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How to Adjust Your Ticket Payout Percentage (Also Ref. Sec. 2, Chp. 4, Cut the Cheese Adj. 2, 6, 9-14, & 16)

Thank you for purchasing a Cut the Cheese redemption game from Sega Pinball, Inc. This is the first game in our SEGA FAMILY FUN® Series and the response to it has been overwhelming from both operators and players alike.

Research gathered from our test locations has shown that it is fairly easy to achieve a high degree of player appeal while maximizing the return on your investment. We would like to briefly share the most successful methods we have found to accomplish this goal.

Control payouts from J-A-C-K-P-O-T Toilet Shots —

By far the biggest factor which keeps players coming back for more is the challenge of spelling J-A-C-K-P-O-T through consecutive shots into the toilet. We have found that players prefer that an increasing # of tickets be awarded for each successive J-A-C-K-P-O-T Letter. Our best results have been obtained with the following settings:

• J pays 5 points • A pays 10 points • C pays 15 points • K pays 20 points • P pays 25 points • O pays 30 points • T pays 40 points (Initial Jackpot) (Ref. Adjustments S-14, # of Points for "X") • Jackpot Letter backup limit set to BACKUP ALL THE WAY (so that winning points from any other hole besides a toilet shot will always take away the most recently hit letter in J-A-C-K-P-O-T (Ref. Adj. 2, Jackpot Letter Backup Limit). Using these settings the operator will be targeting an overall payout of 36%.

Control payouts with Mr. E. Cheese automatic percentaging —

Since the Mr. E. Cheese holes are the most frequent playfield holes scored by the players, Mr. E. Cheese should be set to an automatic percentaged payout. Fixed payouts can be set for 1 to 10 points (Ref. Adj. 16, Ticket Point Value), while automatic percentaging can be set from 20% to 50%. To continue to target an overall payout of 36%, Mr. E. Cheese should also be set to 36% (Ref. Adj. 6, Target Point Payout Percentage. Default = 35%).

Control payouts from all playfield holes with Coin Stops —

Finally, you can control the payouts from any playfield hole by adding, removing, or rotating the position of the Coin Stops. We have had the best results using the Coin Stops on the following holes:

• Left and Right 2 • Left and Right 3 • Left and Right 4 • Left and Right 10 • Left and Right 30 • Left and Right 50 (angled AWAY from the toilet) • Left and Right Mr. E. Cheese • Note: The Coin Stops are shipped pre-installed in this configuration from the factory (Reference Section 3, Chapter 1, Playfield - General Parts, Butyrate & Decals, for locations).

Other Suggestions —

For the first two weeks that your Cut the Cheese is on location, we highly recommend that you check the audits often to assess the overall skill level of your players (See Section 3, Chapter 3, Go To Audits Menu). Daily monitoring, especially during peak periods of play, is encouraged. The faster you can obtain an accurate assessment of your players' skills, the faster you will be able to determine the best configuration for your Cut the Cheese that gives your players a fun yet challenging game while providing an optimal return.

We also recommend that you monitor the game closely following any change of settings. A seemingly minor change could affect the payout or play appeal of the game, resulting in erratic earnings. For example, setting all J-A-C-K-P-O-T letters to pay a flat 15 points at one of our test locations (still approximately 36%) caused play appeal (and earnings) to DROP over 30% from its previous level! This is precisely why we recommend that you monitor each of your Cut the Cheese games very closely, so that you can tune the game to the needs of each location. You may wish to experiment with the Coin Stops to suit the skill of your players. However, we strongly encourage you to ALWAYS use stops on the left and right Mr. E. Cheese hole to collect as many coins as possible from missed ramp shots, allowing the auto-percentaging to work in your favor.

Should you find that you need to increase the payout percentage in response to the skill level of your players, we recommend the following —

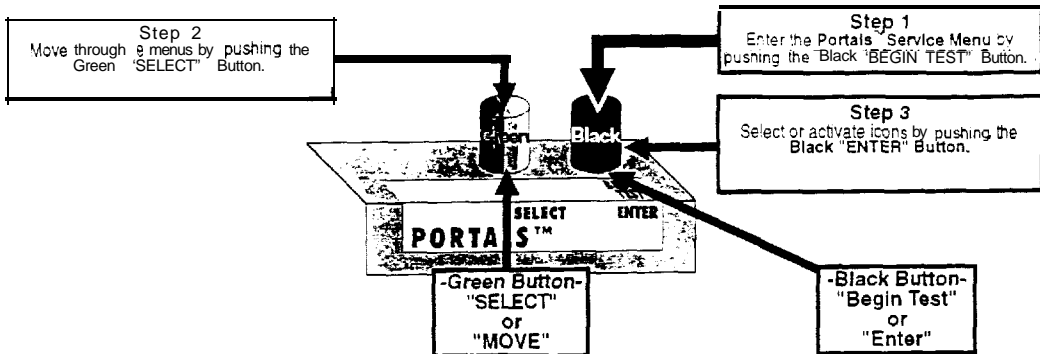
Consider protecting a letter in J-A-C-K-P-O-T using the backup letter limit Adjustment 2. When necessary we found that protecting the letter "C" was quite effective (once the players hit the "C", this letter can never be taken away due to missed shots). Should you elect to do this, note that your audits will now reflect a much more frequent set of payouts for the letters "K" and "P" since they are the next unprotected letters. Your jackpot frequency will also increase, since fewer shots will be required to hit a jackpot once the protected letter is reached. You should review your payouts for all J-A-C-K-P-O-T letters once you decide to protect a letter in the sequence to ensure that the overall payout percentage is not significantly higher than your target. For example, by merely protecting the letter "C" using the payouts suggested above for a 36% target, you are likely to increase the overall payout percentage upwards of 50%!

Consider increasing the payout for each letter in J-A-C-K-P-O-T. If you retained all of the above settings for a 36% payout and merely added 5 points to the payout for each letter (so that "J" now pays 10 points, "A" now pays 15 points, etc.), you could expect to see your overall payout percentage increase to approximately 42%.

We hope that you find these suggestions helpful in operating your Cut the Cheese!

Portals™ Service Menu System

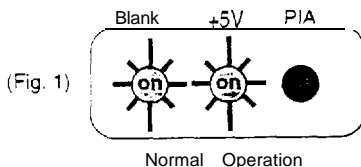
This manual coincides with the Portals™ Service Menu. As the operator navigates through the system on the display, the operator can follow along with this manual. This manual will be divided into Sections and Chapters. The entire **Portals™ Service Menu** is covered in Section 2 with all its chapters. For instructions and details of the Portals™ Service Menu please read through the entire Section 2 before operating the Portals™ Service Menu. The other Sections and Chapters will cover the remainder of information as applies to this redemption game.



Power-Up CPU Self Tests

Upon power-up the CPU Board performs a series of self tests of major components. Turn the game on, while observing the LEDs on the CPU Board. Tests of the PIAs, RAM, and EPROMs are performed automatically and results of the tests are indicated by the PIA LED.

With all tests passed, the LEDs illuminate in the following sequence at power turn-on. The PIA and +5v LEDs illuminate immediately. Approximately 1/2-second later, the PIA LED goes out and the Blanking LED illuminates; the Blanking and +5v LEDs remain illuminated (normal operation) until the game is turned off (See Fig. 1). Test failures are indicated with the PIA LED lit.

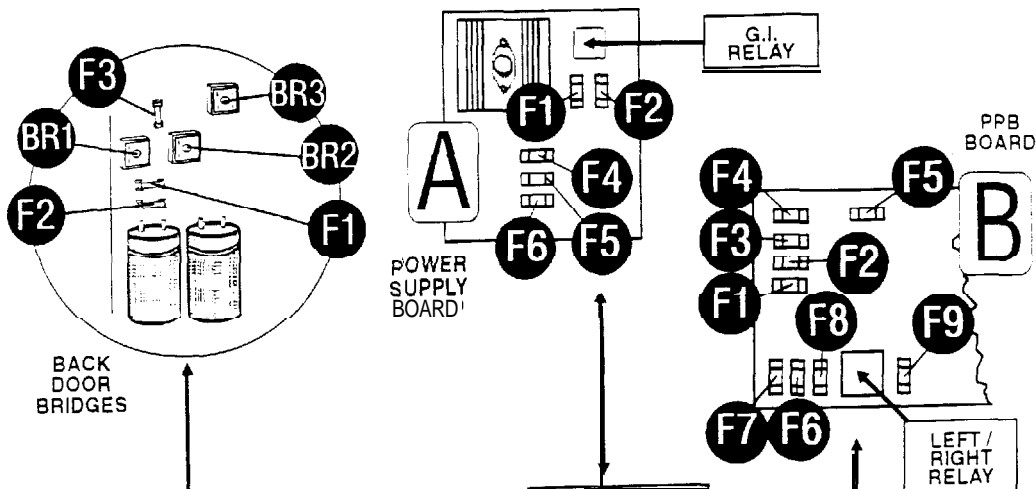


PIA LED	SUSPECT COMPONENT
Stays On:	One of the 6821 PIAs
Flashes 1 Time:	6264 RAM at location D5
Flashes 2 Times:	EPROM at location C5

QUICK REFERENCE FUSE CHART

PPB BOARD		POWER SUPPLY BOARD	
Fuse	DO NOT CHANGE VALUE OF F6 & F7	Fuse	
F1	Fuse Position Not Used (If stuffed, use as spare)	F1	7A Slo-Blo +5vDC Regulator Input (9vAC)
F2	Fuse Position Not Used (If stuffed, use as spare)	F2	7A Slo-Blo +5vDC Regulator Input (9vAC)
F3	Fuse Position Not Used (If stuffed, use as spare)	F3	Fuse Position Not Used (If stuffed, use as spare)
F4	Fuse Position Not Used (If stuffed, use as spare)	F4	8A Slo-Blo Switched Illumination Buss (18vDC)
F5	Fuse Position Not Used (If stuffed, use as spare)	F5	4A Slo-Blo Solenoid (32vDC)
F6	5A Slo-Blo Flash Lamps (32vDC) Right	F6	5A Slo-Blo Solenoid Buss (32vDC)
F7	5A Slo-Blo 32v Coils/Flash Lamps Left		
F8	Fuse Position Not Used (If stuffed, use as spare)		
F9	Fuse Position Not Used (If stuffed, use as spare)		

÷ CABINET BACK DOOR BOARD LAYOUT, FUSE & RELAY LOCATIONS 4



Take Note:

DO NOT CHANGE
FUSE VALUE OF
5A IN F6 & F7 ON
THE PPB BOARD!

(A) PSB Fuses Power Supply Board

F1	7A Slo-Blo +5v DC Regulator Input (9v AC)
F2	7A Slo-Blo +5v DC Regulator Input (9v AC)
F3	Fuse Position Not Used (If stuffed, use as spare.)
F4	8A Slo-Blo Switched illum. Buss (18v AC)
F5	4A Slo-Blo Solenoid (32v DC)
F6	5A Slo-Blo Sol. Buss (34v DC) L/R Relay Coils/Flash

Back Door Bridges / Fuses

F1	8A 250v Slo-Blo 18v DC BR1 Lamps
F2	8A 250v Slo-Blo 32v DC BR2 Coils/Flash Lamps
F3	8A 250v Slo-Blo 18v DC BR3 Display

See Section 2, Chapter 2
for Switches, Coils & Lamps

See Section 3, Chapter 1
for Board Part Numbers

See Section 4, Chapter 3
for Board Layouts

(8) PPB Fuses Playfield Power Board

F1	Fuse Position Not Used (If stuffed, use as spare.)
F2	Fuse Position Not Used (If stuffed, use as spare.)
F3	Fuse Position Not Used (If stuffed, use as spare.)
F4	Fuse Position Not Used (If stuffed, use as spare.)
F5	Fuse Position Not Used (If stuffed, use as spare.)
F6	5A Slo-Blo (Right) (32v) Flash Lamps
F7	5A Slo-Blo (Right/Left) (32v) Coils/Flash Lamps
F8	Fuse Position Not Used (If stuffed, use as spare.)
F9	Fuse Position Not Used (If stuffed, use as spare.)

Cabinet Fuse (In Power Box in Cabinet)

Main Fuse Line 1X 3A 250v Slo-Blo

[illegible]

1 2 3 4 5 6 7 8 9 10 11 12



Normal Line:	110v AC - 125v AC @ 60Hz		
Domestic uses an 8AMP 250v Slo-Blo Fuse.	AVG OPERATION CURRENT: 2.8AMP WATTAGE: 329w	MAX OPERATION CURRENT: 8AMP WATTAGE: 940w	
High Line:	218v AC - 240v AC @ 50Hz		
Export uses 2 X 5AMP 250v Slo-Blo Fuses. (*England & Hong Kong use an 8amp 250v S/B Fuse.)	AVG OPERATION CURRENT: 1.8AMP WATTAGE: 412w	MAX OPERATION CURRENT: 5AMP 8AMP* WATTAGE: 1145w 1832w* <small>England & Hong Kong use an 8A F</small>	
Low Line:	95v AC - 108v AC @ 50Hz / 60Hz		
Export Japan Only uses an 8AMP 250v Slo-Blo Fuse.	AVG OPERATION CURRENT: 2.6AMP WATTAGE: 264w	MAX OPERATION CURRENT: 8AMP WATTAGE: 812w	

[illegible]



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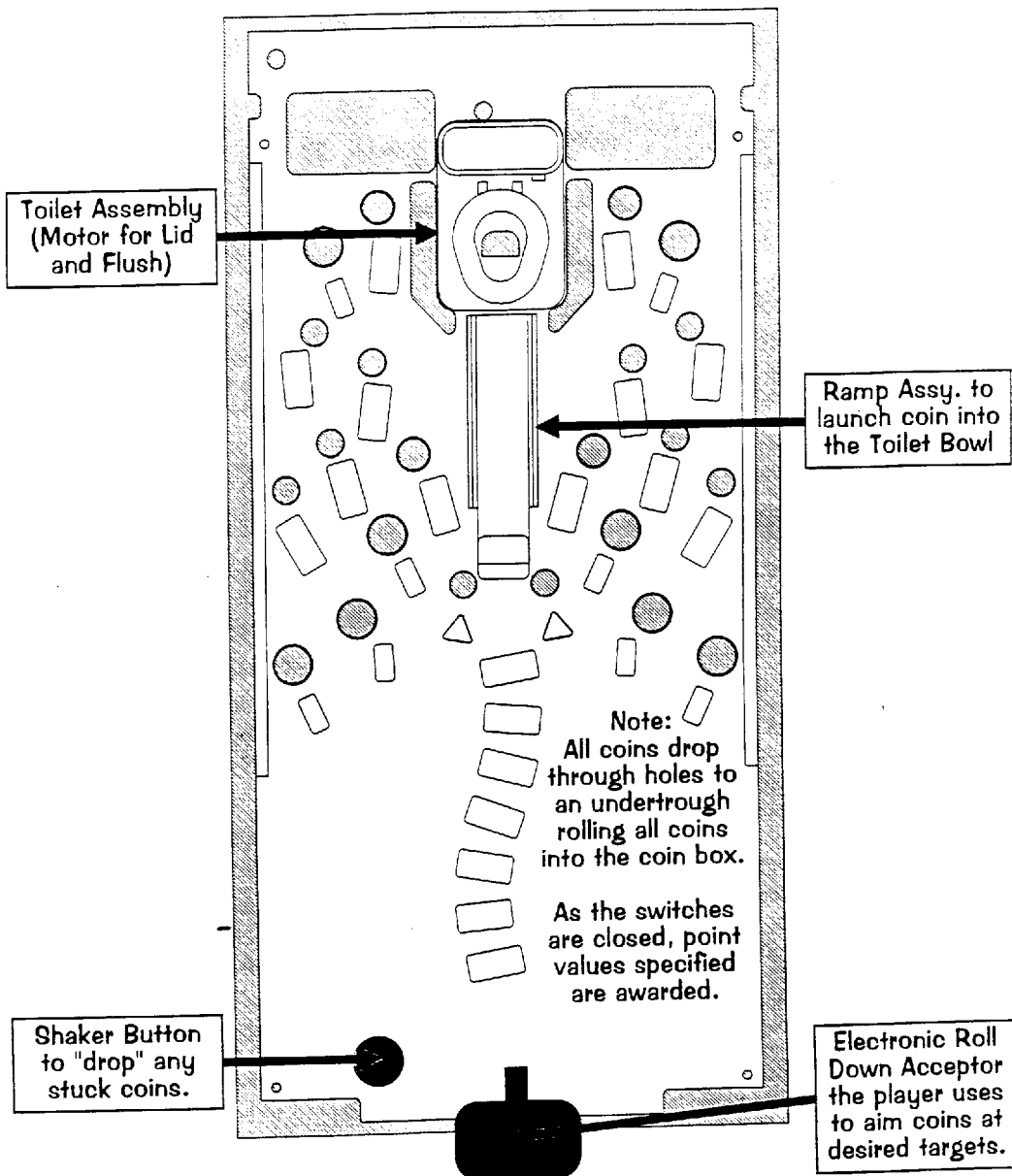
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Game Rules

Overview

Below is the **CUT THE CHEESE** Playfield with all of its component locations indicated (for details on these parts, see Section 2). Read over the components below to help in understanding the effects of the game rules.



'Cut The Cheese'

Game Rules



Roll your coin into the holes on the playfield to win the indicated number of points for tickets (see Adj. 16, Ticket Point Value, to change ratio of points to tickets. Default=1).



Roll your coin into the toilet when the lid is open to advance the letters in J-A-C-K-P-O-T and win the number of points associated with that letter.



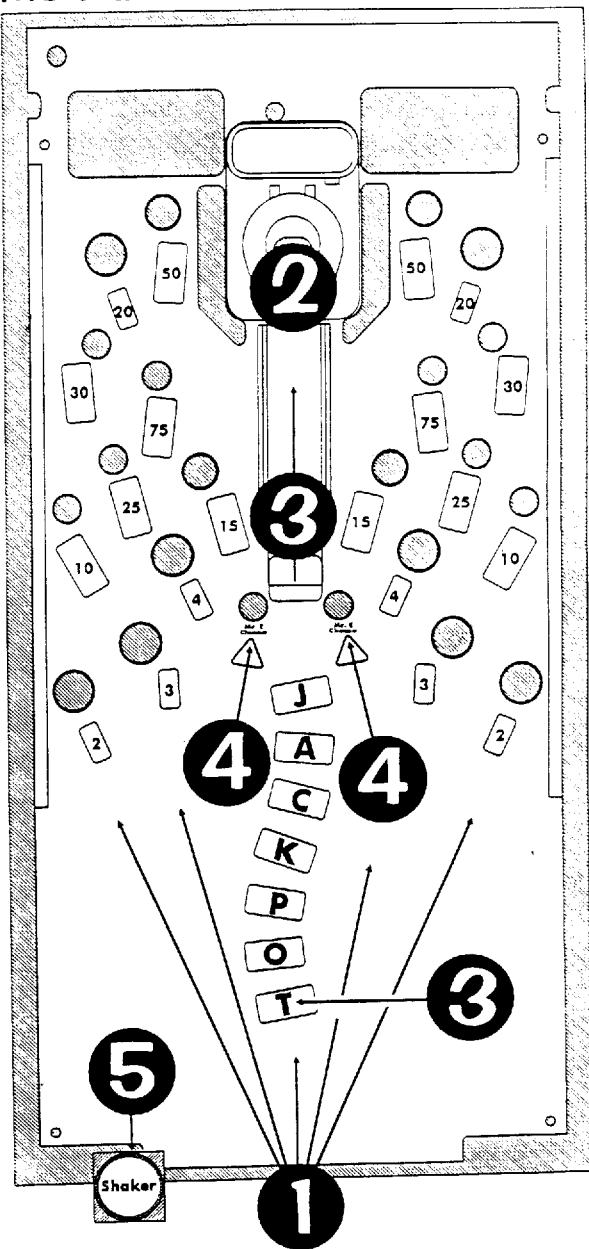
Shoot the toilet when the letter 'T' is flashing to win all of the tickets in the jackpot (which increases with every coin played). But be careful - missing the toilet may cause you to lose J-A-C-K-P-O-T letters! (See Adj. 2, Jackpot Letter Backup Limit.)



Rolling the coin into either of the "Mr. E Cheese" holes will award a mystery amount of points!



Press the SHAKER Button (when lit) to (((s h a k e))) the playfield if you think it might help you!



Portals™ Service Menu

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Bullet Notes:

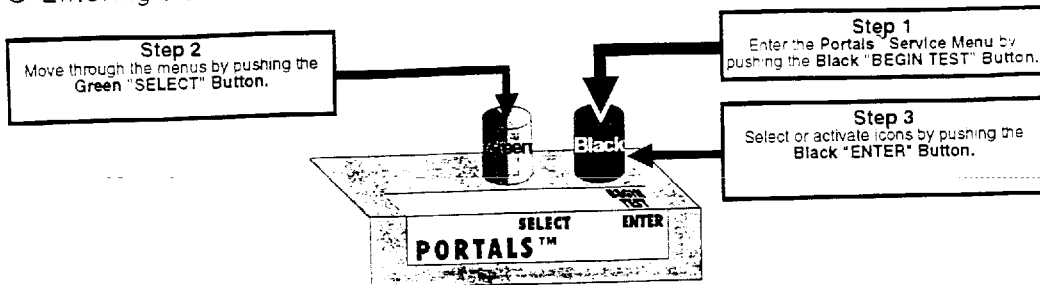
- From Main Menu, Level 1.
- From the Sub-Menu, Level 2.

- From the Sub-Menu, Level 3.
- ◻ Added Information/Instruction.

Service Switch Set (Green & Black Buttons) Access & Use

Open Coin Door and view Service Switch Set (see figures below). The Memory Protect Switch is now disabled when changing adjustments, leave the coin door open, so changes can be made. **Please ensure the Playfield Power Interlock Switch is pulled out for Coil and Flashlamp testing (this is required).**

① Entering Portals™ Service Menu:



How to Use This Section

This section will cover all functions available in the **Portals™ Service Menu** in a *Step-By-Step* process. This section is divided into chapters which coincide with the **MAIN MENU**. The following pages in this chapter will instruct the operator on how to move through the menus. It's simple, easy and fun to use!

To get into the Service Menu Mode: • Power-up game (if not already) & open the Coin Door. • On the Coin Door is the Service Switch Set (**Green & Black Buttons**). Push down the **Black "BEGIN TEST" Button**.

Looking at the Video Display you will momentarily see the introductory screen "Service Menu" with a satellite flying from right to left pulling a banner "Portals™ © 1995 SEGA PINBALL, INC.", followed by the **MAIN MENU**.

The Coin Door may be closed for security, however, please note with the Coin Door closed, the game's **MEMORY PROTECT** is enabled; **meaning any changes that are made will be not be written to memory**. If changing adjustments is required, ensure the Coin Door is open.

Use the **Green "SELECT" Button** to move the selected **ICON**, and the **Black "ENTER" Button** to activate the selected **ICON**.

For diagnostic purposes, be sure the **Playfield Power Interlock Switch** is pulled out so **Playfield Power** is not disabled.

The **MAIN MENU** now appears with the "DIAG" *Icon* (**DIAGNOSTICS MENU**) flashing.

As the operator views the Menu Screen(s), the **MORE MORE** symbols indicates that there are more *Icons* to select in each direction. The *Icon* selected will blink. Pushing the **Black "ENTER" Button** will select the *Icon* and the Menu Screen will change to the menu selected. Select the "**PREV**" *Icons* to move backwards through the menu levels. Select the "**QUIT**" *Icon* to completely exit the Service Mode.

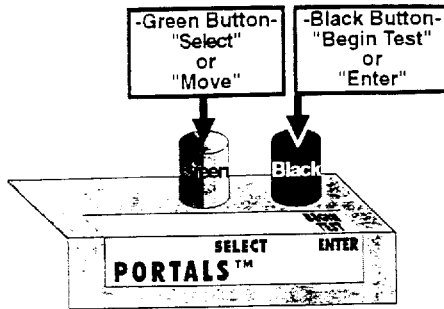
View the **Portals™ Service Menu Icon Tree** on the next pages for a complete overview of all menus used in this system. View the last chapter (**HELP**) if more information is required. Selecting the "**QUIT**" *Icon* with the **Green "SELECT" Button**, then pressing the **Black "ENTER" Button** will exit the Service Mode. This applies to the large and small "**QUIT**" *Icons*.

The **chapters** in this **section**, which coincide with the **MAIN MENU**, will also provide more detailed information which could not fit in the display. Use both the manual and the display to help customize, troubleshoot and/or diagnose faults, if any.

Exiting the Portals™ Service Menu

All icons will be covered in the chapters of this section with the exception of the 'QUIT' icon in the MAIN MENU. Both the large and small icons if selected and activated, will exit the user from the Portals™ Service Menu. The display will return back to the ATTRACT MODE! To re-enter the Portals™ Service Menu follow the instructions at the beginning of this chapter.

If more help is required, see Chapter 6 of this section, and view the various help displays in the game.



Your Notes

Portals™ Service Menu Icon Tree

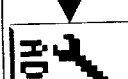
Main Menu



GO TO DIAG-
NOSTICS MENU



CUT THE CHEESE
AUDITS



CUT THE CHEESE
ADJUSTMENTS



GO TO RESET
MENU



QUIT THIS
SESSION



GO TO HELP
SCREEN

Help
Display

Back to
Attract Mode



MORE

Indicates more
icons to the left.



MORE

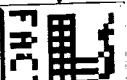
Indicates more
icons to the right.

See Section 2, Chapter 1, for detailed explanations
of the Portals™ Service Menu.

See the remaining chapters for detailed
explanations of all the icons in the menus.

Reset
Menu*

See Section 2, Chapter 5
for details on icon usage.



FACTORY
RESET

Request Installed
(Back to
Attract Mode)



RESET
COIN AUDITS

Request Installed

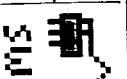


RESET
ALL AUDITS

Request Installed

Diagnostics
Menu*

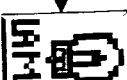
See Section 1, Chapter 2,
for details on icon usage.



GO TO SWITCH
MENU



GO TO COIL
MENU



GO TO LAMP
MENU



TEST FLASH
LAMPS

Test Display



SERVICE
PHONE #

1-800-KICKERS



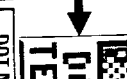
SOUND /
SPEAKER TEST

Test Display



BEGIN
BURN IN

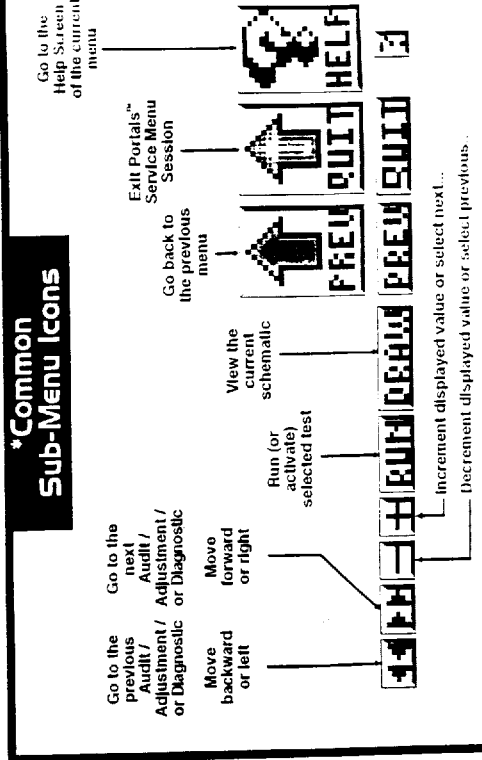
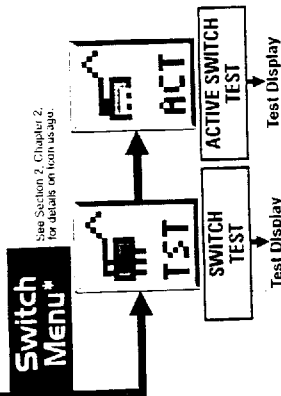
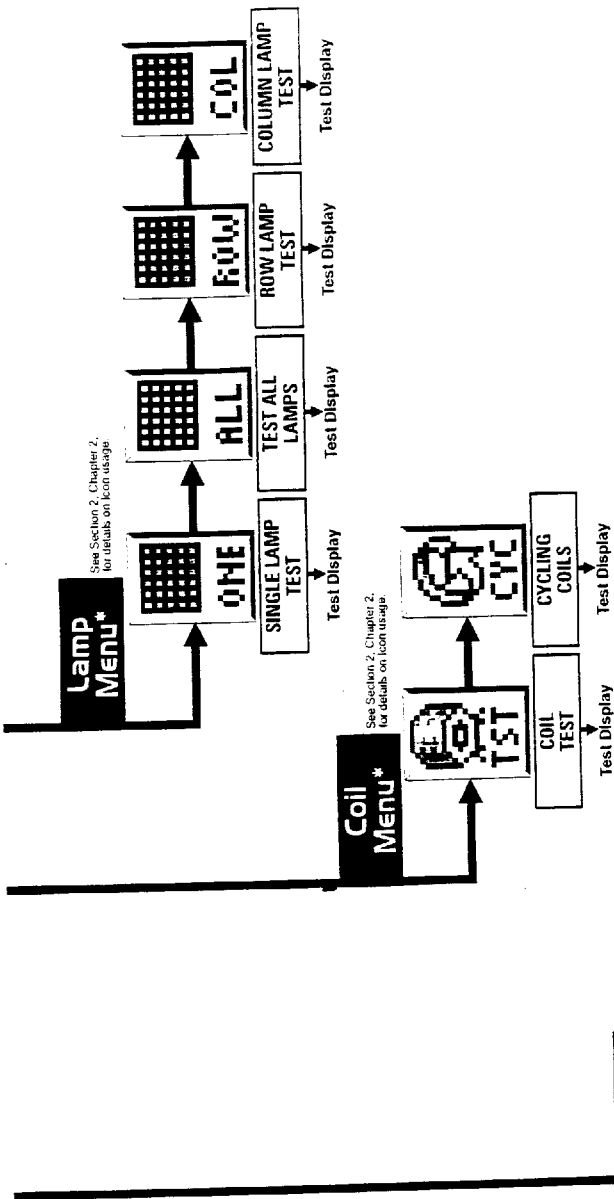
Test Display



DOT MATRIX
TEST

Test Display

T M A B C CUT THE CHEESE



Go To Diagnostics Menu

Special Note: If the *display flashes* "OPEN THE COIN DOOR" the game is indicating that memory has been corrupted. This is caused by either failure in memory (e.g. batteries are dead and/or faulty RAM) or upon installation of updated version of game code. Opening the Coin Door will initiate a *Factory Restore*, by opening the *Memory Protect Switch*. Check battery voltage at **CMOS RAM** with the power off.

Overview

The **Portals™ Service Menu System** provides tests for sounds, display, lamps, switches and coils. Each feature may be tested manually or automatically after entering the **Portals™ Service Menu** (see Chapter 1 of this section). Select the "DIAG" *icon* from the **MAIN MENU** to go to the **DIAGNOSTICS MENU**. The automatic tests (e.g. Cycling Coils, Flash Lamps, etc.) may be used for a quick verification of automatic test functions and the manual tests (Begin Play Test, Single Lamp/All/Row/Column Tests, etc.) may be used for troubleshooting.

During game play, activation of switches and operation of coils with associated switches are monitored. If the CPU Board does not detect a switch transition ("Stuck Open" / "Stuck Closed") for 50 games, it is considered faulty. When operation of a coil should close or open a switch and does not, the coil is considered faulty. In the Attract Mode, faulty switches and coils (if any) are reported. Note that reporting of an unused switch does not constitute a problem and that a bad coil could mean that the associated switch requires adjustment.



GO TO DIAGNOSTICS MENU

With the game in the Attract Mode, open the Coin Door and press the **Black "BEGIN TEST" Button**. Select the "DIAG" *icon* in the **MAIN MENU** with the **Green "SELECT" Button** (upon entry of the **Portals™ Service Menu**, the system defaults with the selection of the "DIAG" *icon* flashing) and press the **Black "ENTER" Button**. The **DIAGNOSTICS MENU** appears.



The "MORE" *symbols* are indicating that "more *icons*" are available which don't appear in the display and which way to move the selection to view the *icons*.



Important Notes:



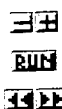
Exit any sub-menu and return to the **MAIN MENU** by selecting & activating the "PREV" *icons*. If no *icons* appear in the display because of a testing function or special display (e.g. "Help"), press any button to exit.



Selecting & activating the "HELP" *icon* from any display will show a help screen. (An explanation of each *Mini-Icon* at that level will cycle continuously until any active button is pressed.)



Selecting & activating the "QUIT" *icon* from any display will exit the Service Session.



In Diagnostics, selecting & activating the "-" or "+" *icons* moves test forwards/backwards. Selecting & activating the "RUN" *icon* repeats the test on the coil or flash lamp left off at. Selecting & activating the "ARROW" *icon* moves between tests in the sub-menu.

Some tests require navigation through the menu(s) and selection of the *icons* with the **Green "SELECT"** and **Black "ENTER" Buttons**.

In Coil Test, ensure the **Power Interlock Switch** is pulled out. (See **Access & Use** of Chapter 1 of this section for the location.) If the switch is not pulled out, the coils and flash lamps cannot be tested (32v DC and 50v DC are disabled). Closing the Coin Door will automatically reset this switch. Coils and Flash Lamps are checked manually in Coil Test. To automatically check coils, go to Cycling Coils from the **COIL TEST MENU**. To automatically check flash lamps, go to Flash Lamp Test, from the **DIAGNOSTICS MENU**.



GO TO SWITCH MENU

From the **DIAGNOSTICS MENU**, select the "SW" icon with the **Green** "SELECT" Button and press the **Black** "ENTER" Button. Switches are configured in an 8 x 8 Matrix of Columns (Switch Drives) and Rows (Switch Returns) with up to 64 switches possible. The Switch Test Menu consists of two parts: Switch Test and Active Switches.



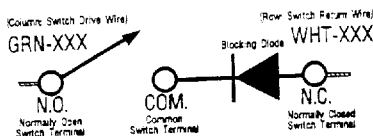
Switch Test

To initiate, from the **SWITCH MENU**, select the "TST" icon with the **Green** Button & press the **Black** Button. In Switch Test, close each switch and observe the display. The display will describe the switch in the Switch Matrix, which includes the switch name, Return (Row) Wire, Drive (Column) Wire, Part N^o, and the "Pin-Outs" from the CPU Board. When the switch is released, the information of the last switch closed will remain in the display until another switch is closed or the test is exited.

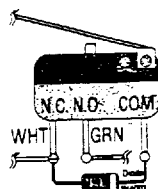


Active Switch Test

To initiate, from the **SWITCH MENU**, select the "ACT" icon with the **Green** Button & press the **Black** Button. If still in a previous test, select the "PREV" icon to return to Switch Menu or selecting either of the "ARROW" icons will move through the tests. If any switches are stuck closed (or made from the presence of a pinball), the display sequences through the switch names, Return (Row) Wire, Drive (Column) Wire, drive transistor, Part N^o, and the "Pin-Outs" from the CPU/SOUND Board. This cycle continues until all switches are cleared or until the test is exited.



Typical Switch Schematic & Side View

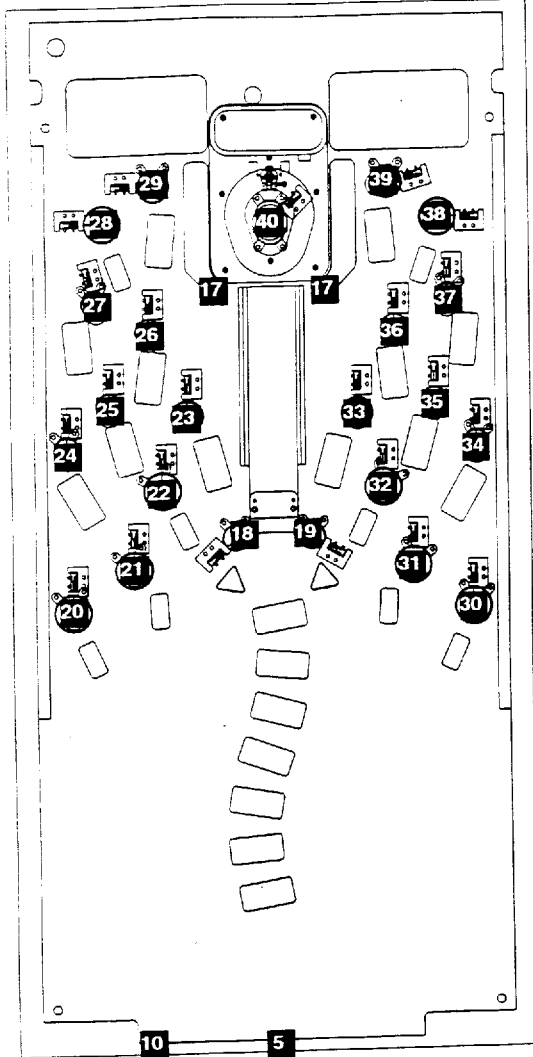


SWITCH MATRIX GRID

Column (Drive)	1 Q55 GRN-BRN CN8-1	2 Q54 GRN-RED CN8-2	3 Q53 GRN-ORG CN8-3	4 Q52 GRN-YEL CN8-4	5 Q51 GRN-BLK CN8-5	6 Q50 GRN-BLU CN8-7	7 Q49 GRN-VIO CN8-8	8 Q48 GRN-GRY CN8-9
Row (Return)								
1	WHT-BRN CN10-9 NOT USED	WHT-RED CN10-8 NOT USED	CHASM X2	LEFT (22)	RIGHT (15)	NOT USED	NOT USED	NOT USED
2	WHT-RED CN10-8	SHAKER OPTION BUTTON	MR. E CHEESE LEFT	LEFT (75)	RIGHT (10)	NOT USED	NOT USED	NOT USED
3	WHT-ORG CN10-7	NOT USED	MR. E CHEESE RIGHT	LEFT (30)	RIGHT (25)	NOT USED	NOT USED	NOT USED
4	WHT-YEL CN10-6	NOT USED	LEFT (2)	LEFT (200)	RIGHT (75)	NOT USED	NOT USED	NOT USED
5	WHT-GRN CN10-5	CENTER COIN SLOT	LEFT MID (3)	LEFT (50)	RIGHT (30)	NOT USED	NOT USED	NOT USED
6	WHT-BLU CN10-3	NOT USED	LEFT (4)	RIGHT (2)	RIGHT (200)	NOT USED	NOT USED	NOT USED
7	WHT-VIO CN10-2	NOT USED	LEFT (15)	RIGHT (3)	RIGHT (50)	NOT USED	NOT USED	NOT USED
8	WHT-GRY CN10-1	LOW TICKETS	LEFT (10)	RIGHT (4)	TOILET	NOT USED	NOT USED	NOT USED

Switch Matrix Descriptions with Part Numbers and Locations

The switch locations correspond with the Switch N^o in the table below and the Switch Matrix Grid.



Legend Note:

□ = Switches located above playfield.

■ = Switches located below playfield.

The following switch is located in the cabinet and are not noted in the diagram above:

8

The following switches are not used:

1-4 6-7 9 11-16 41-64

Sw. N ^o	Col. N ^o	Row N ^o	Switch Matrix Description	Part N ^o
1	1	1	NOT USED	
2	1	2	NOT USED	
3	1	3	NOT USED	
4	1	4	NOT USED	
5	1	5	CENTER COIN SLOT	N/A
6	1	6	NOT USED	
7	1	7	NOT USED	
8	1	8	LOW TICKETS	180-5119-00
9	2	1	NOT USED	
10	2	2	SHAKER OPTION BUTTON	500-6728-08
11	2	3	NOT USED	
12	2	4	NOT USED	
13	2	5	NOT USED	
14	2	6	NOT USED	
15	2	7	NOT USED	
16	2	8	NOT USED	
17	3	1	CHASM FUNNEL LEFT & RIGHT	180-5134-00
18	3	2	MR. E CHEESE LEFT	500-6063-01
19	3	3	MR. E CHEESE RIGHT	500-6063-01
20	3	4	LEFT (2)	500-6063-02
21	3	5	LEFT (3)	500-6063-02
22	3	6	LEFT (4)	500-6063-02
23	3	7	LEFT (15)	500-6063-02
24	3	8	LEFT (10)	500-6063-01
25	4	1	LEFT (22)	500-6063-01
26	4	2	LEFT (75)	500-6063-01
27	4	3	LEFT (30)	500-6063-01
28	4	4	LEFT (200)	500-6063-02
29	4	5	LEFT (50)	500-6063-02
30	4	6	RIGHT (2)	500-6063-02
31	4	7	RIGHT (3)	500-6063-02
32	4	8	RIGHT (4)	500-6063-02
33	5	1	RIGHT (15)	500-6063-01
34	5	2	RIGHT (10)	500-6063-01
35	5	3	RIGHT (25)	500-6063-01
36	5	4	RIGHT (75)	500-6063-01
37	5	5	RIGHT (30)	500-6063-02
38	5	6	RIGHT (20)	500-6063-02
39	5	7	RIGHT (50)	500-6063-02
40	5	8	TOILET	500-6063-02
41	6	1	NOT USED	
42	6	2	NOT USED	
43	6	3	NOT USED	
44	6	4	NOT USED	
45	6	5	NOT USED	
46	6	6	NOT USED	
47	6	7	NOT USED	
48	6	8	NOT USED	
49	7	1	NOT USED	
50	7	2	NOT USED	
51	7	3	NOT USED	
52	7	4	NOT USED	
53	7	5	NOT USED	
54	7	6	NOT USED	
55	7	7	NOT USED	
56	7	8	NOT USED	
57	8	1	NOT USED	
58	8	2	NOT USED	
59	8	3	NOT USED	
60	8	4	NOT USED	
61	8	5	NOT USED	
62	8	6	NOT USED	
63	8	7	NOT USED	
64	8	8	NOT USED	

NOTE:
 LOOP SWITCH ASSEMBLY PART NUMBER 500-6063-01 IS
 ASSEMBLED WITH A 1/8" MYLAR PIECE.
 LOOP SWITCH ASSEMBLY PART NUMBER 500-6063-02 IS
 ASSEMBLED WITH A 1/4" MYLAR PIECE.



GO TO COIL MENU

From the **DIAGNOSTICS MENU**, select the **"COIL"** icon with the **Green "SELECT" Button** and press the **Black "ENTER" Button**. Twenty-Two regular coil drivers (pulsed under microprocessor control) are provided to switch ground coils. The Left/Right Relay is used in conjunction with Drives 1 through 8 to switch +32/50 volts between coils or flash lamps; these sets are termed "Left" or "Right". The first 8 coil numbers are followed by "L" for left; the first 8 flash lamp numbers are followed by "R". This relay is located on the PPB Board which provides isolation diodes and current limiting resistors. This effectively provides up to 30 drive controlled devices (if required). The remaining (09-22) can be either coils or flash lamps (indicated in the display and the tables on the next pages).



Coil Test

To initiate, from the **COIL MENU**, select the **"TST"** icon with the **Green Button** and press the **Black Button**. Ensure the **Power Interlock Switch** is pulled out. Select either the **"-"** or **"+"** icons. Start with the **"+"** icon to start the manual Coil Test from #1L (The test runs through #1L - 22). Press the **Black Button** on the **"+"** icon, as each coil is selected, the display will describe the coil or flash lamp name with the corresponding number, the wire with colors, the "Pin-Outs" from the CPU and PPB Boards, the coil voltage and gauge-turns (e.g. 23-800). Press the **Black Button** again to move forward in the test. To test and view a particular coil or flash lamp, select the **"RUN"** icon and press the **Black Button**. Each time the **Black Button** is pushed, the coil or flash lamp will fire on the playfield and/or backbox, with the display indicating the coil or flash lamp information. Continue with the same procedure to run through the entire test.



Cycling Coil Test

To initiate, from the **COIL MENU**, select the **"CYC"** icon with the **Green Button** and press the **Black Button**. If still in a previous test, select the **"PREV"** icon to return to Coil Menu or selecting either of the **"ARROW"** icons will move to Cycling Coil Test (selecting again will return to Coil Test). The test pulses each regular coil or flash lamp sequentially (cycling) on the playfield and backbox. The display indicates "CYCLING COILS".

GI = General Illumination



**#44 Bulb
(Bayonet)
165-5000-44**

**#44 Bulb uses a
3-Lug Long
Stand-Up Socket
(077-5009-00).
29 ea.**

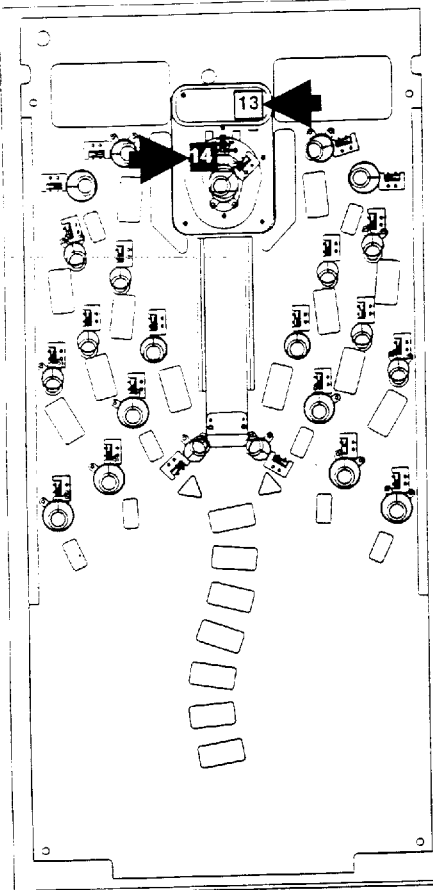
= Flash Lamp (FLAMP)



**#89 Bulb
(Bayonet)
165-5000-49**

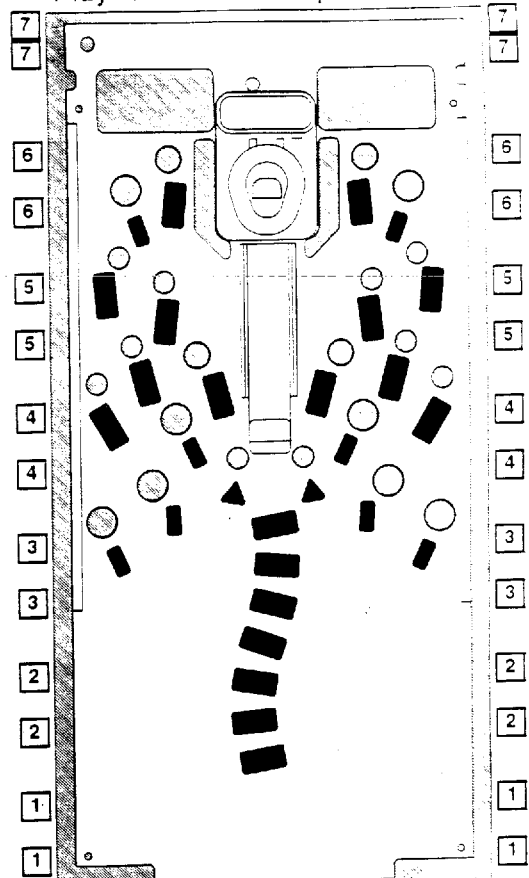
**#89 Bulb uses a
2-Lug Short
Stand-Up Socket
(077-5101-00).
28 ea.**

Playfield Coil Locations



Type	Coil Description
COIL 1L	NOT USED
COIL 2L	NOT USED
COIL 3L	NOT USED
COIL 4L	NOT USED
COIL 5L	NOT USED
COIL 6L	NOT USED
COIL 7L	NOT USED
COIL 8L	NOT USED
COIL 09	COIN METER
COIL 10	A/B RELAY (LEFT/RIGHT)
COIL 11	G.I. RELAY
COIL 12	NOT USED
COIL 13	FLUSH COIL
COIL 14	TOILET LID MOTOR RELAY
COIL 15	SHAKER MOTOR
COIL 16	TICKET DISPENSER
COIL 17	NOT USED
COIL 18	NOT USED
COIL 19	NOT USED
COIL 20	NOT USED
COIL 21	NOT USED
COIL 22	NOT USED

Playfield Flash Lamp Locations



Type	Flash Lamps Description & Qty.
COIL 1R	Left & Right Side Positions 1 & 2 (FRONT P.F.)
COIL 2R	Left & Right Side Positions 3 & 4
COIL 3R	Left & Right Side Positions 5 & 6
COIL 4R	Left & Right Side Positions 7 & 8
COIL 5R	Left & Right Side Positions 9 & 10
COIL 6R	Left & Right Side Positions 11 & 12 (BACK P.F.)
COIL 7R	Left & Right Back Panel Positions 13 & 14
COIL 8R	NOT USED

Legend Note:

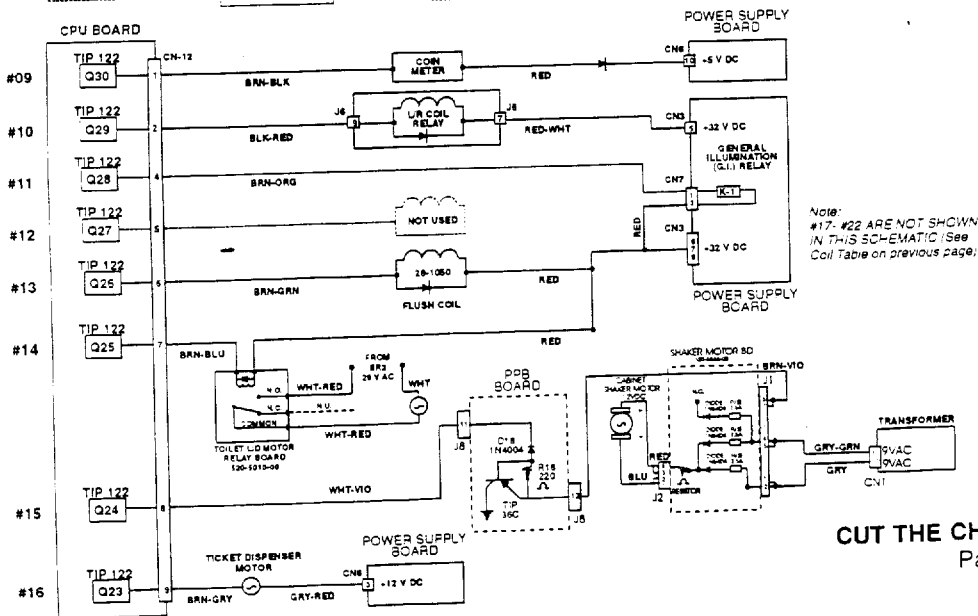
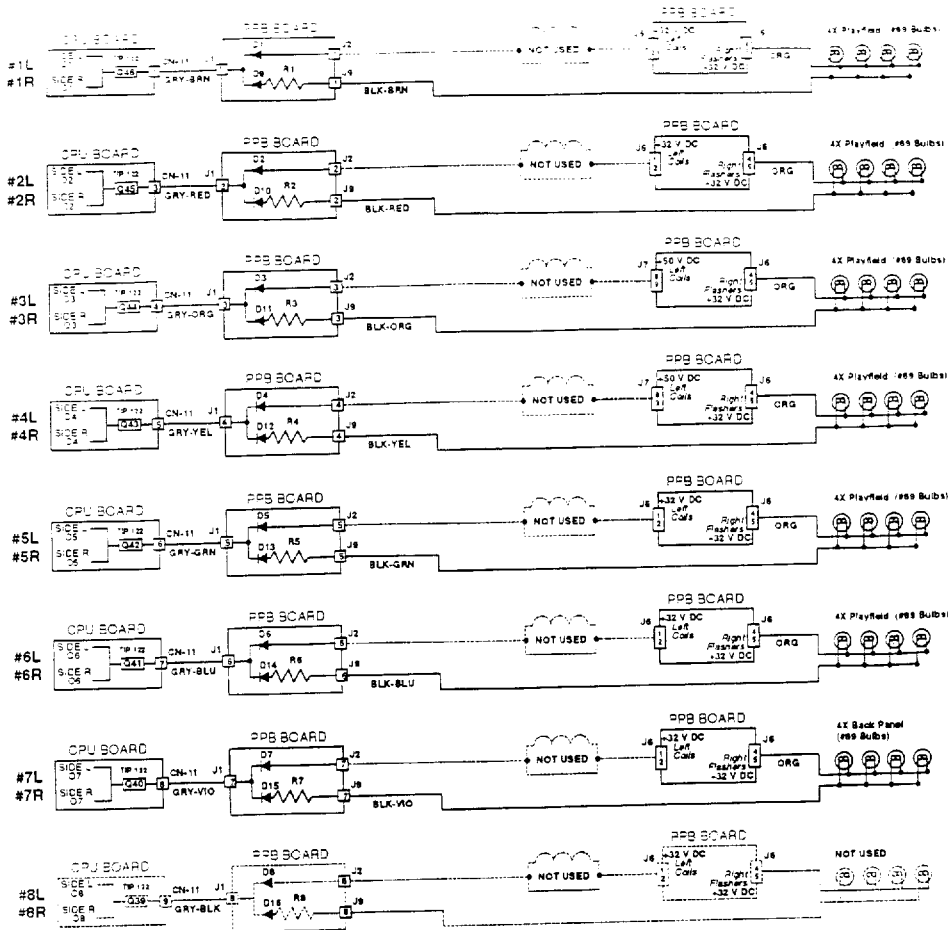
- ☐ = Coils or Flash Lamps located above playfield.
- ☒ = Coils or Flash Lamps located below playfield.

The following coils/flash lamps are not used:

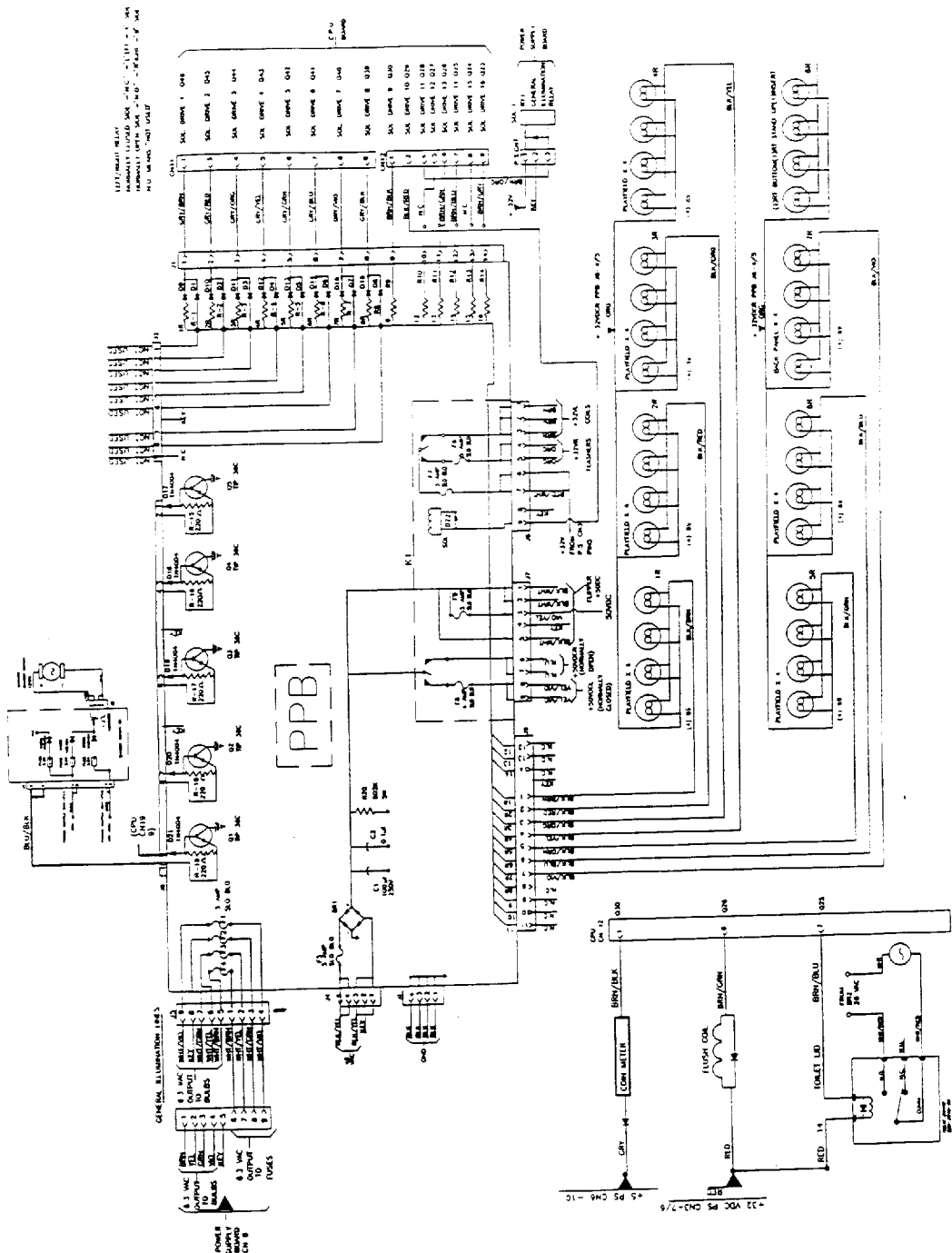
1L	2L	3L	4L	5L	6L	7L	8L	8R
12	17	18	19	20	21	22		

The following coils are not noted in the above pictorial:

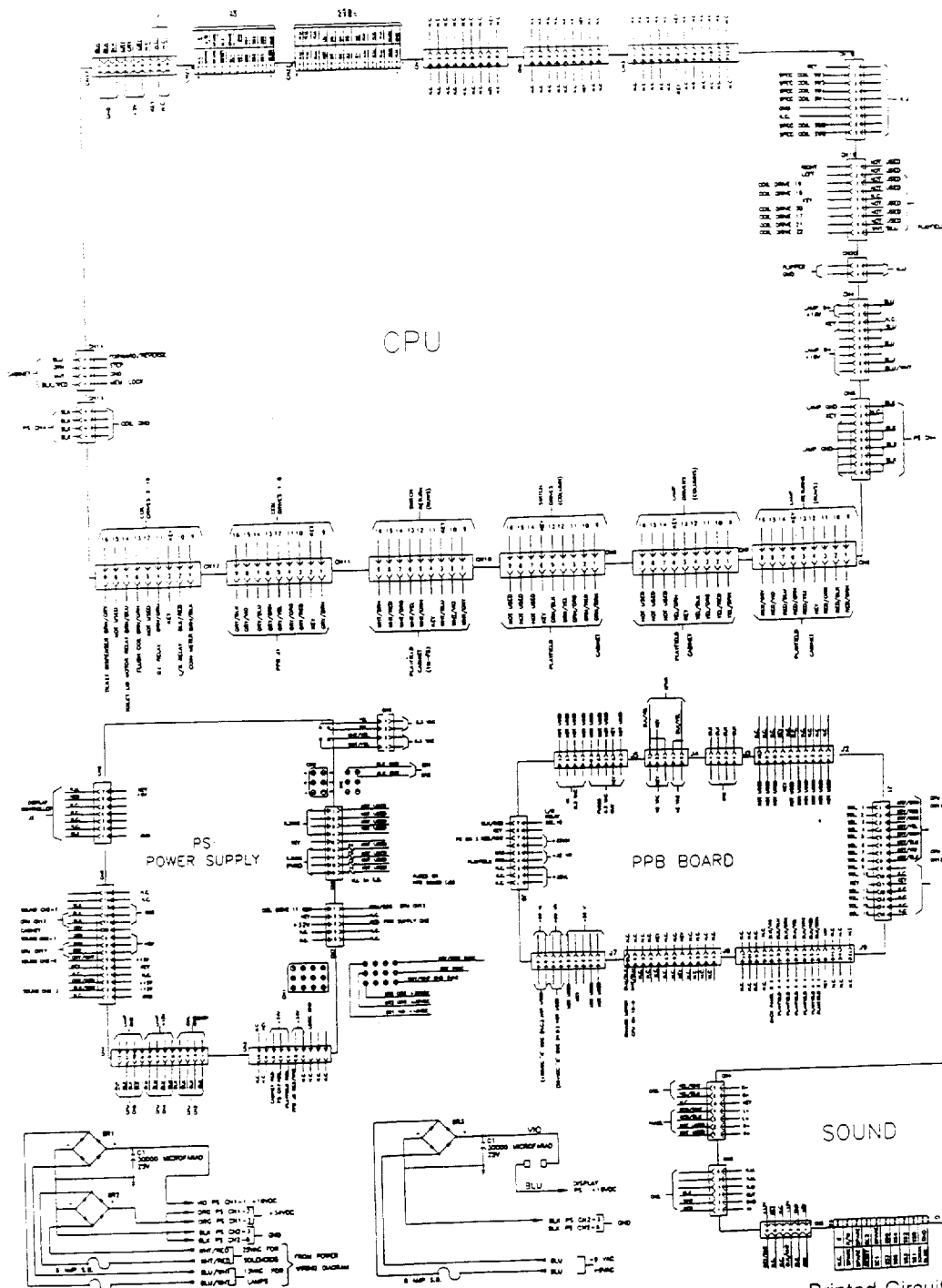
9	10	11	15	16
---	----	----	----	----



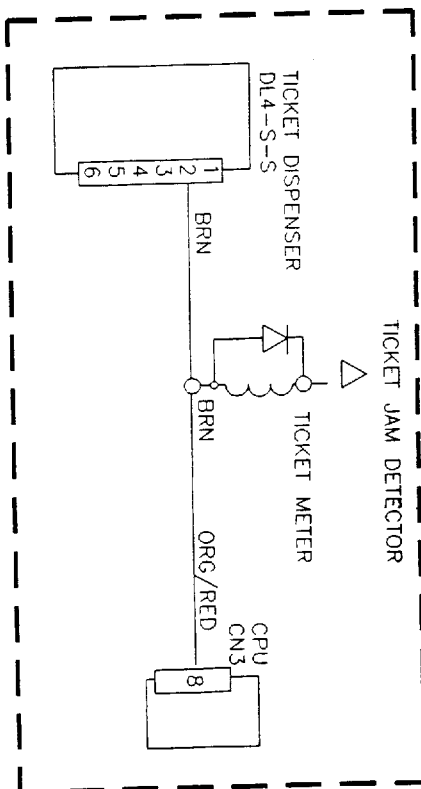
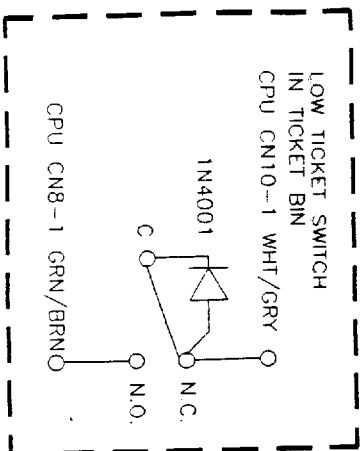
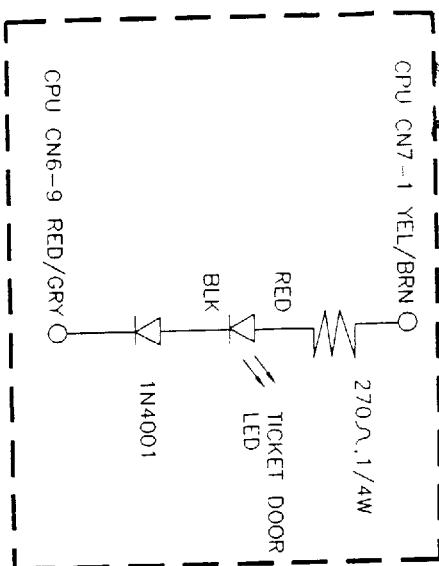
CUT THE CHEESE
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Back Door PCBs Wiring Diagram



WIRE COLOR	ORIGIN	TO ELECTRONIC	MECH
18 AWG BLACK	P/S CN4-2	BLACK	GND
18 AWG GRN/RED	P/S CN6-3	RED	+12VDC
22 AWG ORG/BRN	CPU CN3-9	WHT	INPUT



OWN. <i>Philly</i>	DATE	TITLE
1st USE	05-02-96	
NOVELTY	11	ELECTRONIC COIN MECH CONVERSION

Sega Pinball, Inc

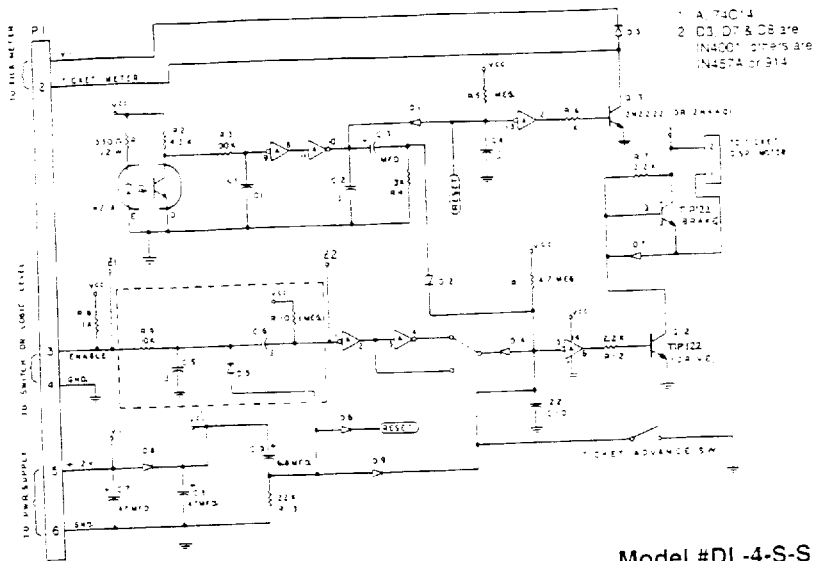
1800 LANCE AVE. MELROSE PARK, IL 60160

PART NO.

000-0000-00

E. MECH CONVERSION

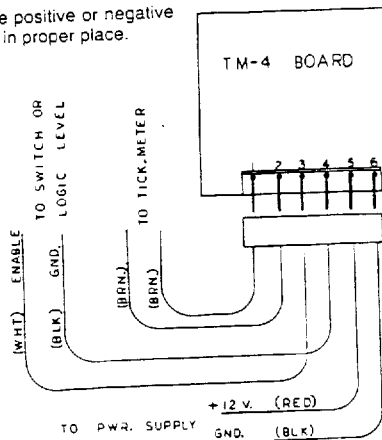
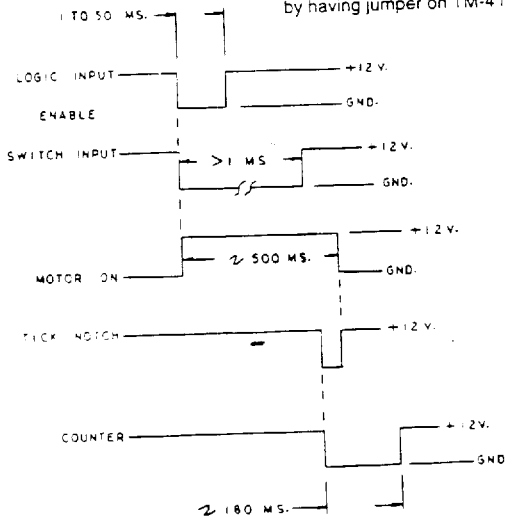
Models DL-4-S-S DL-4-P-S



Model #DL-4-S-S, SW Input
Model #DL-4-P-S, Logic Input.

Note: With logic input components and dotted lines are omitted and Z1 is jumpered to Z2.

Note: Enable pulse may be positive or negative by having jumper on TM-4 in proper place.



Note: On PCB TM-4, Rev. 1 & 2, Q1 and Q2 transistors are D40K1 or equivalent.

Model #DL-4-S-S
Model #DL-4-P-S



GO TO LAMP MENU

From the **DIAGNOSTICS MENU**, select the "LAMP" /icon with the **Green "SELECT" Button** and press the **Black "ENTER" Button**. Controlled lamps are configured in an 8 x 8 Matrix of Columns (Lamp Drives) and Rows (Lamp Returns) with up to 64 lamps possible. The Lamp Test Menu consists of four parts: Single Lamp Test, Test All Lamps, Row Lamp Test and Column Lamp Test.



Single Lamp Test

To initiate, from the **LAMP MENU**, select the "ONE" /icon with the **Green Button** and press the **Black Button**. Select either the "-" or "+" /icons. Start with the "+" /icon to start the manual Lamp Test from Column 1, Row 1, Switch 1. Press the **Black Button** on the "+" /icon as each lamp is selected, the lamp will light at its location on the playfield as well as the display, indicating the Lamp Matrix Grid position, lamp name with the corresponding number, Return (Row) Wire & Color, Drive (Column) Wire & Color, and associated drive transistors. Press the **Black Button** again to move forward in the test. To test and view a particular lamp, select the "RUN" /icon and press the **Black Button**. Each time the **Black Button** is pushed, the lamp will light-up on the playfield, with the display indicating the lamp information. Continue with the same procedure to run through the entire test.

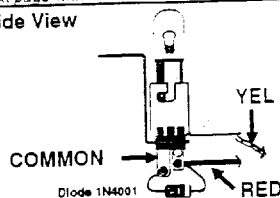
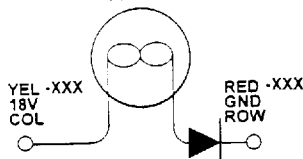


Test All Lamps

To initiate, from the **LAMP MENU**, select the "ALL" /icon with the **Green Button** and press the **Black Button**. If still in Single Lamp Test (or any 1 of the 4 tests), select the "PREV" /icon to return to Lamp Menu or selecting either of the "ARROW" /icons will move through the tests, keep activating until Test All Lamps is displayed. The display will indicate "ALL LAMPS ON" and the lamps on the playfield will be lit, alternating between the rows in the Lamp Matrix.

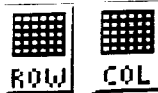
Continued on the next page with Row & Column Lamp Tests

Typical Lamp Schematic & Side View



LAMP MATRIX GRID

Column (18V)	1 Q71 YEL-BRN CN7-1	2 Q70 YEL-RED CN7-2	3 Q69 YEL-ORG CN7-3	4 Q68 YEL-BLK CN7-4	5 Q67 YEL-GRN CN7-5	6 Q66 YEL-BLU CN7-7	7 Q65 YEL-VIO CN7-8	8 Q64 YEL-GRY CN7-9
Row (GND)								
1 Q72 RED-BRN CN6-1	JACKPOT (1)	LEFT (2)	LEFT (20)	RIGHT (75)	MR. E CHEESE LEFT	NOT USED	NOT USED	NOT USED
2 Q73 RED-BLK CN6-2	JACKPOT	LEFT (3)	LEFT (50)	RIGHT (30)	MR. E CHEESE RIGHT	NOT USED	NOT USED	NOT USED
3 Q74 RED-ORG CN6-3	JACKPOT	LEFT (4)	RIGHT (2)	RIGHT (20)	SHAKER OPTION BUTTON	NOT USED	NOT USED	NOT USED
4 Q75 RED-YEL CN6-5	JACKPOT	LEFT (15)	RIGHT (3)	RIGHT (50)	NOT USED	NOT USED	NOT USED	NOT USED
5 Q76 RED-GRN CN6-6	JACKPOT	LEFT (10)	RIGHT (4)	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
6 Q77 RED-BLU CN6-7	JACKPOT	LEFT (25)	RIGHT (15)	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
7 Q78 RED-VIO CN6-8	JACKPOT	LEFT (75)	RIGHT (10)	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
8 Q79 RED-GRY CN6-9	LOW TICKETS	LEFT (30)	RIGHT (25)	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED



Row and Column Lamp Tests

To initiate, from the **LAMP MENU**, select the 'COL' icon with the **Green 'SELECT' Button** and press the **Black Button**. If still in a previous test, select the 'PREV' icon to return to Lamp Menu or selecting either of the 'ARROW' icons will move through the tests. Keep activating until Row or Column Lamp Test (whichever desired) is displayed. In this test, each set of lamps in each row or column of the Lamp Matrix (respective to each test) will light-up on the playfield and is indicated in the display.

Lamp Matrix Location

The lamp locations correspond with the Lamp Number in the Lamp Matrix Grid on the previous page.

Legend Note:

■ =
Lamps located
above playfield.

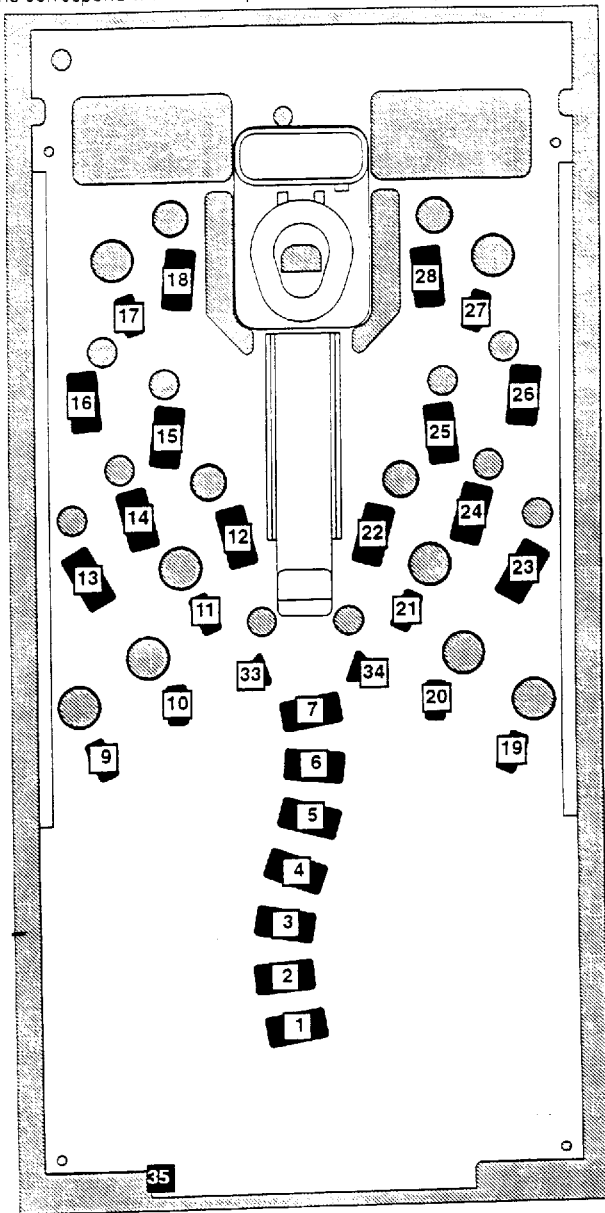
□ =
Lamps located
below playfield.

The following
Lamps are not
used:

29-32 36-64

The following
Lamp is not noted
in this pictorial:

8





TEST FLASH LAMPS

From the **DIAGNOSTICS MENU**, select the "FLASH" *Icon* with the **Green "SELECT" Button** and press the **Black "ENTER" Button**. After selecting this *Icon* the display will indicate "CYCLING FLASHERS" and all the flash lamps will cycle continuously until the test is exited. This test is allows the technician to easily spot any burned-out bulbs and replace them.

Note: This test is also good to verify operation of the Left/Right Relay. If the relay does not function properly coils may energize instead of the flash lamps.



SERVICE PHONE

From the **DIAGNOSTICS MENU**, select the "SERV" *Icon* with the **Green "SELECT" Button** and press the **Black "ENTER" Button**. After selecting this *Icon* the display will indicate a phone number to call if technical assistance is required.



SOUND/SPEAKER TEST

From the **DIAGNOSTICS MENU**, select the "SPKR" *Icon* with the **Green "SELECT" Button** and press the **Black "ENTER" Button**. The BSMT 2000 Sound System produces true digital stereo sound on the Left & Right Speakers (Backbox) and "Mono" on the Center Speaker (Bottom of Cabinet). After selecting this *Icon*, select the "-" or "+" *Icons* and press the **Black "ENTER" Button** to activate the first test. Repeat to visually see & hear all tests. Select the "RUN" *Icon* to activate the test chosen without moving to the next test.

During Sound Tests, the display shows the sound board circuit under test and the corresponding sounds. The sound functions allow verification that all channels are functioning properly & that the speaker connections are correct. (Refer to the game manual for detailed testing procedures).

Speaker Phase Testing

Connections to each of the three speakers are polarized and each must be connected appropriately for the best quality sound. If one speaker has the positive and negative connections reversed with respect to the other two, bass frequencies will not be produced properly and the overall sound quality will be poor.

To test for proper speaker phasing, use the sound test to cycle through the Left, Center, and Right Sine functions. If the Center Sine produces more volume and bass than the Left and Right Sines, the speakers are connected properly. If it produces the same or less, one speaker is connected improperly. To isolate and correct reversed speaker connections, one of two methods may be used.

1. Check each speaker for polarity markings. If the speakers have polarity markings, verify that the single-color wire (BLK, YEL or RED) is connected to the negative (-) terminal.
2. Disconnect the speaker output connector from the CPU / Sound Board and connect a 1.5-volt battery across each speaker pair one at a time while observing the speakers. Make sure the positive battery terminal is connected to the positive lead (CN4- Pin 1, 3 or 6) each time. As the connection is made, check speaker cone movement; proper connections are indicated by outward movement.

Automatic / Manual Tests	Sounds Produced
Left Speaker	Left Sine
Both Left & Right Speakers	Center Sine
Right Speaker	Right Sine
Voice ROM 1 (Loc. U17)	Speech Pattern 1

Automatic / Manual Tests	Sounds Produced
Voice ROM 2 (Loc. U21)	Speech Pattern 2
Voice ROM 3 (Loc. U36)	Not Used
Voice ROM 4 (Loc. U37)	Not Used
Sound/OPSYS EPROM (Loc. U7)	Level 1-3 (Music Test)



BEGIN BURN IN

From the **DIAGNOSTICS MENU**, select the "BURN" *Icon* with the **Green "SELECT" Button** and press the **Black "ENTER" Button**. After selecting this *Icon* the Begin Burn-In Test will start. At this stage the game will exercise all CPU I/O Functions (Dot Matrix Display Test, Coil Testing, Lamp Testing, Sound, etc.). This is provided to constantly exercise sounds, coils, etc... Cumulative Burn-In minutes will be displayed. To reset Burn-In minutes to 00, select the "RESET" *Icon* in the MAIN MENU and select the "FACT" *Icon* (Factory Reset). See Chapter 5, Go To Reset Menu, of this section.



1. Illuminates 1 vertical column of dots, turning it off & illuminating the next column, until each column has been individually lit, while the other columns are off.
2. Illuminates 1 horizontal row of dots, turning it off & illuminating the next row, until each row has been individually lit, while the other rows are off.
3. Illuminates all the dots, except for one column from left to right.
4. Illuminates all the dots except for one row from top to bottom.
5. Illuminates every other dot lit, in both the rows and columns.
6. Illuminates all dots at 30%, 70% & 100% brightness.

The Drivers for the rows and columns are provided on 5 surface mounted integrated circuits on the Dot Matrix Display Driver Board.

CUT THE CHEESE
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Cut The Cheese

GAME AUDIT TABLE

Photocopy for Field Audit Tracking Performance
(Use blank column to fill-in game audit totals)



Nº	Audit Name	Fill-In	Nº	Audit Name	Fill-In
1	# of Total Coins		22	Coins in Left 20	
2	Total Earnings		23	Coins in Right 20	
3	Coins in Chasm		24	Coins in Left Mr. E. Cheese	
4	Coins in Left 2		25	Coins in Right Mr. E. Cheese	
5	Coins in Right 2		26	Coins in Toilet	
6	Coins in Left 3		27	Stuck/Lost Coins	
7	Coins in Right 3		28	Recovered Coins	
8	Coins in Left 4		29	Total Points Scored	
9	Coins in Right 4		30	# of Mr. E. Mysteries Scored	
10	Coins in Left 10		31	Total Mr. E. Points	
11	Coins in Right 10		32	# of Jackpots Scored	
12	Coins in Left 15		33	Total Jackpot Points	
13	Coins in Right 15		34	Point Payout Percentage	
14	Coins in Left 25		35	" J " Points	
15	Coins in Right 25		36	" A " Points	
16	Coins in Left 30		37	" C " Points	
17	Coins in Right 30		38	" K " Points	
18	Coins in Left 50		39	" P " Points	
19	Coins in Right 50		40	" O " Points	
20	Coins in Left 75		41	Tickets Dispensed	
21	Coins in Right 75				

CUT THE CHEESE
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CPU Ver.:
Display Ver.:

Section 2
Chapter 3

Date Audited:
Audited By:
Location:

Game
Audits

Go To Audits Menu

Overview

The Portals™ Service Menu System provides 41 Audit Functions for accounting purposes and for evaluation of game difficulty adjustments. Each audit may be viewed manually after entering the Portals™ Service Menu (see Chapter 1, Introduction, of this section). All audits can be viewed at a glance with the Game Audit Table provided on the previous page and the end of this chapter.



GO TO AUDITS MENU

With the game in the Attract Mode, open the Coin Door and press the Black "BEGIN TEST" Button. Select the "AUD" /icon in the MAIN MENU with the Green "SELECT" Button and press the Black "ENTER" Button. The AUDITS MENU appears.

Important Notes:



Exit any sub-menu and return to the MAIN MENU by selecting & activating the "PREV" /icons. If no /icons appear in the display because of a testing function or special display (e.g. "Help"), press any button to exit.



Selecting & activating the "HELP" /icon from any display will show a help screen. (An explanation of each Mini-Icon at that level will cycle continuously until any active button is pressed.)



Selecting & activating the "QUIT" /icon from any display will exit the Service Session.



Selecting & activating the "ARROW" /icons selects the next or previous audit in the group.

CUT THE CHEESE AUDITS (1-41)

From the AUDITS MENU, with the Green "SELECT" Button, select and activate the "RIGHT ARROW" /icon to view the 1st audit in this group. Continue to select either of the "ARROW" /icons to view each audit one at a time. The display will describe the audit number, the audit name, and the audit total or value. The current audit will remain in the display until the next audit is chosen or when the menu is exited.

Au. N°	Audit Name	Audit Definition
Au. 1	# of Total Coins	Provides the total amount of coins registered through the coin slot.
Au. 2	Total Earnings	The total cash value accumulated since the last <i>Factory Restore</i> occurred (see Chapter 5, Go to Reset Menu, of this section).
Au. 3	Coins in Chasm	Provides the total amount of coins registered through the chasm switch (the chasm is the gaping area around the toilet [sw. 17]).
Au. 4	Coins in Left 2	Provides the total amount of coins registered through this coin hole.
Au. 5	Coins in Right 2	Provides the total amount of coins registered through this coin hole.
Au. 6	Coins in Left 3	Provides the total amount of coins registered through this coin hole.
Au. 7	Coins in Right 3	Provides the total amount of coins registered through this coin hole.
Au. 8	Coins in Left 4	Provides the total amount of coins registered through this coin hole.
Au. 9	Coins in Right 4	Provides the total amount of coins registered through this coin hole.
Au. 10	Coins in Left 10	Provides the total amount of coins registered through this coin hole.
Au. 11	Coins in Right 10	Provides the total amount of coins registered through this coin hole.
Au. 12	Coins in Left 15	Provides the total amount of coins registered through this coin hole.

Au. N ^o	Audit Name	Audit Definition
Au. 13	Coins in Right 15	Provides the total amount of coins registered through this coin hole.
Au. 14	Coins in Left 25	Provides the total amount of coins registered through this coin hole.
Au. 15	Coins in Right 25	Provides the total amount of coins registered through this coin hole.
Au. 16	Coins in Left 30	Provides the total amount of coins registered through this coin hole.
Au. 17	Coins in Right 30	Provides the total amount of coins registered through this coin hole.
Au. 18	Coins in Left 50	Provides the total amount of coins registered through this coin hole.
Au. 19	Coins in Right 50	Provides the total amount of coins registered through this coin hole.
Au. 20	Coins in Left 75	Provides the total amount of coins registered through this coin hole.
Au. 21	Coins in Right 75	Provides the total amount of coins registered through this coin hole.
Au. 22	Coins in Left 20	Provides the total amount of coins registered through this coin hole.
Au. 23	Coins in Right 20	Provides the total amount of coins registered through this coin hole.
Au. 24	Coins in Left Mr. E. Cheese	Provides the total amount of coins registered through this coin hole.
Au. 25	Coins in Right Mr. E. Cheese	Provides the total amount of coins registered through this coin hole.
Au. 26	Coins in Toilet	Provides the total amount of coins registered through this coin hole.
Au. 27	Stuck/Lost Coins	Provides the total amount of coins not scored immediately after coin in.
Au. 28	Recovered Coins	Provides the total amount of coins collected during automatic shaking by the game player.
Au. 29	Total Points Scored	Provides the total amount of points scored from the player scoring the various holes.
Au. 30	# of Mr. E. Mysteries Scored	Provides the total amount of times the Mr. E. Cheese was collected.
Au. 31	Total Mr. E. Points	Provides the total amount of points issued from the player scoring the Mr. E. Cheese hole(s).
Au. 32	# of Jackpots Scored	Provides the total amount of times the JACKPOT was achieved by the player.
Au. 33	Total Jackpot Points	Provides the total amount of points issued from the player scoring the Jackpot(s).
Au. 34	Point Payout Percentage	Provides the point payout percentage by the number of points scored divided by the earnings in pennies, based on 1 Point = 1c with 1 Token worth 25c.
Au. 35	" J " Points	Provides the total amount of points awarded by player scoring letter J.
Au. 36	" A " Points	Provides the total amount of points awarded by player scoring letter A.
Au. 37	" C " Points	Provides the total amount of points awarded by player scoring letter C.
Au. 38	" K " Points	Provides the total amount of points awarded by player scoring letter K.
Au. 39	" P " Points	Provides the total amount of points awarded by player scoring letter P.
Au. 40	" O " Points	Provides the total amount of points awarded by player scoring letter O.
Au. 41	Tickets Dispensed	Provides the total amount of tickets dispensed.



Cut The Cheese

EXTRA GAME AUDIT TABLE

Photocopy for Field Audit Tracking Performance
(Use blank column to fill-in game audit totals)



Nº	Audit Name	Fill-In	Nº	Audit Name	Fill-In
1	# of Total Coins		22	Coins in Left 20	
2	Total Earnings		23	Coins in Right 20	
3	Coins in Chasm		24	Coins in Left Mr. E. Cheese	
4	Coins in Left 2		25	Coins in Right Mr. E. Cheese	
5	Coins in Right 2		26	Coins in Toilet	
6	Coins in Left 3		27	Stuck/Lost Coins	
7	Coins in Right 3		28	Recovered Coins	
8	Coins in Left 4		29	Total Points Scored	
9	Coins in Right 4		30	# of Mr. E. Mysteries Scored	
10	Coins in Left 10		31	Total Mr. E. Points	
11	Coins in Right 10		32	# of Jackpots Scored	
12	Coins in Left 15		33	Total Jackpot Points	
13	Coins in Right 15		34	Point Payout Percentage	
14	Coins in Left 25		35	" J " Points	
15	Coins in Right 25		36	" A " Points	
16	Coins in Left 30		37	" C " Points	
17	Coins in Right 30		38	" K " Points	
18	Coins in Left 50		39	" P " Points	
19	Coins in Right 50		40	" O " Points	
20	Coins in Left 75		41	Tickets Dispensed	
21	Coins in Right 75				

Game
Audits

Date Audited:

Audited By:

Location:

Section 2
Chapter 3

CPU Ver.:

Display Ver.:

CUT THE CHEESE
Page 23



Cut The Cheese

GAME ADJUSTMENT TABLE

Nº	Adjustment Name	Factory Setting
1	Automatic Shaker Option	3
2	Jackpot Letter Backup Limit	Backup All The Way
3	Enable Fart Sounds	Yes
4	Attract Mode Music	Occasionally
5	Obligatory Ticket	Yes
6	Target Point Payout Percentage	35%
7	Starting Toilet Jackpot	100 Points
8	Toilet Jackpot Limit	300 Points
9	# of Points for 'J'	5
10	# of Points for 'A'	10
11	# of Points for 'C'	15
12	# of Points for 'K'	20
13	# of Points for 'P'	25
14	# of Points for 'O'	30
15	Out of Tickets Alarm	AUTOMATIC
16	Ticket Point Value	1

Go To Adjustments Menu

Overview

The Portals™ Service Menu System provides 16 Adjustment Functions to vary game difficulty or to customize ticket payouts. Each adjustment may be viewed manually after entering the Portals™ Service Menu (see Chapter 1, Introduction, of this section). All adjustments can be viewed at a glance with the Game Adjustment Table provided on the previous page. If a value is changed or customized, the display will indicate REQUEST INSTALLED.



GO TO ADJUSTMENTS MENU

With the game in the Attract Mode, open the Coin Door and press the **Black "BEGIN TEST" Button**. Select the **"ADJ" Icon** in the **MAIN MENU** with the **Green "SELECT" Button** and press the **Black "ENTER" Button**. The **ADJUSTMENTS MENU** appears.

Important Notes:



Exit any sub-menu and return to the **MAIN MENU** by selecting & activating the **"PREV" Icons**. If no *Icons* appear in the display because of a testing function or special display (e.g. "Help"), press any button to exit.



Selecting & activating the **"HELP" Icon** from any display will show a help screen. (An explanation of each *Mini-Icon* at that level will cycle continuously until any active button is pressed.)



Selecting & activating the **"QUIT" Icon** from any display will exit the Service Session.



In Adjustments, selecting & activating the **"-" Icon** decrements the value setting. Selecting & activating the **"+" Icon** increments the value setting.



Selecting & activating the **"ARROW" Icons** selects the next or previous adj. in the group.

CUT THE CHEESE ADJUSTMENTS (1-16)

From the **ADJUSTMENTS MENU**, with the **Green "SELECT" Button**, select and activate the **"RIGHT ARROW" Icon** to view the 1st adjustments in this group. Continue to select either of the **"ARROW" Icons** to view each adjustment one at a time. The display will describe the adjustment number, the adjustment name, and the adjustment total or value. The current adjustment will remain in the display until the next adjustment is chosen or when the menu is exited.

Adj. N°	Adjustment Name	Adjustment Definition
Adj. 1	Automatic Shaker Option	Set to NEVER or 1 - 7 . Adjusts the game to shake automatically after a certain amount of stuck coins (1-7) are noted by the program. When set to 3 , after 3 stuck coins are noted, the game will automatically shake. Note: The player can have the option to SHAKE the game when the player decides it might be beneficial. Set to NEVER to turn this feature off. Default = 3 .
Adj 2	Jackpot Letter Backup Limit	Set to BACKUP ALL THE WAY, J, A, C, K, P or O . Adjusts the game to see how far will the lit letters in J-A-C-K-P-O-T backup when a player misses a shot into the toilet? When set to C means that until J-A-C is lit, none of these letters will ever be taken away from the player: once K or higher is lit, letters in JACKPOT will be taken away for each miss of the toilet, <i>but no further back than C</i> ... thus the letters J-A-C area always protected once lit. Default = BACKUP ALL THE WAY (Reference page i for a more detailed explanation.)
Adj. 3	Enable Fart Sounds?	Set to YES or NO . When set to YES , the "fart noises" are audible during game play and attract mode. Default = YES .

Adj. N°	Adjustment Name	Adjustment Definition
Adj. 4	Attract Mode Music	Set to NEVER , OCCASIONALLY or ALWAYS . When set to NEVER , the game produces no sounds in Attract Mode and game play music fades. When set to OCCASIONALLY , the game produces sounds in Attract Mode occasionally and game play music fades out. When set to ALWAYS , the game produces sounds continuously. Default = OCCASIONALLY .
Adj. 5	Obligatory Ticket	Set to YES or NO . When set to YES , the game will award at least one ticket for every coin played. Default = YES .
Adj. 6	Target Point Payout Percentage	Set to 20% - 50% . Adjusts the game through the use of automatic percentaging in Mr. E. Cheese (the two holes in front of the ramp) whereas what overall payout percentage should the game attempt to acheive. Default = 35% . (Reference page i for more information.)
Adj. 7	Starting Toilet Jackpot	Set to 50, 100, 150, 200, 250, 300, 400, 500, 750 or 1000 Points . Adjusts the Toilet Jackpot Reset to how many Points should it initially be worth. Default = 1000 Points .
Adj. 8	Toilet Jackpot Limit	Set to 100, 150, 200, 250, 300, 400, 500, 750 or 2000 Points . Adjusts the maximum Jackpot which the game should pay. The Toilet Jackpot increases at the rate of 1 ticket per coin played. Default = 300 Points . NOTE: Jackpots can be fixed at 100, 150, 200, 250, 300, 400, 500, 750 or 1000 Points by setting Adjustments 6 and 7 to the same value. WARNING: If Adjustment 6 is set to a higher value than that of Adjustment 7, the number of Points that are set in Adjustment 6 will be used as both the starting value AND limit on number of Points in the Jackpot.
Adj. 9	# of Points for 'J'	Set to 1 - 99 Points . Adjusts how many Points the Toilet Shot that lights the letter "J" should award. Default = 5 .
Adj. 10	# of Points for 'A'	Set to 1 - 99 Points . Adjusts how many Points the Toilet Shot that lights the letter "A" should award. Default = 10 .
Adj. 11	# of Points for 'C'	Set to 1 - 99 Points . Adjusts how many Points the Toilet Shot that lights the letter "C" should award. Default = 15 .
Adj. 12	# of Points for 'K'	Set to 1 - 99 Points . Adjusts how many Points the Toilet Shot that lights the letter "K" should award. Default = 20 .
Adj. 13	# of Points for 'P'	Set to 1 - 99 Points . Adjusts how many Points the Toilet Shot that lights the letter "P" should award. Default = 25 .
Adj. 14	# of Points for 'O'	Set to 1 - 99 Points . Adjusts how many Points the Toilet Shot that lights the letter "O" should award. Default = 30 .
NOTE: There is no adjustment of "T" since scoring "T" awards the Jackpot subject to its own adjustments as noted above.		
Adj. 15	Out of Tickets Alarm	Set to AUTOMATIC or MANUAL . When set to AUTOMATIC , the game will audibly/visually alert an "Out of Tickets" Condition. When set to MANUAL , the operator can check manually (Note: Games produced prior to APR 96 must use the MANUAL setting because of wiring differences.) Default = AUTOMATIC .
Adj. 16	Ticket Point Value	Set to 1 - 10 . Adjusts how many points equals the amount of tickets specified. For example, if set to 1, 1 Point = 1 Ticket. Default = 1 . <i>Note:</i> Any fractional tickets are awarded to the player. (See page i.)

Go To Reset Menu

Overview

The Portals™ Service Menu System provides three (3) functions to reset adjustments and/or audits back to the *Factory Setting*. See Chapter 3, Go to Audits Menu, and Chapter 4, Go to Adjustments Menu, for the Game Audits & Adjustments Information. If a Factory Reset is performed, the Service Session is exited and returns to the Attract Mode. If reset of Coin or Game Audits is performed, the display will indicate **REQUEST INSTALLED** and return to the **RESET MENU**. Please note that once reset, all customized settings are lost! Certain audits and adjustments however cannot be reset (refer to the details below).



GO TO RESET MENU

With the game in the Attract Mode, open the Coin Door and press the **Black "BEGIN TEST" Button**. Select the "RESET" *Icon* in the **MAIN MENU** with the **Green "SELECT" Button** and press the **Black "ENTER" Button**. The **RESET MENU** appears.

Important Notes:



Exit any sub-menu and return to the **MAIN MENU** by selecting & activating the "PREV" *Icon*.



Selecting & activating the "QUIT" *Icon* from the display will exit the Service Session.



Selecting & activating the "HELP" *Icon* from the display will show a help screen. (An explanation of each *Mini-Icon* at that level will cycle continuously until any active button is pressed.)



FACTORY RESET

From the **RESET MENU**, select the "FACT" *Icon* with the **Green Button** and press the **Black Button**.
 ⚠ All adjustments will be reset to *Factory Settings* (except for Proprietary Adjustments). The display will indicate **REQUEST INSTALLED** and exit the Service Session. See Chapter 4, Go to Adjustments Menu, of this section, for the *Factory Settings* in the **Game Adjustment Table**.



RESET COIN AUDITS

From the **RESET MENU**, select the "COIN" *Icon* with the **Green Button** and press the **Black Button**.
 ⚠ All Coin Audits (See Fig. 1) will be reset to *Factory Settings*. The display will indicate **REQUEST INSTALLED** and return to the **RESET MENU**. Coin Audits can also be reset from the **ADJUSTMENTS MENU, SEGA ADJUSTMENT 8**. See Chapter 4, Go to Adjustments Menu, of this section. After selecting this *Icon*, all of the *Coin Audits (5-11)* are reset to zero.



RESET GAME AUDITS

From the **RESET MENU**, select the "AUD" *Icon* with the **Green Button** and press the **Black Button**.
 ⚠ All Game Audits (See Fig. 2) will be reset to *Factory Settings*. The display will indicate **REQUEST INSTALLED** and return to the **RESET MENU**. Game Audits can also be reset from the **ADJUSTMENTS MENU, SEGA ADJUSTMENT 9**. See Chapter 4, Go to Adjustments Menu, of this section. After selecting this *Icon*, all of the *Audits* are reset to zero, except for the Coin Audits (Audits 1-2).

Fig. 1

• Reset Coin Audits	
Earnings Audits (Coin Audits Only 1 & 2)	
Au. N°	Description
1	# of Total Coins
2	Total Earnings
3+	The remainder of the Audits

Fig. 2

• Reset Game Audits	
Remainder of Audits (3+)	
Au. N°	Description
1	# of Total Coins
2	Total Earnings
3+	The remainder of the Audits

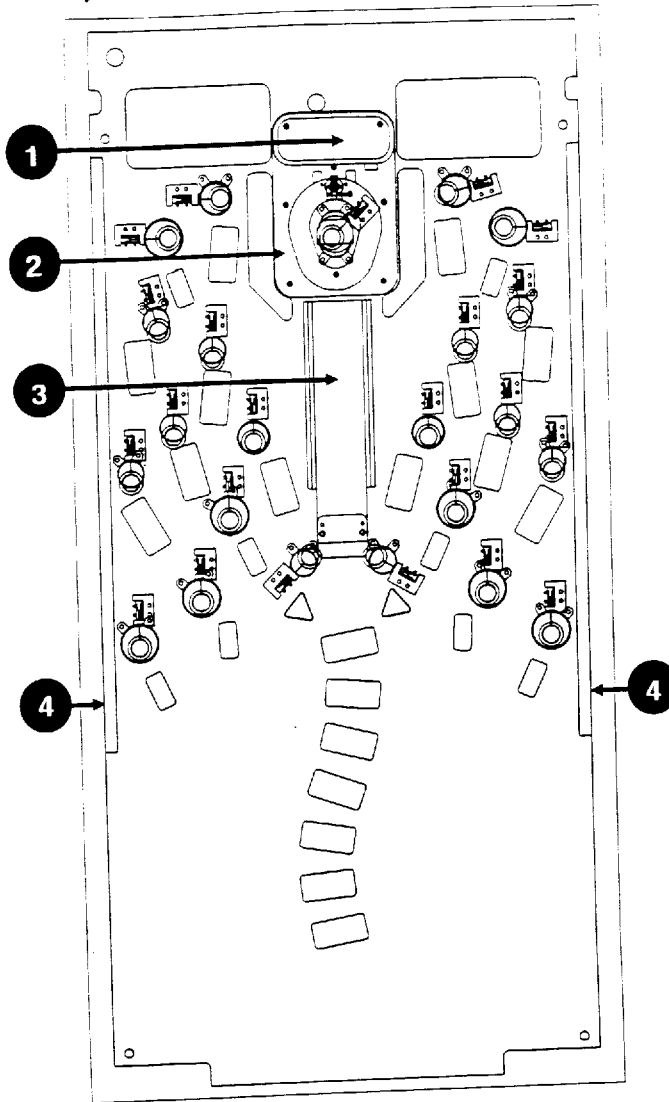
Parts Identification & Location

Overview

This section provides the part numbers and locations of the elements in the this redemption game. Some parts which are complex (made up of numerous parts) will be noted in detail in Chapter 2: Assembly Drawings.

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Nº	Major Assembly Part Name	SPI Part Nº	Nº	Ramp Part Name	SPI Part Nº
1	Toilet Assembly	500-6051-02	3	Plastic Ramp	545-5678-00
2	Toilet Lid Lift Assembly	500-6060-00			
Nº			Nº	Rail Part Name	SPI Part Nº
4			4	Wood Rail 24-1/2" (Qty. 2)	525-5007-37

- Note: See Section 3, Chapter 2, Assembly Drawings, to identify the components of each above assembly (Items 1 & 2).

Playfield - General Parts, Butyrate & Decals

Nº	Below Playfield Part Name	SPI Part Nº
1 *	Playfield Support Vibration Mount Assy.	500-5909-00
ORDERING ABOVE (ITEM 1) ASSEMBLY PART Nº WILL INCLUDE:		
1A	Rubber Mounts (incl. bolt) (Qty. 6)	292-5000-00
1B	Playfield Bracket Support (Qty. 6)	535-7137-00
1C	Washer 5/16" I.D. X 5/8" O.D. (Qty. 6)	242-5030-00
1D	Stop Nut 5/16" - 18 (Qty. 6)	240-5315-00
2 *	Main Plastic Coin Funnel	545-5676-00
3 *	Chasm Mini-Plastic Coin Funnel Left	545-5682-00
4 *	Chasm Mini-Plastic Coin Funnel Right	545-5682-01
5 *	Rubber Light Cover (Red) (Qty. 14)	545-5014-02
6 *	Rubber Light Cover (Yellow) (Qty. 2)	545-5014-06

For Micro Switches see Section 2, Chapter 2, Sw. Matrix Locations

Nº	Above Playfield Part Name	SPI Part Nº
7	Coin Stop 1-1/2"ø (Qty. 8)	535-7630-00
8	Coin Stop 1-1/4"ø (Qty. 2) in toilet	535-7631-00
9	Coin Stop 1"ø (Qty. 6)	535-7632-00
10	Ramp Flap	535-7639-00
11	Multi-Side-Lights Panel Assy - Right Side	515-6530-00

ORDERING ABOVE (ITEM 11) ASSEMBLY PART Nº WILL INCLUDE:

11A *	Small Wood Light Panel Piece	525-5421-00
11B *	Large Wood Light Panel Piece	525-5421-01
11C *	2-Lug Stand-Up Short Socket (Qty. 14)	077-5101-00
11D *	#89 Bulb (Qty. 14)	165-5000-89
11E	Mini-Mars Light Cover Yellow (Qty. 6)	550-5031-06
11F	Mini-Mars Light Cover Amber (Qty. 6)	550-5031-03
11G *	Bar Bracket (Qty. 3)	535-7680-00

12	Side Panel (Over Item 11) - Right	545-5484-05
13 *	Multi-Side-Lights Panel Assy - Left Side	515-6530-01

ORDERING ABOVE (ITEM 12) ASSEMBLY PART Nº WILL INCLUDE:

	See Items 11A-11G. Items are the same, the difference is Item 11G is mounted differently on the left side.	See Items 11A-11G
14 *	Side Panel (Over Item 13) - Left	545-5484-04
15	Mini-Mars Light Cover Amber (Qty. 2)	550-5031-03
16 *	Mirror Side - Right	545-5573-00
17 *	Mirror Side - Left	545-5573-01
18	Plastic Ramp	545-5678-00
19 *	Molded Plastic Mouse	830-5803-00

For Toilet Assembly Parts, see Section 3, Chapter 2, Assy. Dwg.

Nº	Butyrate Part Name	SPI Part Nº
B1 *	Screened/Clear Butyrate Entire Sheet	830-5495-XX
B2 *	Back Panel Butyrate	830-5495-01
B3 *	Back Panel Bracket (Qty. 2)	535-7638-00
B4 *	Toilet Lid Cover Butyrate	830-5495-00

Nº	Decal Part Name	SPI Part Nº
D1 *	Cabinet Decal Left	820-6145-00
D2 *	Cabinet Decal Right	820-6145-01
D3 *	Control Panel Decal	820-6145-03
D4 *	"Win Tickets" Decal	820-6147-01
D5 *	"Everybody Wins" Decal	820-6147-02
D6 *	Ramp Decal	820-6149-01
D7 *	"Family Fun" (featuring Santa the Hedgehog™)	820-6151-00

Nº	The Playfield	SPI Part Nº
P1 *	Playfield Screened (no parts)	830-5148-00

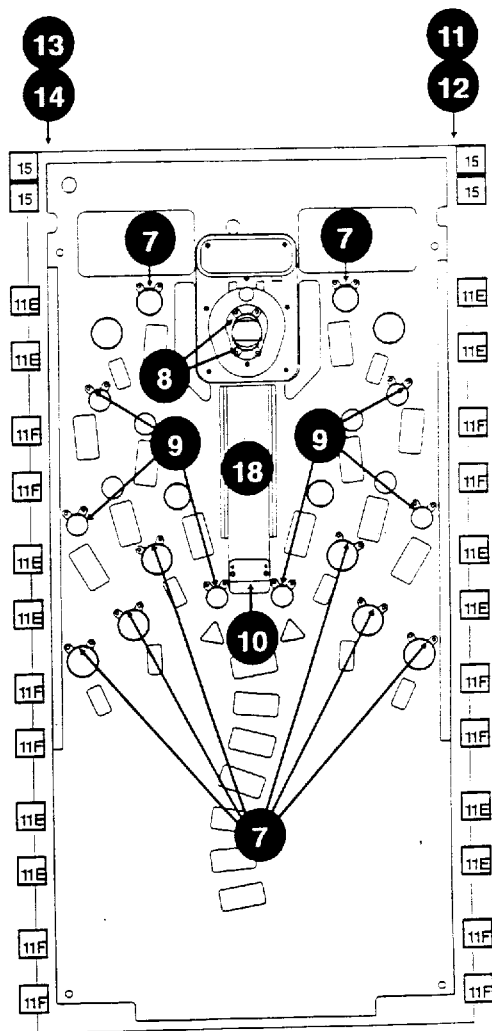
Note: Items with an asterisk (*) are not noted in the above pictorial.

CUT THE CHEESE

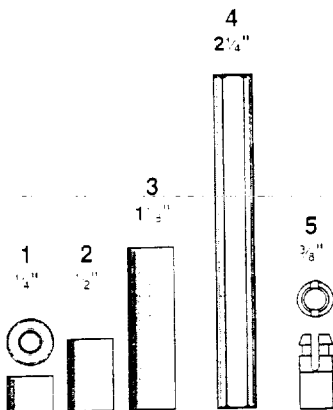
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Section 3
Chapter 1

Parts Identification
& Location

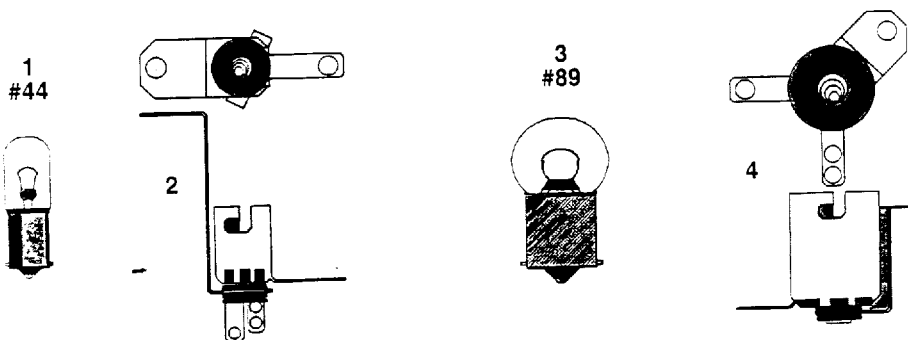


Playfield - Posts & Spacers



Nº	Post / Spacer Name	QTY.	Part Nº
1	Spacer 1/4" Long X 5/16" X .144 I.D.	4	254-5014-03
2	Spacer 1/2" Long X 5/16" X .144 I.D.	6	254-5014-00
3	Spacer 1 1/4" Lg. X 5/16" X .144 I.D.	6	254-5014-02
4	Spacer 2 1/4" Hex Tapped 5-32	1	254-5008-18
5	Spacer 3/4" Plastic Slt. Rtn. SFS-5-01	8	254-5007-01

Playfield - Bulbs & Sockets



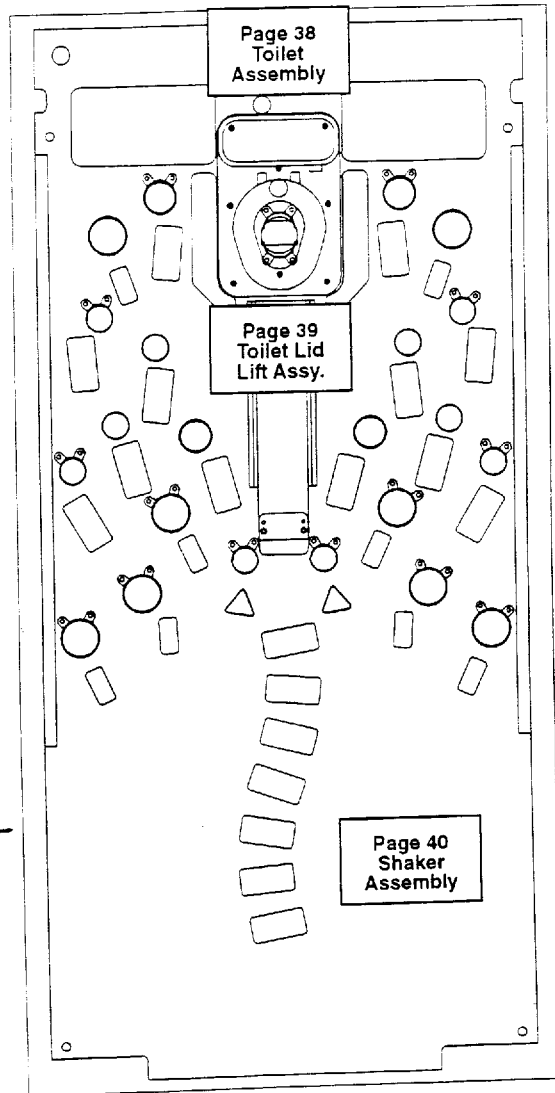
Nº	Bulb / Socket Name	QTY.	Part Nº	Nº	Bulb / Socket Name	QTY.	Part Nº
1	#44 Bulb	29	165-5000-44	5 *	Fluorescent 18" Tube Cool White	1	165-5020-00
2	3-Lug Stand-Up Long Socket	29	077-5009-00	6 *	Fluorescent Light Fixture	1	515-6171-00
3	#89 Bulb	28	165-5000-89	7 *	Fluorescent Light Bi axial F-13BX	2	165-5013-00
4	2-Lug Stand-Up Short Socket	28	077-5101-00	8 *	Fluorescent Light Sockets	2	077-5203-00

Note: An asterisk (*) indicates items not shown.

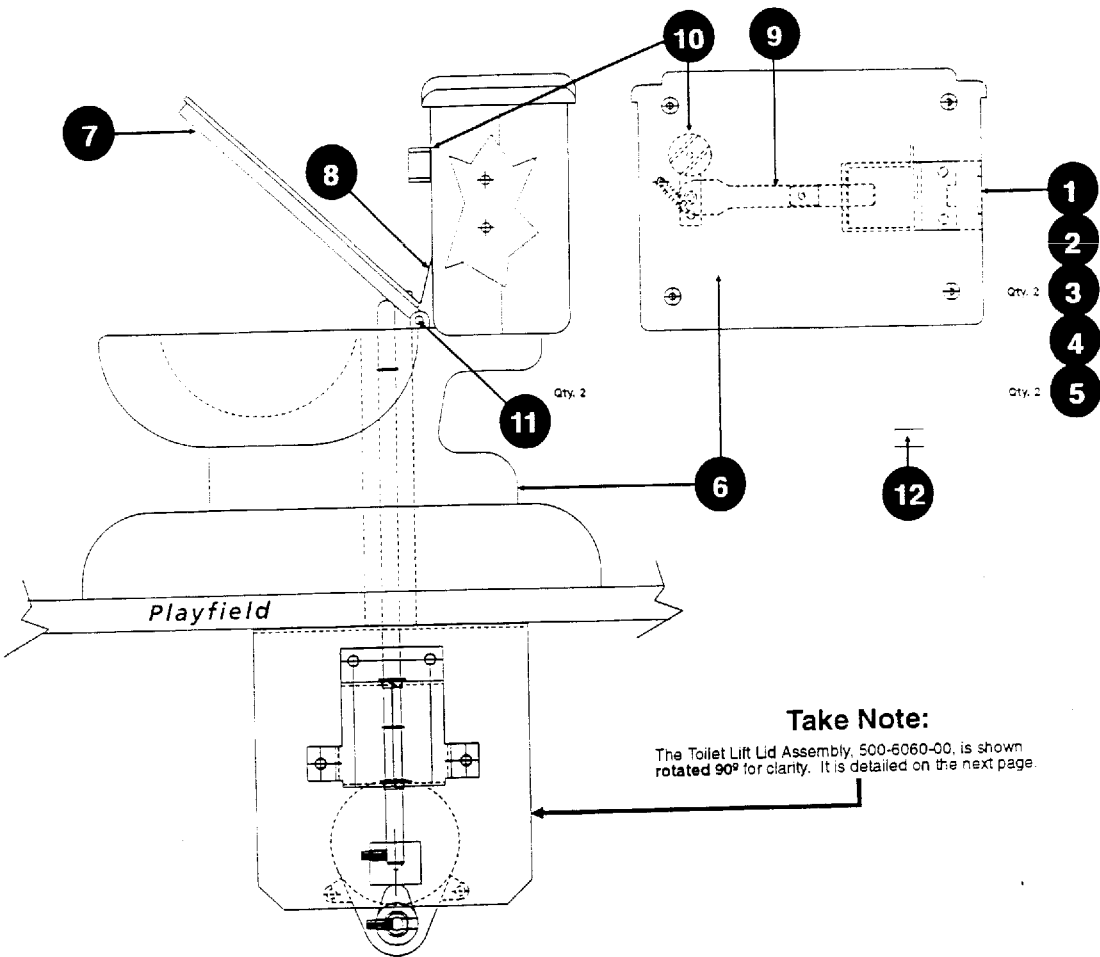
Assembly Drawings

Overview

This chapter expands Chapter 1 of this section. The Part Numbers for all Major Assemblies are provided and can be ordered as a complete assembly. Each assembly is broken down, describing the individual parts and/or sub-assemblies (with the part numbers) which can be ordered separately. Where multiple parts are riveted or assembled as sub-assemblies the sub-assembly needs to be ordered. The drawings show the location of the individual parts. Note that minor changes may be made during production (e.g. coil size, addition or deletion of minor parts). Always verify the part to be replaced with the part number and/or description as noted. Replacement parts may be substituted with revised parts which may have a different part number. Any questions, call our Technical Support Dept (1-800-KICKERS USA & Canada or 708-345-7700).



Toilet Assembly, 500-6051-02 (Items 1-12)



Take Note:

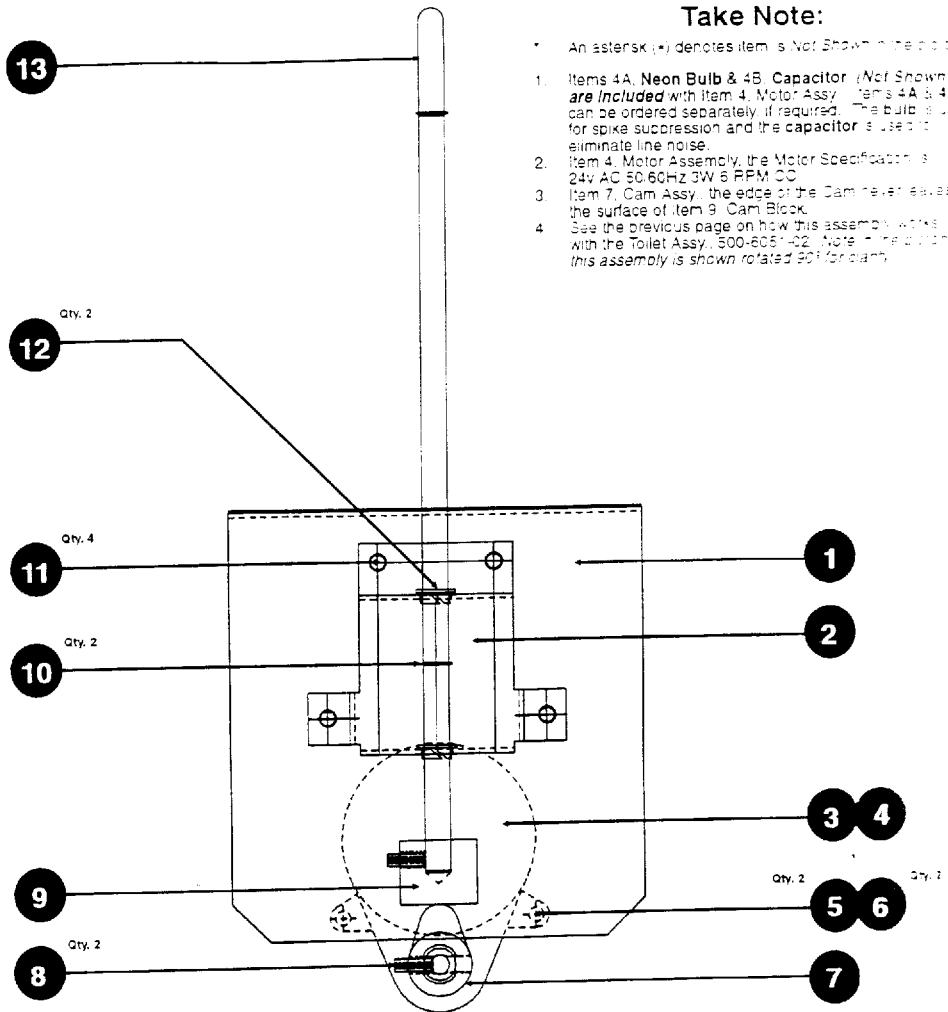
The Toilet Lift Lid Assembly, 500-6060-00, is shown rotated 90° for clarity. It is detailed on the next page.

Nº	Part Name	SPI Part Nº	Nº	Part Name	SPI Part Nº
1	Frame	535-7633-00	9	Plunger Assembly	515-6057-01
2	Coil Bracket	535-6784-00	ORDERING ABOVE ITEM 9 ASSEMBLY PART Nº WILL INCLUDE:		
3	#6-32 X 3/16\" PHMS SEMS (Qty. 2)	232-5209-00	9A	Plunger	530-5302-00
4	Coil, 28-1050 (incl. Coil Sleeve)	090-5046-00	9B	Link	545-5490-01
ORDERING ABOVE ITEM 4 COIL PART Nº WILL INCLUDE:			9C	Roll Pin 1/8\" X 1/2\" Lg.	251-5014-00
4A	Coil Sleeve	545-5500-00	10	Flush Lever Assembly	515-6498-00
4B	Diode, 1N4004	112-5003-00	ORDERING ABOVE ITEM 10 ASSY. PART Nº WILL INCLUDE:		
5	#6-32 X 1/2\" PHMS SEMS (Qty. 2)	232-5202-00	10A	Spacer 1/2\"	254-5000-03
6	Toilet (Altered)	500-6051-02	10B	#6-7/8\" PRH Screw	237-5003-00
7	Butyrate Seat Cover	830-5495-00	10C	#6 Washer	242-5001-00
8	Seat Spring	535-7703-00	11	#4 X 3/8\" PHSMS (Qty. 2)	237-5815-00
			12	Wing Harness/Cable	036-5391-09

Toilet Lift Lid Assembly, 500-6060-00 (Items 1-13)

Take Note:

- * An asterisk (*) denotes item is Not Shown in the drawing.
- 1. Items 4A, Neon Bulb & 4B, Capacitor (Not Shown), **are included** with Item 4, Motor Assy. Items 4A & 4B can be ordered separately, if required. The bulb is used for spike suppression and the capacitor is used to eliminate line noise.
- 2. Item 4, Motor Assembly, the Motor Specification is 24V AC 50-60Hz 3W 5 RPM CC.
- 3. Item 7, Cam Assy., the edge of the Cam never leaves the surface of Item 9, Cam Block.
- 4. See the previous page on how this assembly works with the Toilet Assy., 500-6051-02. Note in the drawing, this assembly is shown rotated 90° for clarity.



Nº	Part Name	SPI Part Nº	Nº	Part Name	SPI Part Nº
1	Motor Bracket	535-7626-00	6	#6-32 Nyloc (Qty. 2)	240-5005-00
2	Support Bracket	535-7627-00	7	Cam Assembly	515-6497-00
3	3/16" E-Ring	270-5001-00	8	#8-32 X 3/8" Set Screw (Qty. 2)	237-5939-00
4	Motor & Cable Assembly	515-6496-00	9	Cam Block	535-7768-00
ORDERING ABOVE (ITEM 4) ASSEMBLY PART Nº WILL INCLUDE:			10	Retaining Ring (Qty. 2)	270-5002-00
4A*	Neon Bulb (Not Shown)	165-5021-00	11	#8-32 Self Tapping Screw (Qty. 4)	237-5905-00
4B*	Cap. .1 MFD 500V Disc (Not Shown)	130-5000-00	12	Nyliner (Qty. 2)	545-5423-00
5	#6-32 PHMS (SEMS) (Qty. 2)	232-5202-00	13	Shaft	530-5402-00