyboard is attached with velcro to the left side of the interior section of the control panel, near the CPU.
2. Locate the video billboard (CRT-252/CRT-253) assembly.
   - **On 9" cabinets**, the video billboard assembly is mounted on the inside, rear door.
   - **On 13" cabinets**, the video billboard assembly is mounted on the floor of the cabinet, on the interior, left side of the control panel section.
   - **On 19" cabinets**, the video billboard assembly is mounted on the left wall of the cabinet, on the interior of the control panel section.

NOTE: THE REMOVABLE CARTRIDGE (CRT-253) THAT IS PLUGGED INTO THE CRT-252 P.C. BOARD ALLOWS YOU TO SWAP INFORMATION BETWEEN LOCATIONS OR PROGRAM THEM AHEAD OF TIME. SERIOUS DAMAGE AND LOSS OF STORED INFORMATION WILL OCCUR IF YOU REMOVE OR INSTALL THE CARTRIDGE WITHOUT FIRST TURNING THE GAME OFF.

3. Plug the keyboard into the CRT-252 board. Power up the game. Refer to Appendix A for instructions on using the keyboard.

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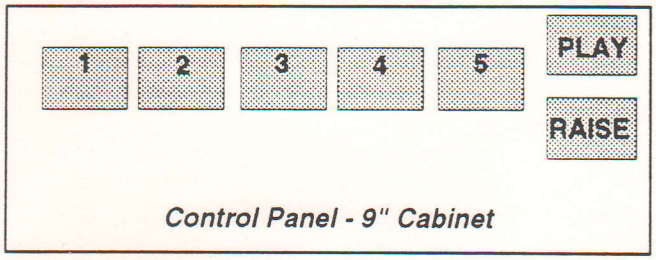
SECTION 3 - GAME OPERATION

3.1 Idle Mode

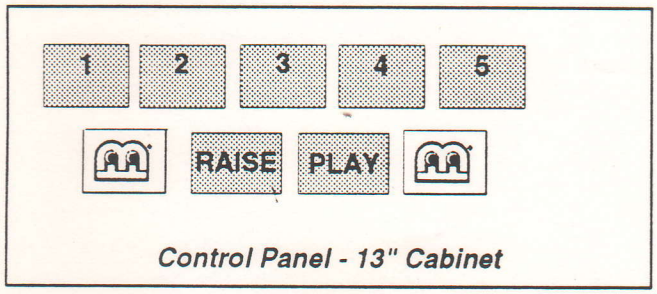
When no credit is available, the countertop is in its idle state. The display will randomly show screens of each of the available games.

3.2 Front Panel Controls

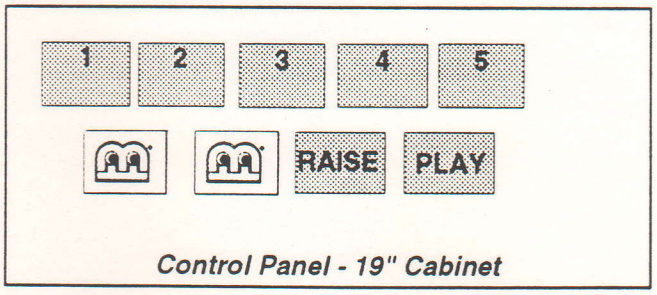
The 9" cabinet consists of a 7 button control panel. The 13" and 19" cabinets consist of a 9 button control panel. The first five buttons on each control panel perform the same function; each of these buttons have blank legends. Two buttons on the 13" and 19" cabinets are not used for any of the games, and they are identified by the Merit logo legend. The other two buttons on all machines are identified as the PLAY or RAISE buttons. Refer to the control panel layouts for button definitions.



Control Panel - 9" Cabinet



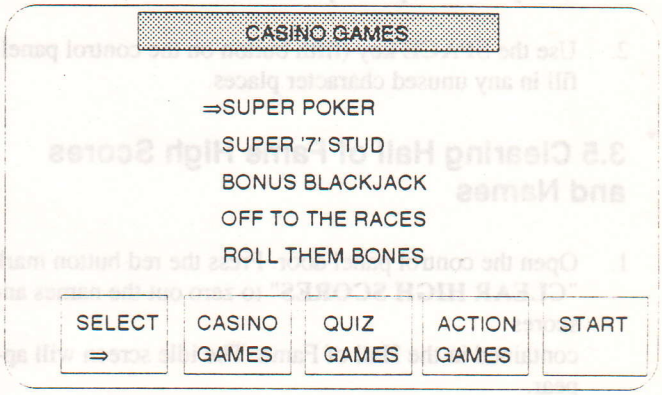
Control Panel - 13" Cabinet

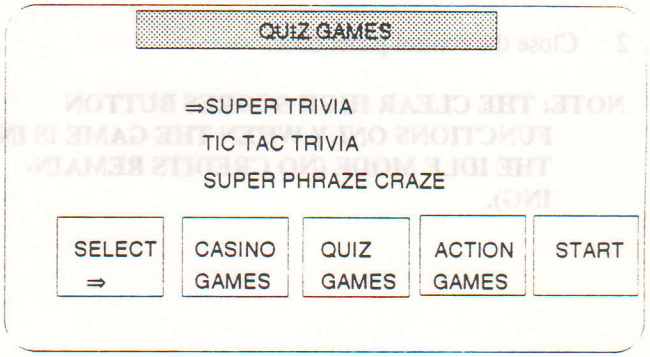


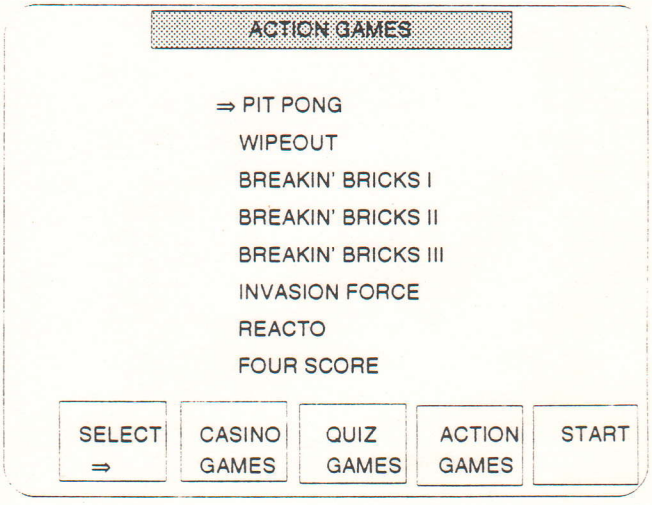
Control Panel - 19" Cabinet

3.3 Selecting a Game

Once credits have been deposited, one of three Game Selection Screen appears. The games are divided into three categories: Casino Games, Quiz Games and Action Games. The first button on the control panel is used to select a game within a category. The second button selects the list of casino games, the third button selects the list of quiz games and the fourth button selects the list of action games. the fifth button starts a selected game.







3.4 Entering Your Name in the Hall of Fame

Players with the highest scores can enter their names in the "Hall of Fame". These scores are displayed during the idle mode and are retained in memory until cleared. To enter your name in the Hall of Fame:

1. When the Hall of Fame screen appears, use the left and right arrow keys (first two buttons on the control panel) to move across the letters of the alphabet, stopping at the letter you need. Press **ENTER** (third button on control panel) to select the letter. Repeat this step until you have spelled your name.

2. Use the **SPACE** key (fifth button on the control panel) to fill in any unused character places.

3.5 Clearing Hall of Fame High Scores and Names

1. Open the control panel door. Press the red button marked "**CLEAR HIGH SCORES**" to zero out the names and scores
contained in the Hall of Fame. The idle screen will appear.

2. Close the control panel door.

NOTE: THE CLEAR HIGH SCORES BUTTON FUNCTIONS ONLY WHEN THE GAME IS IN THE IDLE MODE (NO CREDITS REMAINING).

3.6 Bookkeeping

When the game is not in progress, the total number of coins deposited into the machine as well as the total number of coins per game can be displayed on the video screen by opening the control panel door and pressing the **BOOKS** button. The display shows the total coins on the top line of the display. It shows the "COINS IN" for each individual game on the subsequent lines. To return the game to normal operation, press any front panel button.

To clear the "TOTAL COINS IN" entry, press and hold the **BOOKS** button for approximately 5 seconds. The "COINS IN" for the individual games are lifetime readings, and can be reset *only by clearing all memory.*

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SECTION 4 - GAME DESCRIPTIONS AND RULES

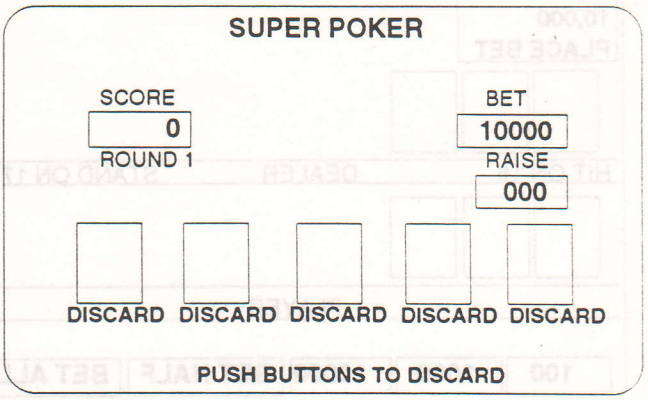
4.1 Casino Games/Rules

NOTE: THROUGHOUT THIS SECTION OF THE MANUAL, REFERENCES WILL BE MADE TO BUTTONS 1 THROUGH 5. REFER TO THE CONTROL PANEL BUTTON LAYOUTS FOR EACH CABINET AS DEPICTED ON PAGE 3-1.

4.1.1 Super Poker

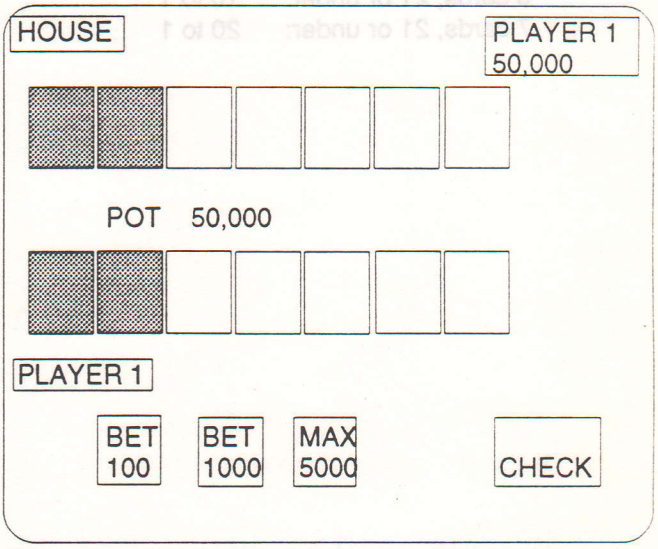


Super Poker is a card game in which a player bets that the value of his hand is greater than that of the hand held by the house (machine), in which each subsequent hand must either equal or raise the bet or drop out, and in which the player holding the highest hand at the end of the betting wins the pot. The player can play Hi/Lo Double Up on any winning hand.



Once a bet has been placed, five cards are dealt. The player may discard any or all of the cards, pressing "PLAY" to draw new cards. At the end of a winning hand, the player can take the score by pressing button #2 or double up by pressing button #4. To bet that the card will be low (2 thru 7), the player presses the second button. To bet that the card will be high (9 thru Ace), the player presses the fourth button. If the card dealt matches what the player picked, the player wins double the amount bet.

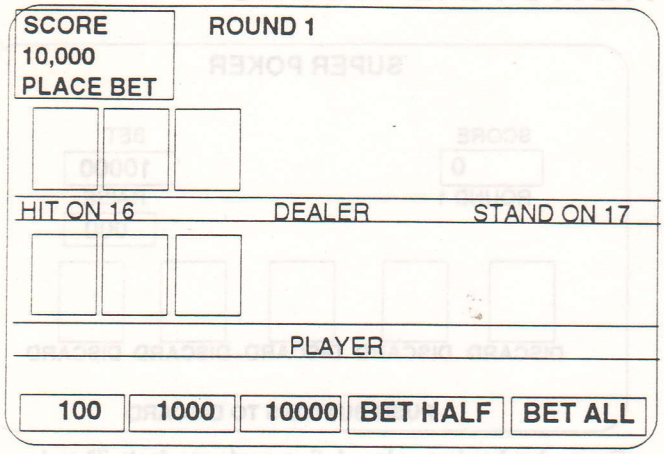
4.1.2 Super '7' Stud



This game based on Seven Card Stud poker pits the player against the House. The player and "house" are dealt their first card face down and other cards face up with a round of betting taking place after each of the last 4 rounds of dealing.

The maximum bet increases to 10,000 in Round 2 and 20,000 in Round 3. The player may optionally call or fold as the hand is played. The next hand is dealt when the player presses button #5 (NEXT HAND).

4.1.3 Bonus Blackjack

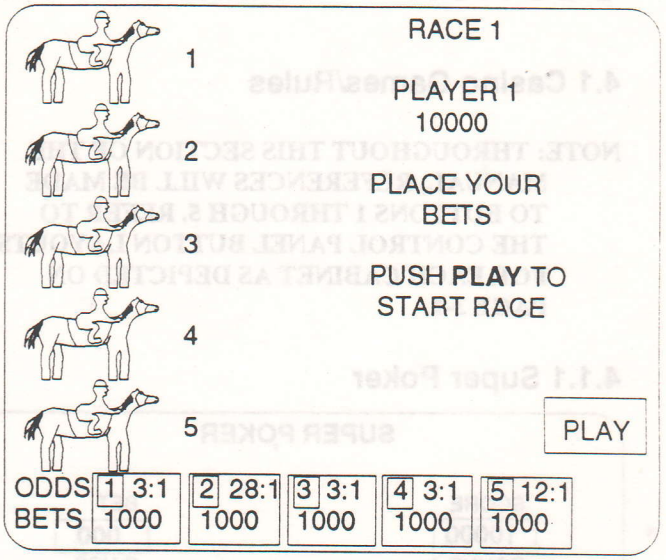


The object of this card game is to be dealt cards having a higher count than those of the dealer up to but not exceeding 21. This realistic game of BLACKJACK features "SPLITS", "DOUBLE DOWN" and "INSURANCE". The player may split any pair once and double down on 9, 10 or 11. There are also special 5, 6 and 7 card bonus winners.

The 5, 6 and 7 card bonuses are as follows:

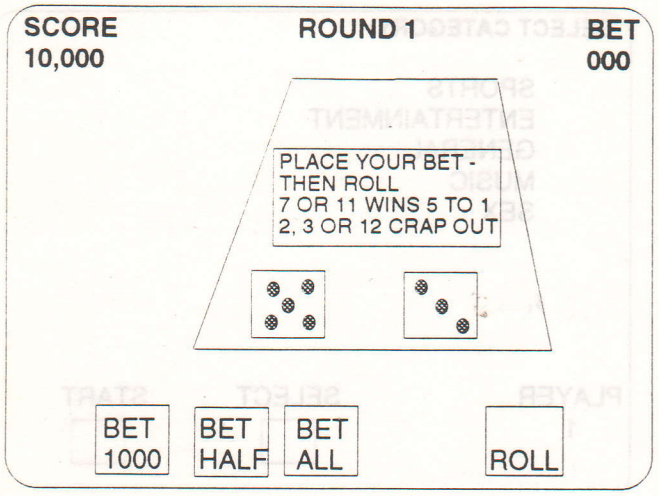
5 cards, 21 or under:	5 to 1
6 cards, 21 or under:	10 to 1
7 cards, 21 or under:	20 to 1

4.1.4 Off To The Races (Foto Finish)



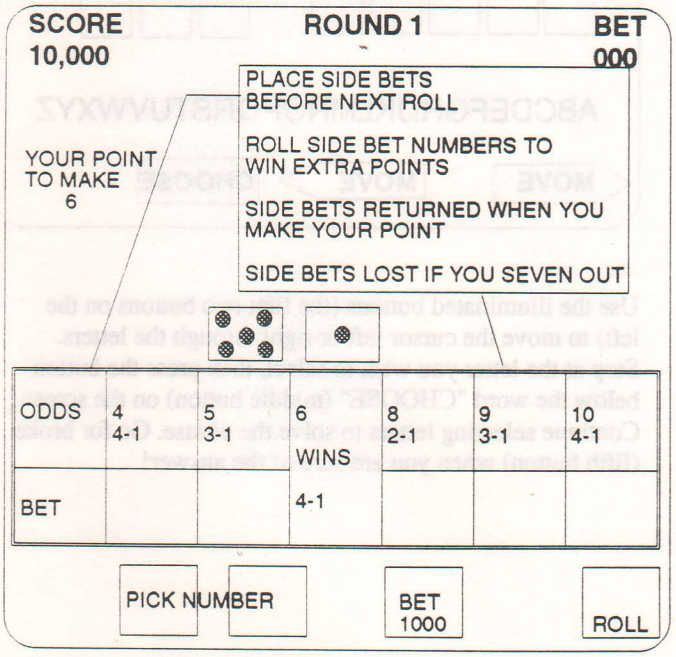
This exciting horse race game allows the player to play any or all of the five horses in the race. Each horse has different odds. The minimum bet is 1000 points. Each button on the panel represents a different horse (#1-5). Pressing a button places bets on the horse associated with that button. The PLAY button starts the race. At the end of the race, the winning horse number will be shown. Each player has a chance to win 5 races.

4.1.5 Roll Them Bones (Dice Game)



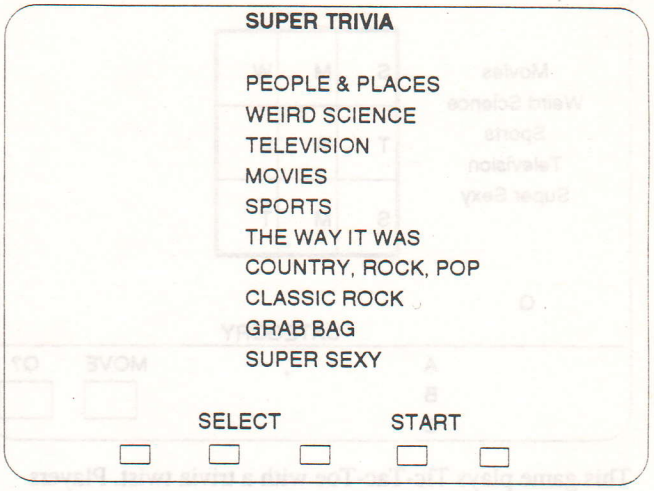
This dice game involves placing a bet and rolling the dice. If you roll a 7 or an 11, you win 5 times the amount of your bet. If you roll a 2, 3, or 12, you crap out. The number you roll becomes your point to make. You may place side bets on the numbers 4 through 10. If you roll the side bet numbers, you will win extra points. Side bets will be returned when you make your point. Side bets will be lost if you seven out. If you roll a 2 after the first roll, you collect the SNAKE EYES bonus.

The side bet screen is shown below. The first two push-button switches are now used to pick the number on which you wish to place your bets. The third push-button switch is used to bet in 1000 point increments. The fifth push-button switch is used to roll the dice.

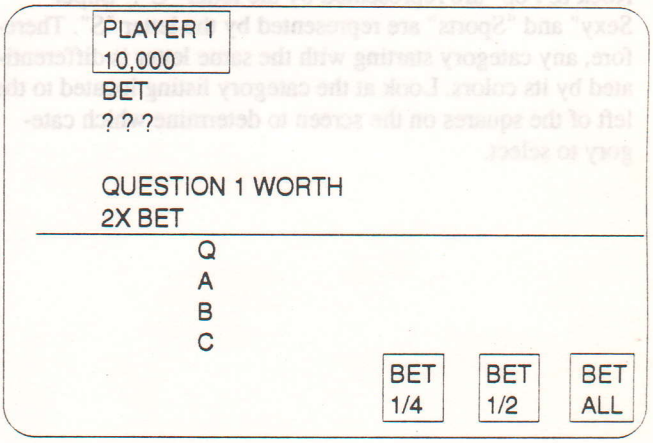


4.2 Quiz Games/Rules

4.2.1 Super Trivia

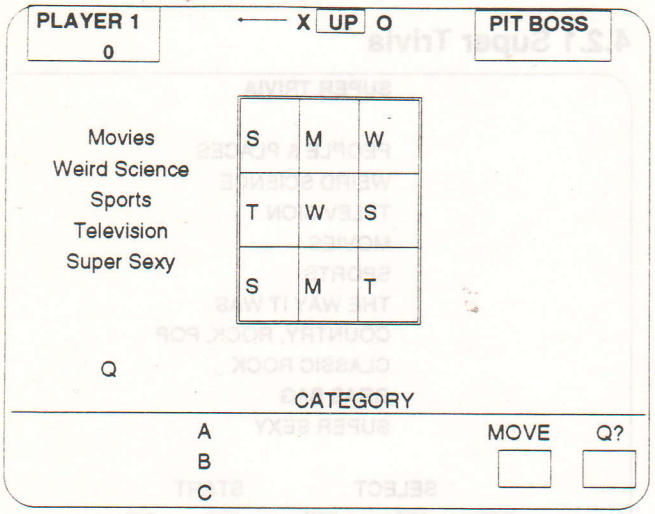


Merit's famous trivia game tests the player's knowledge of a wide range of trivia. Super Sexy trivia is included if DIP switch #3 is OFF. Other trivia categories include: People & Places; Weird Science; Television; Movies; Sports; The Way It Was; Country, Rock, Pop; Classic Rock; Grab Bag; and Super Sexy. Use the SELECT button to move the cursor to the trivia category you wish to select. Use the START button to begin the trivia game. When a category is selected, a screen similar to the one below will appear.



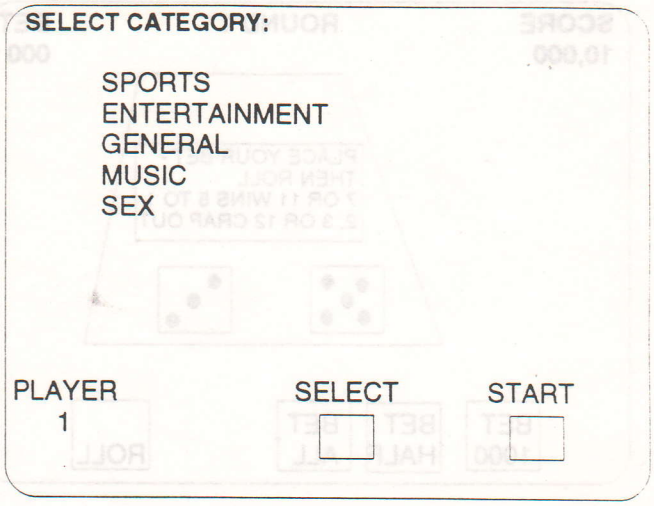
Once the game screen appears, use the BET buttons to place your bet. A question will appear on the screen and you will have 10 seconds to pick the right answer. The game continues until 5 questions have been asked. Bonus questions appear if you have 1,000,000 points accrued. Once the game is over and you have credits remaining, you may optionally play again, play against another person, or select another game.

4.2.2 Tic Tac Trivia

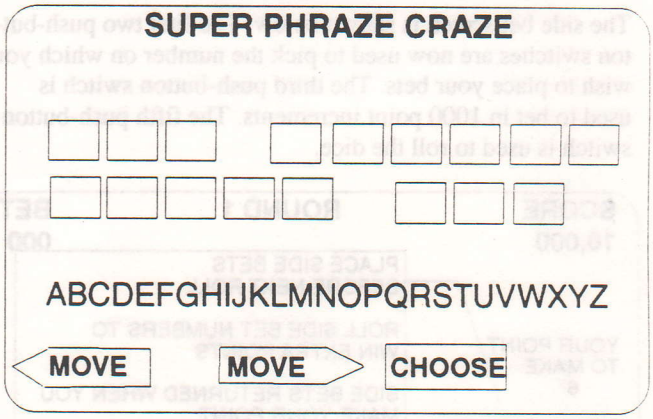


This game plays Tic-Tac-Toe with a trivia twist. Players must answer Trivia questions correctly to win squares on the Tic-Tac-Toe board. The first player to get Tic-Tac-Toe wins the game and gets a chance at a bonus round. You can play against a friend or play against Robo™ (the machine). Five randomly selected categories will appear at the left of the screen. The letters on the squares represent the first letter of the category from which the question for that square is selected. "Television" and "The Way It Was" are represented by the letter "T". "Classic Rock" and "Country, Rock & Pop" are represented by the letter "C". "Super Sexy" and "Sports" are represented by the letter "S". Therefore, any category starting with the same letter is differentiated by its colors. Look at the category listing located to the left of the squares on the screen to determine which category to select.

4.2.3 Super Phraze Craze



Phraze Craze is a game of knowledge in which each player is presented with a blank "mystery phrase" and must pick letters to try and solve the phrase. The categories include: Sports, Entertainment, General, Music, and Sex. Sex phrases are included if DIP switch #3 is OFF. Refer to Section 6 for Dip switch settings. After selecting the category, a screen similar to the one shown below will appear:

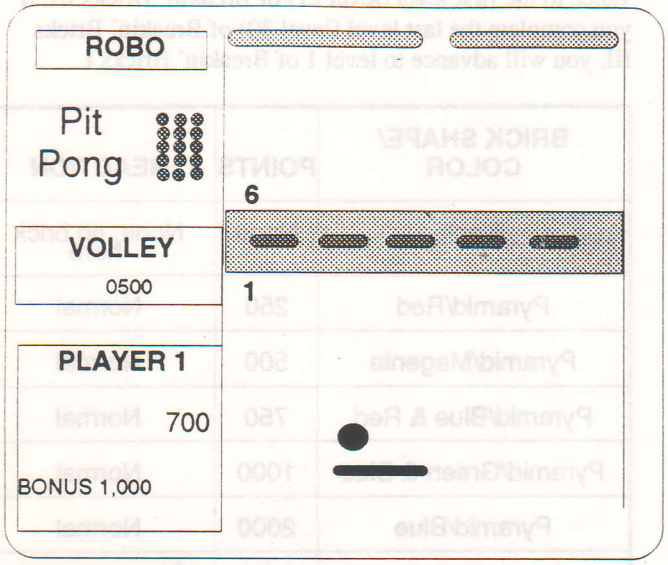


Use the illuminated buttons (the first two buttons on the left) to move the cursor left or right through the letters. Stop at the letter you wish to select, then press the button below the word "CHOOSE" (middle button) on the screen. Continue selecting letters to solve the phrase. Go for broke (fifth button) when you are sure of the answer!

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4.3 Action Games/Rules

4.3.1 Pit Pong

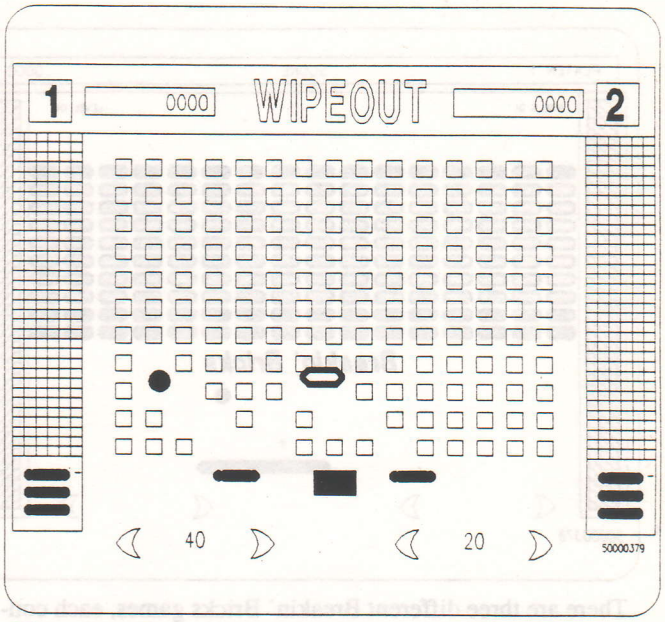


Pit Pong is a game resembling table tennis. It is played with paddles and a ball. The screen above depicts the one-player Ping Pong game. In one-player Pit Pong, the first ball is served to the player. The last two buttons on the control panel enable the player to move the paddle left or right to hit the ball. The first volley is worth 500 points. The object of the game is to hit the ball through the opening in the moving wall at the top of the screen. Each time the ball is hit by the paddle or an obstacle is hit by the ball, the player earns 100 points. If an obstacle turns yellow and the player hits it, the horizontal direction of the ball changes. If an obstacle turns orange and the player hits it, the ball changes its vertical direction and comes back at the player. If an obstacle turns green and the player hits it, the player earns 300 points and the ball speeds up vertically.

Eleven or fifteen balls are served, depending upon the DIP switch settings. Bonus points accumulate throughout the game. Each volley is worth 1000 bonus points. At the end of the game, the winner's bonus points are added to his score. The other player loses his bonus points.

Two-player Pit Pong plays the same as one-player Pit-Pong, except there is no moving wall. Instead, there is another player with another paddle. In two-player Pit Pong, the first ball is served to Player 1. The first two buttons on the control panel move Player 2's paddle left and right. The last two buttons on the control panel move Player 1's paddle left and right.

4.3.2 Wipeout



The screen above depicts the two-player WIPEOUT game. When WIPEOUT is selected, brief game instructions appear on the screen for 5 seconds or until a button is pressed. The SERVE button flashes for 5 seconds or until the player presses it.

Each player is given 4 paddles. The object of the game is to wipe out all the color blots on the screen without using all of your paddles. There are 3 levels to the WIPEOUT game. If the player has any unused paddles left after clearing the screen for level 1, the game will advance to level 2. There will be an additional floating character on the screen. If there are still remaining paddles after the screen is cleared a second time, the game will advance to level 3. Level 3 will have 3 floating characters.

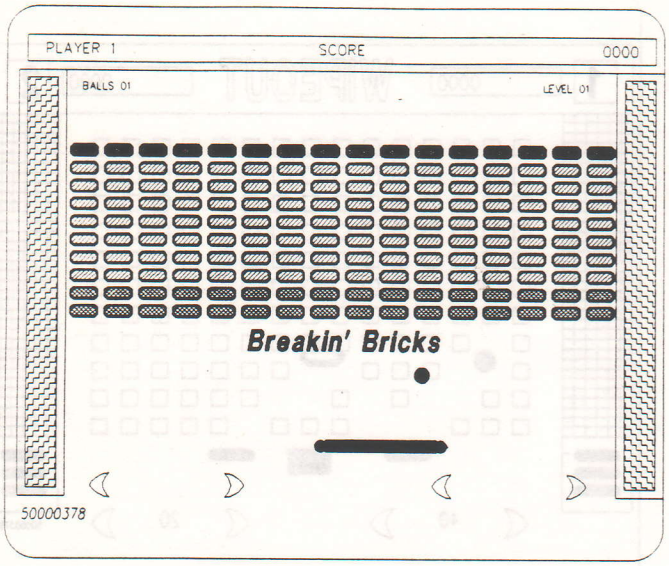
Each time the paddle hits the ball, the player receives 100 points. Additional points are awarded as the player wipes out the various color blots. Each color blot represents a different point value, giving the player between 50 and 100 points per color blot.

At the end of the game, the winner receives 1,000 points for each unused paddle.

The first two buttons on the control panel move Player 2's paddle left and right. The last two buttons on the control panel move Player 1's paddle left and right. The middle button serves the ball.

In one-player Wipe-Out,the last two buttons on the control panel enable the player to move the paddle left or right.

4.3.3 Breakin' Bricks



There are three different Breakin' Bricks games, each consisting of 10 levels. Each level presents a different brick pattern. Points are awarded according to the type of brick hit by the player. The actual time of ball play increases the ball speed. One brick type slows the ball down. Some bricks make the paddle size larger or smaller. Still others cause different reactions. Refer to the table to the right for a description of each of the bricks, the point value awarded and the reaction that occurs by hitting a particular brick.

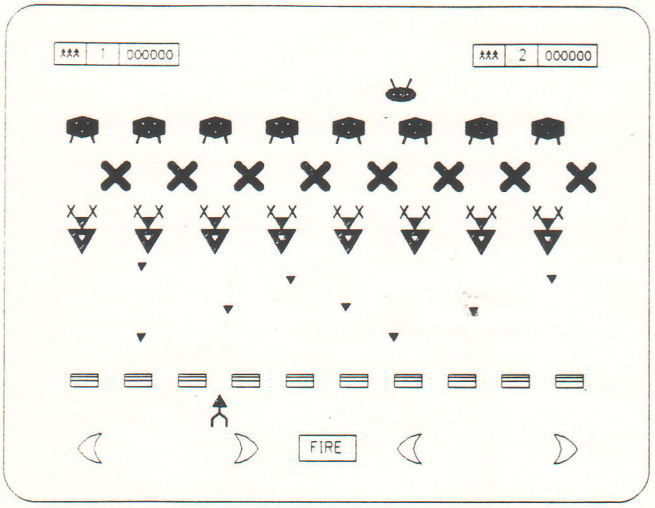
Upon selecting Breakin' Bricks I, II, or III from the Game Selection Menu, you will be asked to choose a level at which to begin. Each time you press the "NEXT LEVEL" button (fifth button), the name of the level will appear at the top of the screen. In Breakin' Bricks I, you will keep seeing levels 1 through 10 until you select the level you want to play. *(In Breakin' Bricks II, you will keep seeing levels 11 through 20, and in Breakin'Bricks III, you will keep seeing levels 21 through 30.)* Once the level you want to play appears on the screen, press the START button (first button). Use the left and right arrow keys to move the paddle. (Button #1 or 4 moves the paddle to the left and button #2 or 5 move the paddle to the right.)

The object of the game is to break through the bricks and advance to the next level without using all of your paddles. If you successfully complete a level and you have paddles remaining, the game will automatically advance to the next level. Additionally, if you successfully complete the tenth level in any of the games *(level 10 in Breakin' Bricks I, level 20 in Breakin' Bricks II, and level 30 in Breakin' Bricks III)* and you still have paddles remaining, you will automatically advance to the next game. For example, if you complete level 10 of Breakin' Bricks I, you will automatically advance to the first level (level 11) of Breakin' Bricks II. Likewise, if you complete the last level of Breakin' Bricks II (level 20), you will automatically advance to the first level (level 21) of Breakin' Bricks III. If you complete the last level (level 30) of Breakin' Bricks III, you will advance to level 1 of Breakin' Bricks I.

BRICK SHAPE/ COLOR	POINTS	REACTION
Black	None	None, no brick here
Pyramid/Red	250	Normal
Pyramid/Magenta	500	Normal
Pyramid/Blue & Red	750	Normal
Pyramid/Green & Blue	1000	Normal
Pyramid/Blue	2000	Normal
Pyramid/Yellow	5000	Normal
Square/Blue	700	Slows down ball
Square/Black & Magenta	7000	Automatically ends level with bonus points
Pyramid/Green	800	Ball goes right through brick and destroys it
Square/Orange	3000	Block up and normal down
Square/Yellow	6000	Requires 3 hits to explode
Red paddle	2000	Toggles the paddle size medium & large unless small - then sets it to medium
Square/White	50	Blocker, never can be destroyed
Square/Black & Cyan	8000	Activates secondary screen
Square/Green	4000	Requires 2 hits to explode

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4.3.4 Invasion Force



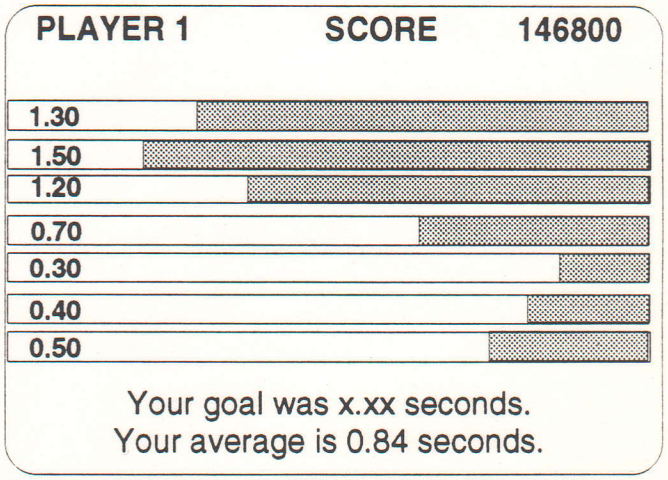
The screen above depicts the Invasion Force game. The object of the game is to shoot at and hit each of the objects moving across the screen while evading the bombs that are dropping out of the mother ship. The left and right "move" buttons (buttons 1, 2, 4 and 5) enable the player to move the firing device left or right to line up with the objects. (Left-handed players may prefer using the first two buttons while right-handed players may prefer using the last two buttons.) The third button is used to fire at the objects. The game may be played by one or two players.

4.3.5 Reacto



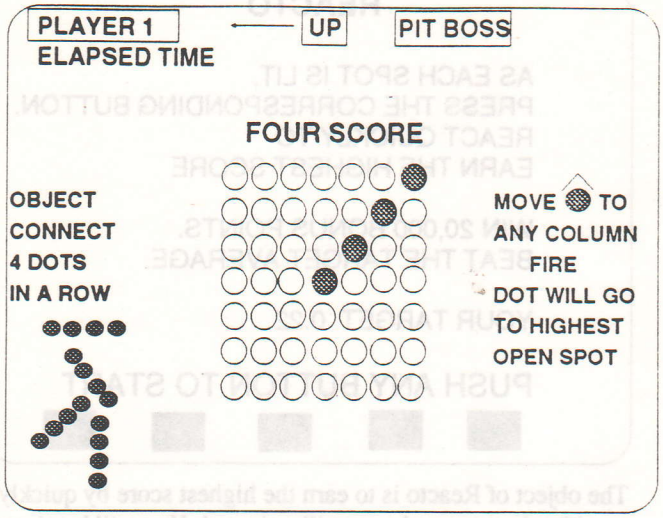
The object of Reacto is to earn the highest score by quickly touching buttons as they are illuminated. You will be given seven chances per round to respond before the game averages your reaction time. There are 3 rounds per game. In the first round, the lamps on the control panel will light along with the spots on the screen. In round 2, no lamps will light up on the control panel, only the spots on the screen will light. In round 3, you will have to match five different shapes to the corresponding spot/button. If you push the wrong button, this message appears on the screen: "WRONG BUTTON PUSHED".

You may play against Robo™ (the machine) or against another player.



NOTE: IF YOU BEAT THE TARGET IN ROUND 1, YOU WIN 20,000 BONUS POINTS. IF YOU BEAT THE TARGET IN ROUND 2, YOU WIN 40,000 BONUS POINTS. IF YOU BEAT THE TARGET IN ROUND 3, YOU WIN 60,000 BONUS POINTS.

4.3.6 Four Score



The challenging game in which the player must connect four dots before his opponent. Play against a friend or play against Robo ™.

Use the left and right arrow keys (they will be illuminated) to move the cursor to the column in which you wish to add a dot. Use the FIRE key to insert a "dot" in the highest open space in the column.

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SECTION 5 - MAINTENANCE

5.1 Warranty and Service

The Pit Boss Superstar 30 game is warranted by Merit Industries, Inc. in accordance with the limited warranty found on page ii of this manual. Should a problem occur, service and troubleshooting must be performed by a qualified service technician familiar with microprocessor based equipment. In order to quickly process equipment in need of repair (when a qualified technician is not available) it should be returned to your distributor and not directly to Merit Industries, Inc. Following this procedure will return your equipment to operation in the shortest time possible.

5.2 Cleaning the Cabinet

The cabinet should be cleaned with a damp cloth and mild detergent.

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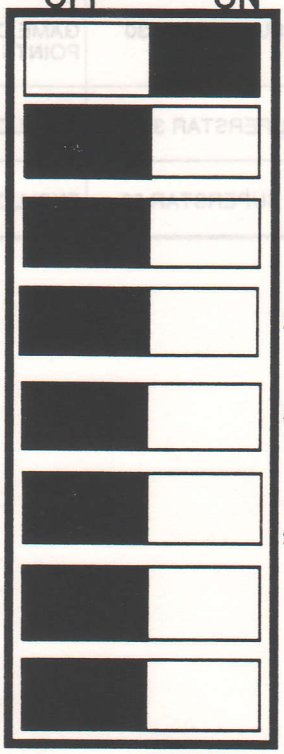
SECTION 6 - DIP SWITCH SETTINGS

6.1 Standard Program Settings

The game contains one DIP switch. The standard settings are defined below. *The recommended setting is switch 1 ON, all other switches OFF.*

- The operator can delete "Super Poker", "Stud Poker", "Bonus Blackjack", "Roll Them Bones" and "Off to the Races" by turning DIP switch two ON.
- The operator can delete all sex questions in the TRIVIA games and all sex phrases in PHRAZE CRAZE by turning DIP switch three ON. The sex categories in Trivia, TicTac and Phraze Craze are replaced with a Pot Luck category.
- For those areas with a two coin at a time limit, turn DIP switch four ON. A lockout coil must be installed on the coin mechanism.

DIP SWITCH ASSIGNMENT 9233-00-XX



OFF		ON
CATEGORIES LETTERED IN TIC TAC TRIVIA	1	CATEGORIES NUMBERED IN TIC TAC TRIVIA
CASINO GAMES ENABLED	2	CASINO GAMES DISABLED
SEX TRIVIA AND SEX PHRASES ENABLED	3	SEX TRIVIA AND SEX PHRASES DISABLED
NO COIN LIMIT	4	2 COIN LIMIT (WITH LOCKOUT COIL)
25¢ PER GAME	5	50¢ PER GAME
15 BALLS IN PIT PONG; AND 5 PADDLES IN BREAKIN' BRICKS	6	11 BALLS IN PIT PONG; AND 3 PADDLES IN BREAKIN' BRICKS
SYNC ADJUSTMENT *(Set by factory)*	7	
SYNC ADJUSTMENT *(Set by factory)*	8	

RECOMMENDED DEFAULT SETTING

6.2 Custom Program Versions

Some of the options or features in the standard game may not be offered in certain jurisdictions. Depending upon the program version being used, the settings may differ slightly. Refer to Table 6.1.

TABLE 6.1

PROGRAM #	PROGRAM DESCRIPTION	PROGRAM DIFFERENCES
9233-00-01	STANDARD PIT BOSS SUPERSTAR 30	INCLUDES ALL OPTIONS/ NO RESTRICTIONS
9233-00-02	MINNESOTA PIT BOSS SUPERSTAR 30	EXCLUDES ALL CASINO GAMES
9233-00-03	LOUISIANA PIT BOSS SUPERSTAR 30	EXCLUDES DRAW POKER AND STUD POKER
9233-00-04	WISCONSIN PIT BOSS SUPERSTAR 30	GAME CANNOT END IF PLAYER BUSTS; 1000 POINTS ARE ADDED TO END OF EACH HAND
9233-00-05	MONTANA PIT BOSS SUPERSTAR 30	EXCLUDES BLACKJACK, DICE AND FOTO FINISH
9233-00-06	CALIFORNIA PIT BOSS SUPERSTAR 30	EXCLUDES POKER DOUBLE UP FEATURE

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SECTION 7 - TROUBLESHOOTING

7.1 Power Up Error Codes

The following error messages may be displayed on power up:

"ERROR CODE 1"
This indicates a defective or improper game program.

If "ERROR CODE 1" appears, first check to ensure that EPROMs U9, U11, U14 and U15 are installed properly, with no bent pins. Please make note of the error code displayed and the numbers on the EPROM labels and call Merit Customer Service at 1-800-445-9353.

"ERROR CODE 2"
This indicates a defective or improper question set, CRT-256 board, or a non-programmed data key.

If "ERROR CODE 2" appears, first check to ensure that EPROMs U5, U6 and U7 are installed properly, with no bent pins. Also, check that the CRT-256 and CRT-254 boards have been installed properly and seated correctly. If the game still does not function, the black data key (DS1204-3) may not be programmed, and the game will not function. Please make note of the error code displayed and the numbers on the EPROM labels and call Merit Customer Service at 1-800-445-9353.

"ERROR CODE 3"
This indicates that the CRT254 security module is not installed or that the black data key (DS1204-3) is not installed on the CRT254 module.

If "ERROR CODE 3" appears, first check to ensure that the CRT254 security module and the black data key (DS1204-3) are present. If they are present, make sure the CRT254 is properly seated on the J2 connector and the black data key is connected to the CRT254 module. If the parts are present but not functioning, or the parts are missing, call Merit Customer Service at 1-800-445-9353.

"ERROR CODE 4"
This indicates that there is a possible problem with the question set.

If "ERROR CODE 4" appears, call Merit Customer Service at 1-800-445-9353.

"ERROR CODE 5"
This indicates that there is an internal software problem.

If "ERROR CODE 5" appears, call Merit Customer Service at 1-800-445-9353.

7.2 Coin Jam

The game also has coin jam and stringing detection software. Should a coin become jammed in the mech or someone tries to string the mech, a continuous tone will be emitted by the game. To clear the coin jam indicator sound, the game must be powered down and back up.

If the game emits the coin jam indicator sound when powered up, this may indicate that the NORMALLY CLOSED contacts of the coin mechanism are being used. The NORMALLY OPEN contacts must be used.

7.3 Clearing Credits or Game Video Lockup

To clear all credits:

1. Power down the machine. Then, open the control panel door.

2. Press and hold both the **CLEAR HIGH SCORES** and **BOOKS** buttons while powering up the machine. Wait until the musical tune is over and then stop holding the buttons. All credits will be cleared.

8.0 PARTS LIST

PART NO.	DESCRIPTION	CABINET
SIGNS AND MANUALS		
PM8920	SIGN,PIT BOSS SUPERSTAR 30	ALL
SA7298	SIGN HOLDER,W/ADH,ACRYLIC	ALL
PM8924	MANUAL, PIT BOSS SUPERSTAR 30	ALL
PM0999	MANUAL, 13" MINI SUPERTOP SYSTEM	13"
HARNESSES AND CABLES		
SA1125-0D	HARNESS MAIN REG 13" C-TOP	13"
SA1146	HARNESS CNTRL 7 HOLE UPR	13"
SA1047	HARNESS P/S MINI SUPERTOP	13"
SA1263	HARN MAIN/CNTRL PNL 9" MCT	9"
SA1329-0A	HRN/OVRLY PIT BOSS 2 VBB 9" MCT	9"
SA1055	HARN,CTL PNL,9 BTN,U/R	19"
SA1138-OJ	HARNESS MAIN 200 UPRIGHT	19"
SA1140	HARNESS AC PWR MONITOR UP	19"
SA1010	HARNESS FOR MX-300 P/S	19"
SA1011	HARNESS MX-300 AC P/S	19"
SA1012	HARNESS MX-3/MONITOR PWR	19"
EC2250	CABLE,RIBN,2 X 14, 9" .600 DIP	ALL
PRINTED CIRCUIT ASSEMBLIES		
SA2270-01	PCA,CPU/MEM/KEY, PIT 30 9" C-TOP	9"
SA2270-02	PCA,CPU/MEM/KEY,PB 30 CT & UP	13", 19"
SA1900-OG	PCA,CPU,VID,250, BASIC	ALL
SA1907	PCA,MEMORY,250,BASIC	ALL
SA1955	PCA,PGRM COPY PROTECT,250,VID	ALL
GLASS		
GL1080	PLEXI,CRT,PIT BOSS, U/R 19"	19"
GL1178	PLEXI,CRT,GRY, .125, MST	13"
GL1179	PLEXI,CRT,CLR,MST	13"

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PART NO.	DESCRIPTION	CABINET
GLASS (CONT.)		
GL1188	PLEXI,CRT, SCREEN .250 MCT	9"
TRANSFORMERS AND POWER SUPPLIES		
SA4055	TRANSFORMER MINI SUPERTOP	13"
EC7526	PWR SPL,SWITCH, 11 AMP	ALL
SA4056	POWER ENTRY MINI SUPER-T 120V	13"
EC3000	FUSE SLO-BLO 250V 2 AMP	13"
SA4044-0E	XFMR ASSY MICRO COUNTER TOP	9"
SA4058-0B	ENTRY 9" MICRO COUNTER TOP 120V	9"
SA4530	POWER ASSEMBLY UPRIGHTS	19"
SA4048	XFMR MX-300 UPRHT/CABRT	19"
EC7250-0C	TRANSFORMER MX-300 110V	19"
SA4049	PWR ENTRY 120V UPRIGHT CABINET	19"
BUTTONS AND LEGENDS		
SW1800	LEGEND YELLOW RECT. MERIT LOGO	13"
SW1890	BUTTON LENS CAP RED RECT.	19"
SW1891	BUTTON LENS CAP YELLOW RECT.	13"
SW1900	PB SWITCH/LAMP, 14V,161	9", 13"
SW1575	BTN/BODY RED RECT PLAY	ALL
SW1576	BTN/BODY RED RECT RAISE	ALL
SW1690	BTN/BODY YL SQ "BLANK"	9", 13"
SW1971	PBBODY,RECT, STRIPPED	19"
SW1821	LEGEND RED RECT. BLANK	19"
SW1856	LEGEND RED REC. MERIT LOGO	19"
SPEAKERS AND MONITORS		
SA4084	SPEAKER ASSY, 4"	9", 13"
SA4085	SPEAKER W/CONN/BRACKET	19"
EC9375	COLOR MONITOR 19"	19"
EC9344-0A	COLOR MONITOR 9" (MICRO C-TOP)	9"
EC9358	COLOR MONITOR 13"	13"

PART NO.	DESCRIPTION	CABINET
VIDEO BILLBOARD, TEST SWITCH AND PANEL ASSEMBLIES		
SA7225	VIDEO B.B. ASSY FOR 9" C/T	9", 19"
SW6003	MEMBRANE KEY BOARD VBB & V/D	9", 19"
SA4089	TEST SWITCH W/CONN ASSY	ALL
SA4013-0A	CONTROL PANEL ASSY 9" MCT	9"
SA4520	PANEL ASSEMBLY UPRIGHTS	19"
MISCELLANEOUS HARDWARE		
HW3151	NUT THUMB NYLON	9"
HW6027	STANDOFF,PLSTC,1-1/8, ADH MTG	ALL
HW6026	STANDOFF,PLSTC,1-1/8,SCREW MTG	9"
EC6050	FLUOR,FIX. 15"W/LB 60 HZ(MT) 110V	19"

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APPENDIX A
VIDEO BILLBOARD KEYBOARD USER'S GUIDE

The keyboard supplied with your PIT BOSS VIDEO BILLBOARD kit allows up to 12 advertisement screens to be entered and edited. These screens will be displayed during the game idle mode.

FEATURES:

The keyboard system has the following features:

- 12 individual screens
- Adjustable background color
- Adjustable character color
- 4 border types
- Large and small characters
- Blinking lines
- Graphic characters
- Punctuation
- Adjustable screen display time
- Removable ad memory module
- Built in HELP facility
- Screen layout:

The screen can be laid out in any way desired to achieve a number of effects. A full set of alphabetic, numeric, punctuation, and graphic characters are available in both big and small sizes. Screens can be entered as all text, just graphic pictures made from graphic characters, or a mixture of both. A number of desirable effects are also achieved by mixing big and small characters on a screen. Lines of characters can be highlighted by using the blinking feature, giving a very eye catching effect.

The screen allows for 24 characters across and up to 21 lines of small characters, or less, depending on the mixture of big and small characters. A large character is two lines high.

ENTERING THE KEYBOARD MODE:

To enter the keyboard mode the game must be in the idle mode, which means all games finished and no pending credits. The keyboard must be connected to the VIDEO BILLBOARD module (See Figures A.1 to A.3) and is activated by pressing the ON/OFF key. Once activated, the cursor (white block) will be displayed in the upper left corner of the screen and the status line will appear on the bottom of the screen, giving the current screen number. If any information was previously entered on screen 1, it will be displayed now.

The screen displays can now be changed or entered. As each character key is pressed, the character will be displayed on the screen where the cursor was, and the cursor will move to the right one character. At the end of the line, the cursor will go to the beginning of the next line. When all the desired information has been entered, either move to the next screen, or exit the keyboard by pressing the ON/OFF key.

APPENDIX A
VIDEO BILLBOARD KEYBOARD USER'S GUIDE (cont.)

KEY DESCRIPTIONS:

BLACK KEYS:

The black keys are the standard alphabetic characters that will be displayed on the screen when both the SHIFT and CONTROL indicators in the status line are off.

RED KEYS:

The red keys are the number, punctuation and graphic characters that will be displayed when the SHIFT is on. To use the red keys, press the red SHIFT button. The word SHIFT will be displayed on the status line to indicate that the red keys are selected. To turn off the red keys, merely press the SHIFT key again. Note that the shift indicator will stay on until SHIFT is pressed again, or until the CONTROL is pressed.

BLUE KEYS:

The blue keys are the special function keys, described as follows:

- *CONTROL* - Turns on the control indicator and waits for the next command keypress (see CONTROL FUNCTIONS).
- *ON/OFF* - Turns the keyboard off when finished entering screen information.
- *BIG/SM* - Changes the character size from big to small or small to big (see CHARACTER SIZE).
- *SPACE* - Puts a blank space at the cursor position in either character size.
- *BORDER* - Change the border type, selecting from 4 borders.
- *F1* - Display the help information. Press again to erase the help messages.
- *F2* - Currently not in use.
- *LEFT ARROW* - Moves the cursor 1 character to the left.
- *RIGHT ARROW* - Moves the cursor 1 character to the right.
- *UP ARROW* - Moves the cursor up 1 line.
- *DOWN ARROW* - Moves the cursor down 1 line.
- *RETURN* - Moves the cursor from the current line to the first character on the next line down.
- *HOME* - Moves the cursor to the upper left corner of the screen.

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APPENDIX A
VIDEO BILLBOARD KEYBOARD USER'S GUIDE (cont.)

CONTROL FUNCTIONS:

BLINKING:

A whole line can be made to blink by pressing the CONTROL key, followed by the T key. The status line will show a BL when the cursor is on a line that has blinking activated. Blinking can be turned off with the same key sequences. Note that the line will not blink in the keyboard mode, only when displayed in the idle mode.

PREVIOUS SCREEN:

To move to the previous screen, press the CONTROL key followed by the B key. The screen number will be reduced by 1 and the screen of text will appear. Note that if the previous screen function is used on screen 1, screen 12 will be displayed.

NEXT SCREEN:

To move to the next screen, press the CONTROL key followed by the F key. The screen number will be increased by 1 and the screen text will appear. Note that if the next screen function is used on screen 12, screen 1 will be displayed.

ERASE SCREEN:

The current screen can be erased by pressing the CONTROL key followed by the E key. The entire screen will be erased and the cursor will be displayed in the upper left corner of the screen.

ERASE ALL SCREENS:

All screens can be erased by first pressing the CONTROL key followed by the A key. All screens will be erased and a blank screen 1 will be displayed on the monitor.

CENTER LINE:

To center the current line, press the CONTROL key followed by the P key. The line will be adjusted to the center of the screen.

SCREEN TIMING:

The amount of time that a screen will be displayed during the idle mode can be varied from 5, 8, 10 or 15 seconds. To change the screen display time, press the CONTROL key followed by the S key, and the time indicated on the screen will be changed from 5 sec to 8 sec to 10 sec to 15 sec, and recycle.

LINE COLOR:

The color of text on each line can be set. To step through the available text colors, first press the CONTROL key followed by the C key. The color of text on the line where the cursor is will change to the next available color. Repeat the key sequence until the desired color is displayed.

APPENDIX A
VIDEO BILLBOARD KEYBOARD USER'S GUIDE (cont.)

TEXT COLOR:

The color of text on all the lines may be set simultaneously to the color of the line the cursor is currently on. First, move the cursor to any line on the screen and, using the CONTROL C line color command, set the line to the color you want all the text and graphics to be. Then press the CONTROL key followed by the W key and all the text and graphics on the screen will be set to the color you selected.

FIELD COLOR:

The color of the field on which the text appears can be set. To step through the available field colors, first press the CONTROL key followed by the Z key. The color of background field will change to the next available color. Repeat the key sequence until the desired color is displayed.

HELP:

The F1 key will display a list of the control functions. Press the F1 key and the following will be displayed on top of any text on the screen:

- PUSH "CONTROL" THEN "F" FOR NEXT PAGE
- PUSH "CONTROL" THEN "B" FOR PREVIOUS PAGE
- PUSH "CONTROL" THEN "T" TO TOGGLE BLINK
- PUSH "CONTROL" THEN "P" TO CENTER LINE
- PUSH "CONTROL" THEN "S" TO SET SECONDS
- PUSH "CONTROL" THEN "C" TO SET LINE COLOR
- PUSH "CONTROL" THEN "W" TO COLOR ALL LINES ALIKE
- PUSH "CONTROL" THEN "Z" TO SET FIELD COLOR
- PUSH "CONTROL" THEN "E" TO ERASE CURRENT PAGE
- PUSH "CONTROL" THEN "A" TO CLEAR ALL ADD PAGES

Pressing any other key will erase the help message and restore the original text to the screen.

REMOVABLE MEMORY CARTRIDGE:

The advertisement screen information is stored on removable memory cartridges (See Figures A.1 to A.3). This allows the cartridges to be programmed ahead of time in the operator's shop and carried preprogrammed to the customer's location.

WARNING:

TURN THE GAME OFF BEFORE REMOVING OR INSTALLING THE MEMORY CARTRIDGE.
FAILURE TO DO SO CAN RESULT IN DAMAGE TO THE CARTRIDGE OR THE VIDEO GAME AND VOIDS ANY WARRANTY.

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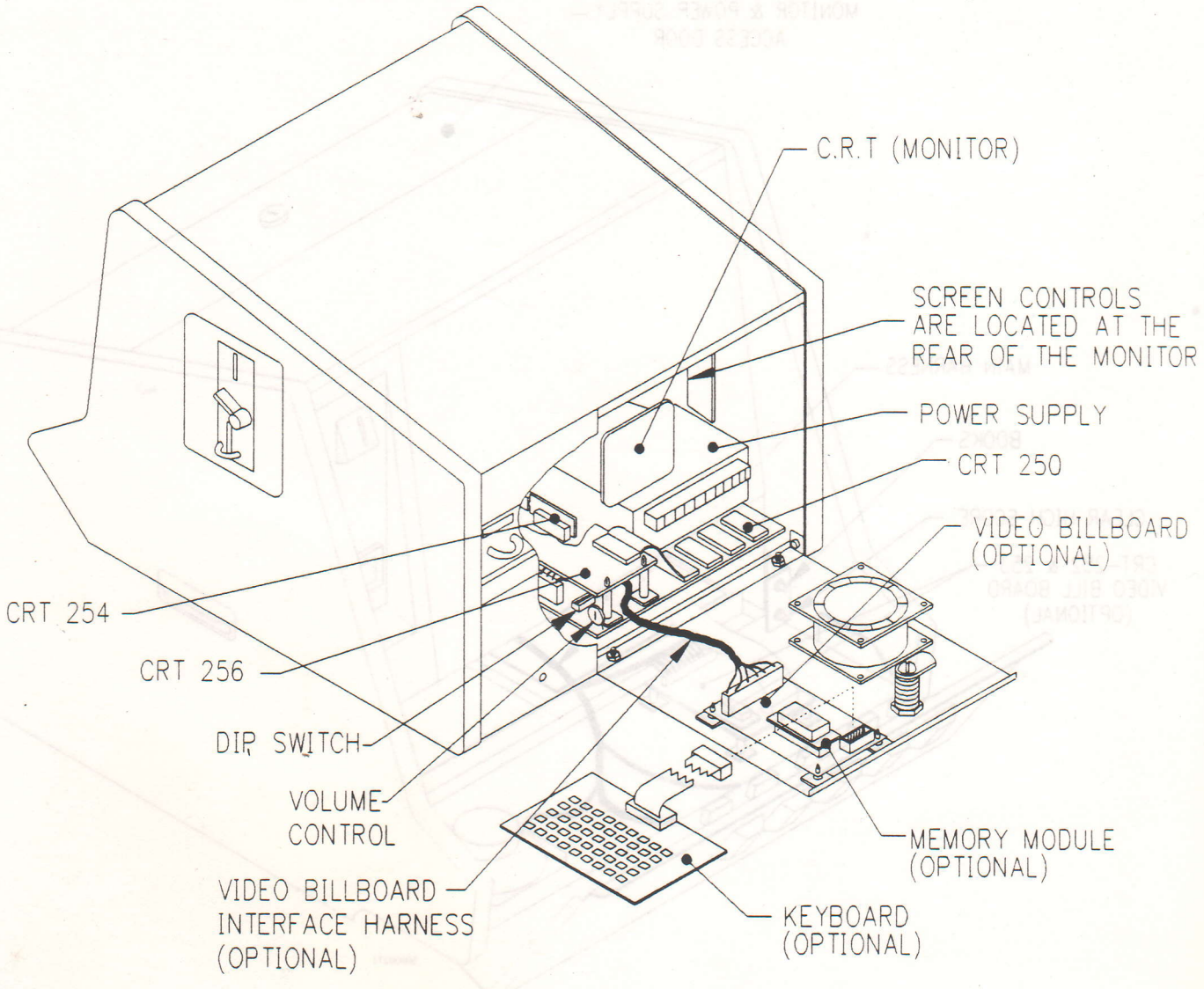


FIGURE A.1 - LOCATION OF VIDEO BILLBOARD AND MEMORY MODULE - 9" CABINET

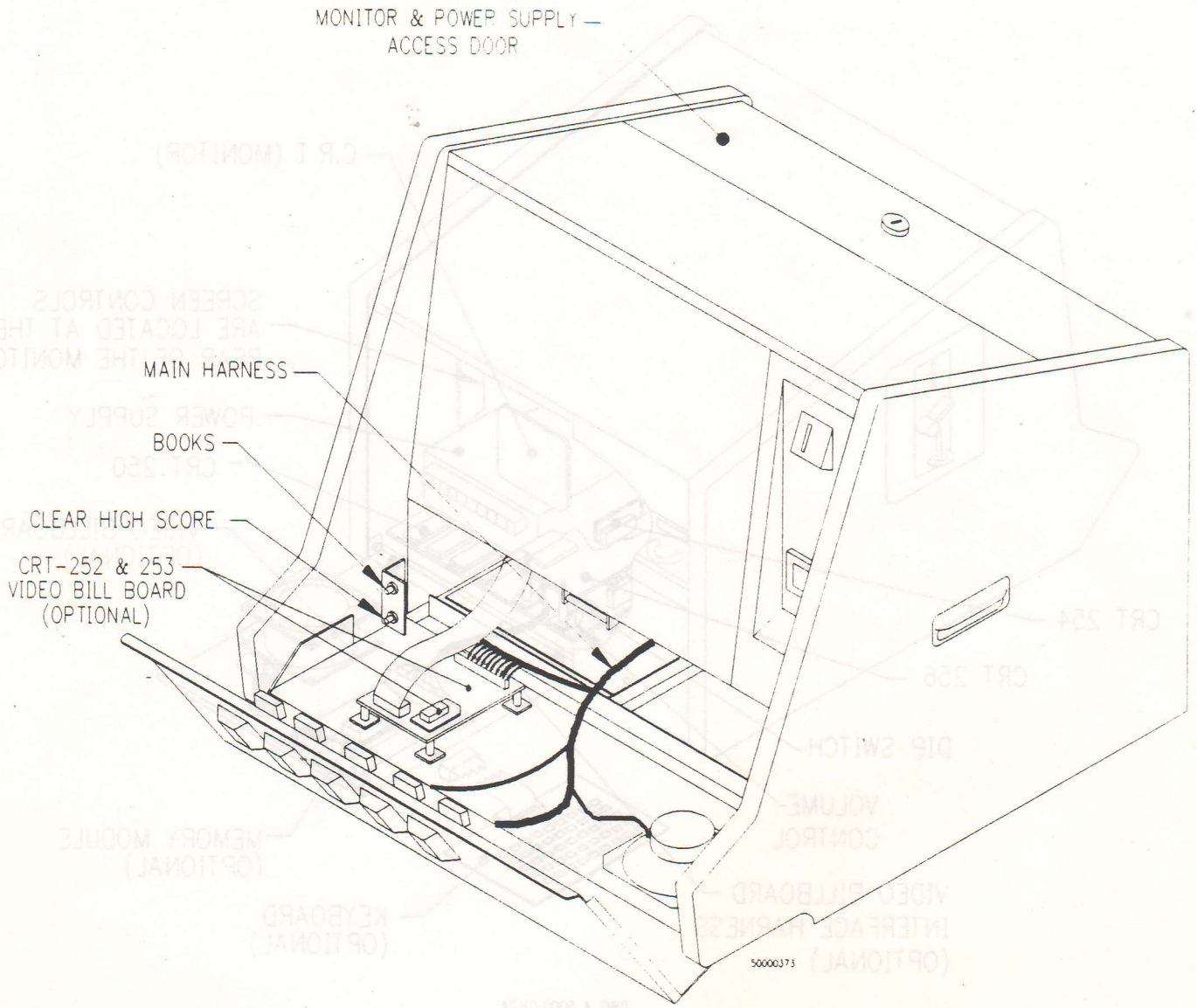


FIGURE A.2 - LOCATION OF VIDEO BILLBOARD AND MEMORY MODULE - 13" CABINET

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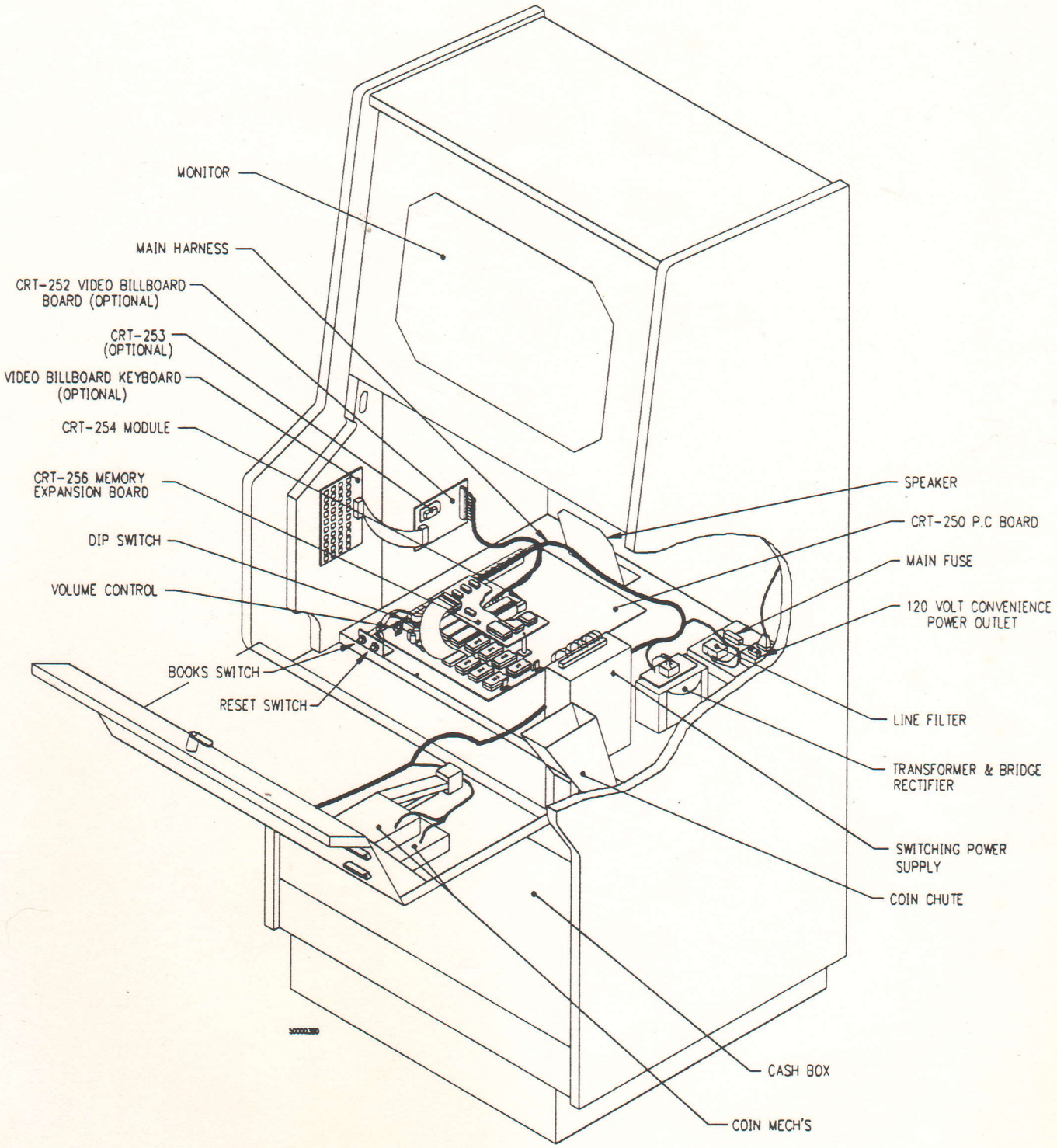


FIGURE A.3 - LOCATION OF VIDEO BILLBOARD AND MEMORY MODULE - 19" CABINET