

THE  
**amc** **WALKING DEAD**



**PRO MODEL**

THE WALKING DEAD © 2014 AMC FILM HOLDINGS LLC. ALL RIGHTS RESERVED.

**WARNING**

**Important Health Warning: PHOTSENSITIVE SEIZURES**

A very small percentage of people may experience a seizure when exposed to certain visual images, including flashing lights or patterns. Even people with no history of seizures or epilepsy may have an undiagnosed condition that can cause "photosensitive epileptic seizures" due to certain visual images, flashing lights or patterns. Symptoms can include light-headedness, altered vision, eye or face twitching, jerking or shaking of arms or legs, disorientation, confusion, momentary loss of awareness, and loss of consciousness or convulsions that can lead to injury from falling down or striking nearby objects.

**IMMEDIATELY STOP PLAYING AND CONSULT A DOCTOR IF YOU EXPERIENCE ANY OF THESE SYMPTOMS.**

Please visit [www.sternpinball.com](http://www.sternpinball.com)

For part numbers and mechanical drawings.

Stern Pinball machines are assembled in Melrose Park, Illinois, USA; each pinball machine has unique characteristics that make it a one of a kind American made product. Each machine will have variations in appearance resulting from differences in the machine's particular wood parts, individual silk screened art and mechanical assemblies. Stern Pinball has inspected each game element to insure it meets our quality standards.

**Pinball Service Game Manual**

Please call, email, or visit us online for technical support, questions or comments regarding this pinball game.

Go to [www.sternpinball.com](http://www.sternpinball.com) and click **SERVICE & SUPPORT**.

Find **Service Game Manual** (with updates), **Coin Cards**, **Game Code Library**, **Appendixes**, **Care & Maintenance**, **Service Bulletins** and much more!

• Toll-Free: 1-800-KICKERS (542-5377) or 1-708-345-7700 • Email: [parts.service@sternpinball.com](mailto:parts.service@sternpinball.com)

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SPI Part Number  
**780-50F8-00**

# HOW TO UPDATE YOUR GAME CODE FOR S.A.M. SYSTEM MACHINES

**USB Compatible Data Storage Device** (Thumb, Flash or Jump Drives) required to copy game code into system.  
 S.A.M. System compatible, tested & SPI approved USB Data Storage Devices 128MB+  
 available through your local distributor: Ask for **SPI Part Number 970-0128-00**

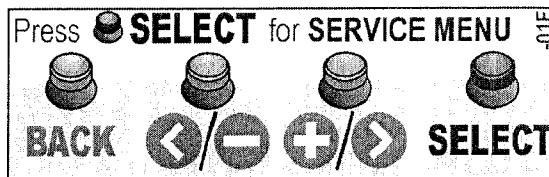
\* to get the Data Storage Device with the latest Game Code copied to it, add "game title" to above part number.

STYLE, COLOR, SIZE AND MANUFACTURER SUBJECT TO CHANGE.

Game Code is subject to change. Update this game with the latest code downloaded from our website, from another game or order through your local distributor (use SPI PN + name above).

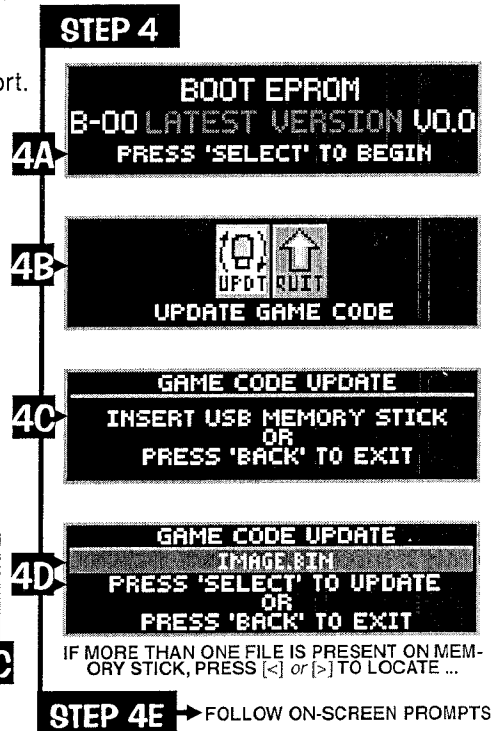
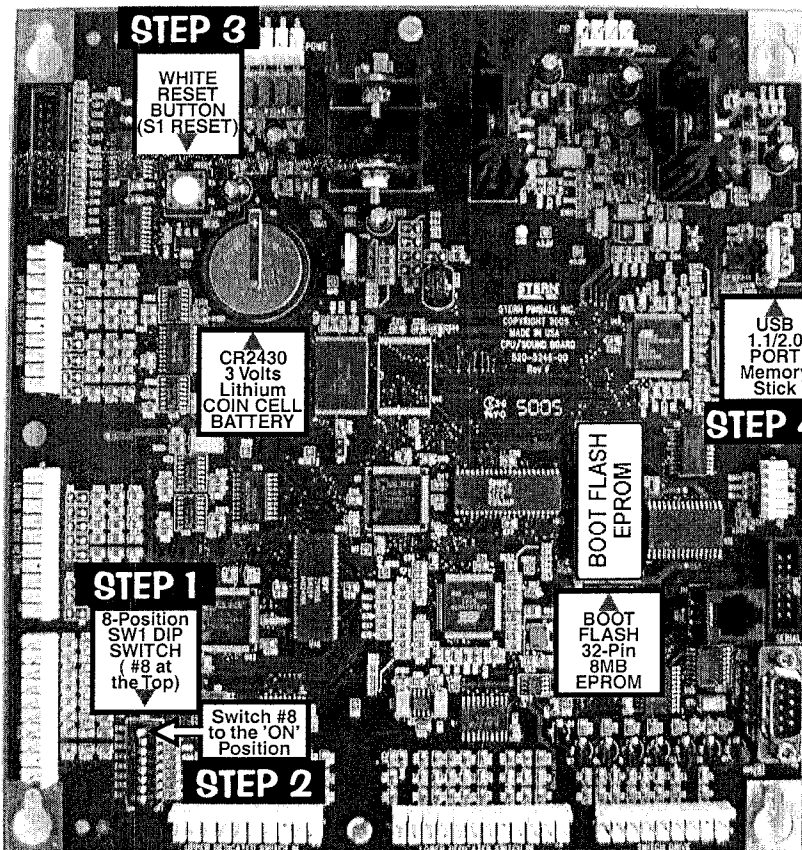
Upon power-up the display will describe the version of code installed in your game. When directed to do so (via Service Bulletin or website announcement) you will need to update your code ... with the **BOOT FLASH EPROM\*** installed, here's how:

- STEP 1** Open the Back Box and locate the **8-Position Dip Switch** (SW1 on the CPU/Sound Board).
- STEP 2** Switch Dip Switch #8 to 'ON'.  
 (\***BOOT FLASH EPROM** must be installed.)
- STEP 3** Press the **White Reset Button** (S1 RESET on the CPU/Sound Board) or Power Cycle the game **OFF/ON** (ON/OFF Switch is located on the outside of the cabinet bottom, front right).
- STEP 4** Using the **4-Button Service Switch Set** (inside the Coin Door):
- 4A } Press [**SELECT**] to begin.
  - 4B } With the "UPDT" *Icon highlighted*, press [**SELECT**].
  - 4C } Insert the Data Storage Device [w/latest file(s)] into the USB Port.
  - 4D } If more than one file is present on the Data Storage Device, press [**<**] or [**>**] to locate your file. Press [**SELECT**] to update.
  - 4E } Follow on-screen prompts.



- **Green Button**  
Press to **Escape Back** (or **Exit**).
- **Red Buttons**  
Press to move **< Left , Right >**.  
Press to **- Decrease** or **+ Increase** values or to change settings.
- **Black Button**  
Press to **Enter Select** (or **OK**).

## CPU/Sound Board (S.A.M. System)

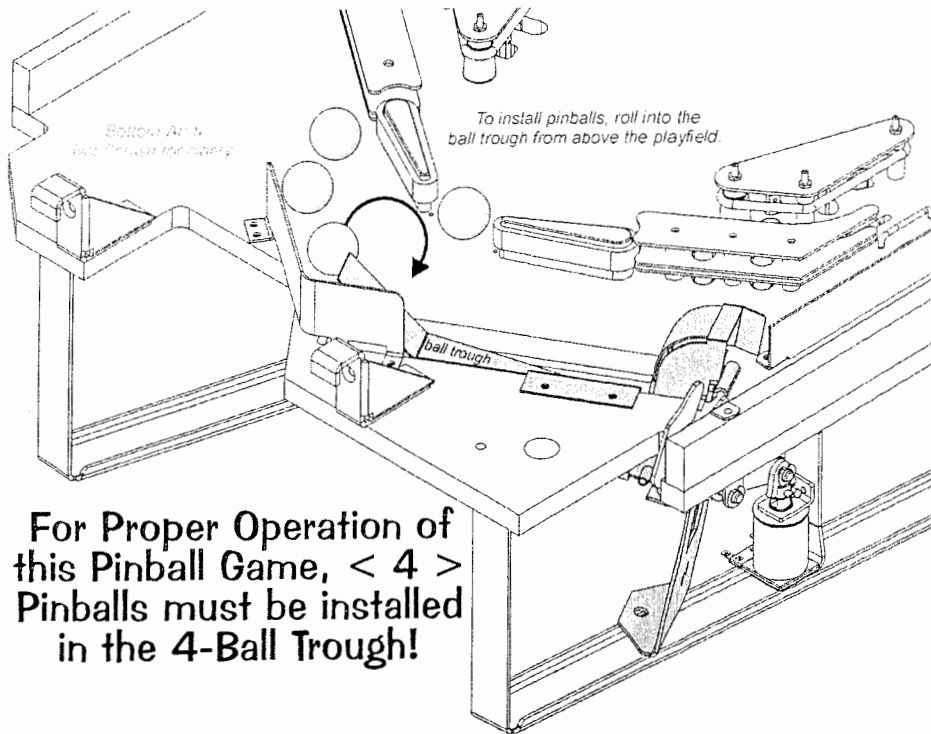


You can also retrieve your latest code from another game! From the **USB MENU** via the **UTILITIES MENU**, select the "BKUP" *Icon* instead and download to your Data Storage Device.



**! Quick Tip ~ Try backing up your current code prior to installing your new code, just in case your Data Storage Device file was corrupted by a computer glitch while you were copying /**

Got confused? Comments? Questions? Call Technical Support at 800-542-5377 or 708-345-7700 (Option 1).



For Proper Operation of this Pinball Game, < 4 > Pinballs must be installed in the 4-Ball Trough!

**QUICK REFERENCE FUSE CHART**  
 3/4A S.B. 200-5000-17 | 3A S.B. 200-5000-08 | 4A S.B. 200-5000-06 | 5A S.B. 200-5000-01 | 7A S.B. 200-5000-03 | 8A S.B. 200-5000-05

**BACKBOX FUSES**  
**I/O POWER DRIVER BOARD**  
 with RED LED STATUS INDICATORS (if any RED LED is OFF, check the fuse)

F1	5A S.B.	5.7VAC~G.I. Lamps	[BROWN-WHITE⇄WHT-BRN]
F2	5A S.B.	5.7VAC~G.I. Lamps	[YELLOW⇄WHITE-YEL Circuit]
F3	5A S.B.	5.7VAC~G.I. Lamps	[GREEN⇄WHITE-GRN Circuit]
F4	5A S.B.	5.7VAC~G.I. Lamps	[VIOLET⇄WHITE-VIO Circuit]
F5	7A S.B.	50VDC Coils / Flippers	[48VAC feed to BRDG 1]
F6	3A S.B.	24VAC~ Motor or Special Application	
F7	4A S.B.	50VDC Magnet(s) or Special Application	
F8	3A S.B.	50VDC Coils	
F9	5A S.B.	5VDC Logic Power	[13VAC feed to BRDG 4]
F10	5A S.B.	20VDC Coils / Flashers	[16VAC feed to BRDG 2]
F12	5A S.B.	12VDC Audio	[19VAC feed to BRDG 3]
F13	5A S.B.	12VDC Audio	[19VAC feed to BRDG 3]

**CABINET FUSES**  
**POWER (SERVICE OUTLET) BOX**  
 (Access through Coin Door inside cabinet, front bottom.)

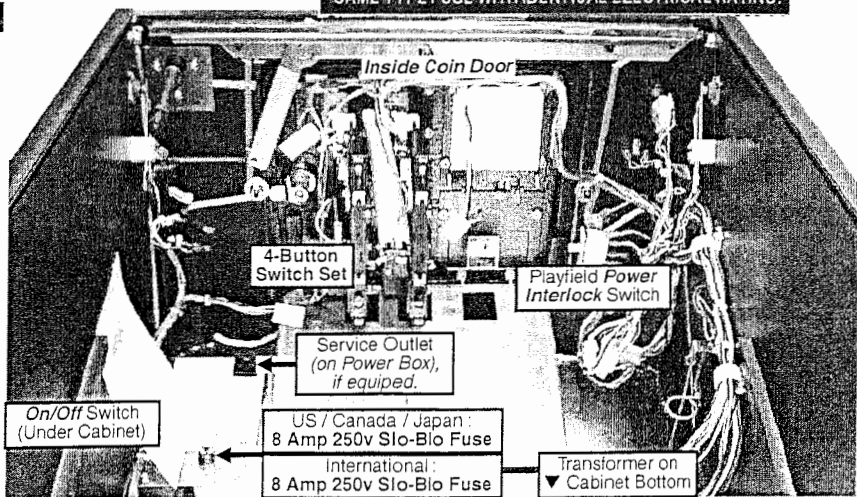
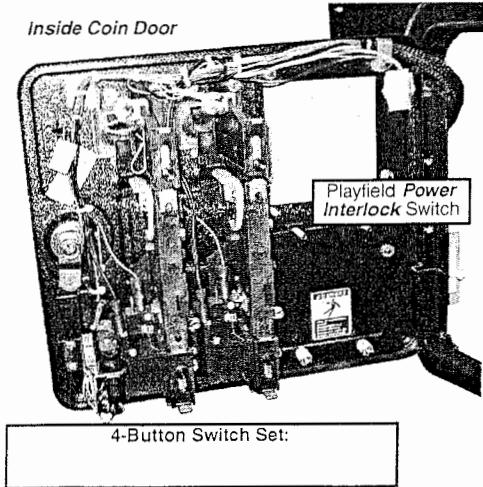
8A S.B.	110-120V Main Line	US / Canada / Japan
5A S.B.	220-240V Main Line	International

**PLAYFIELD FUSES**  
**FLIPPER OR SPECIAL APPLICATION**  
 (Coil Fuses are located under the playfield near assembly.)

3A S.B.	50VDC R. Flipper	[BLU-YEL⇄RED-YEL]
3A S.B.	50VDC L. Flipper	[GRY-YEL⇄RED-YEL]
3A S.B.	50VDC Additional Flipper Coil, if used.	
3A S.B.	50VDC Spcl. Application Coil, if used.	

For location & more details on fuses, see Sec. 5, Chp. 2.

ALL FUSES ARE 250V S.B. (SLO-BLO)  
 SEE FUSE OR TABLES FOR AMP RATING  
**CAUTION**: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE FUSE WITH IDENTICAL ELECTRICAL RATING!



# OPEN THE COIN DOOR TO ACCESS THE SERVICE SWITCH X4 SET.

## ● ● ● ● Service Switch X4 Set Overview

The four buttons (*inside Coin Door*) have dual functions depending if you have entered the **Service Menu** or not.

### Functions in Game or Attract Mode

**Green Button**  
 Press for Service Credit(s).

**Red Buttons**  
 Press for Volume Adjustment  
 - for less (quieter),  
 + for more (louder)

**Black Button**  
 Press for Service Menu entry.

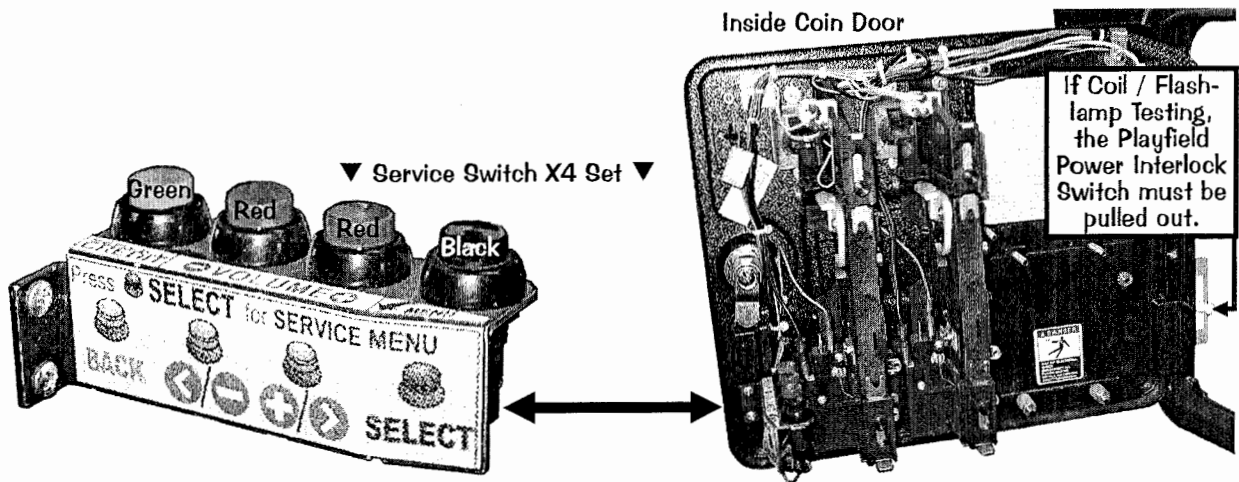
### Functions in the Service Menu

Press **SELECT** for SERVICE MENU

**Green Button**  
 Press to Escape Back (or Exit).

**Red Buttons**  
 Press to move < Left , Right >.  
 Press to - Decrease or + Increase values or to change settings.

**Black Button**  
 Press to Enter Select (or 'OK').



#### EXAMPLE:

To enter the **SERVICE MENU**, then enter the **SWITCH TEST MENU** via the **DIAGNOSTIC MENU**, perform the below steps.

**Step 1** Press [ **SELECT** ].

**Step 2** With the "DIAG" *Icon* highlighted, press [ **SELECT** ].

**Step 3** With the "SW" *Icon* highlighted, press [ **SELECT** ].

**Step 4** With the "TEST" *Icon* highlighted, press [ **SELECT** ].

Press any switch. If wired correctly, the information in the display will match the information in the Switch Matrix (see DR. 4).

Press [ < ] or [ > ] to move left or right through the menus.

Press [ **BACK** ] to go back a menu, exit or escape at any time.

Continue through the other menus.



The Service Menu is subject to change. Update this game with the latest code downloaded from our website with a USB Data Storage Device (64MB min., recommendation 128MB or higher). See the inside front cover for directions or in the Service Menu "Go To Utilities Menu" then "Go To USB Menu" and follow prompts.



# DIAGNOSTIC AIDS

**50V / 20V DISABLED**  
**CLOSE COIN DOOR**  
**OR PULL INTERLOCK SWITCH**  
**TO RESTORE POWER**

This **audible / visual alert display** is shown when the **50V / 20V Power** is disabled (by opening the Coin Door). **PULL OUT THE INTERLOCK SWITCH ONLY WHILE IN THE SERVICE MENU** FOR COIL, SWITCH OR PLAY TESTING WHEN THE COIN DOOR IS REQUIRED TO STAY OPEN FOR SERVICE BUTTON USE! Pulling out the Power Interlock Switch or pressing the 'escape' **Green [ BACK ] Button** will remove the alert display. Initial display presentation is accompanied by 3 audible tones (the bright display warning will go dim after approximately 30 seconds).

**OPERATOR ALERT!**  
**AUTO PLUNGER**  
**DEVICE MALFUNCTION**

This **alert display** is shown momentarily during **Game Mode** or **Power-Up** to alert the operator of a device malfunction (device or mechanism doesn't energize or is energized repeatedly). **OPERATOR ALERT!** works by monitoring any switch activated device that has the potential to trap a ball when disabled (e.g. in the Shooter Lane, Scoop or Eject Holes, etc.). This alert can also appear if a switch associated with a device (e.g. Ball Trough, Auto Plunger, etc.) is stuck closed (caused by a switch jam or stuck ball); the game will activate the device a predetermined number of times and if the problem is still detected, this device or switch will be noted in **Switch Alerts** and/or **Technician Alerts**.

V0.00      GAME NAME      HDW. 0  
 SYS. 0.00  
**SERVICE MENU \***  
 USE -/+ TO VIEW TECH. ALERTS

Upon entering the **SERVICE MENU**, if an asterisk "\*" is displayed after the words "SERVICE MENU," the game has detected possible faulty devices, switches and/or missing pinballs. Press the either of the **Red Buttons** (short-cut to the **TECHNICIAN ALERTS MENU**) or continue into the **SERVICE MENU** (press the **Black Button** again), select the "DIAG" Icon and "TECH" Icon for the **Technician Alerts** information.

# CPU DIP SWITCH SETTINGS

*The 8-Pos. Dip Switch [SW1] is on the CPU/Sound Board (between Conn. J3 & J13, lower left corner)*

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>USA</b>	ON								
	OFF	▲	▲	▲	▲	▲	▲	▲	▲

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Germany</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Russia</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Australia</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Greece</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>So. Africa</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Austria</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Italy</b>	ON			▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Spain</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Belgium</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Japan</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Sweden</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Canada 1</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Lithuania</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Switzerland</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Canada 2</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Middle East</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Taiwan</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Croatia</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Netherlands</b>	ON			▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>UK</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Denmark</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>New Zealand</b>	ON					▲	▲	▲	▲
	OFF								

CPU/SND PCB SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>UPDATE CODE</b>	ON								▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Finland</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

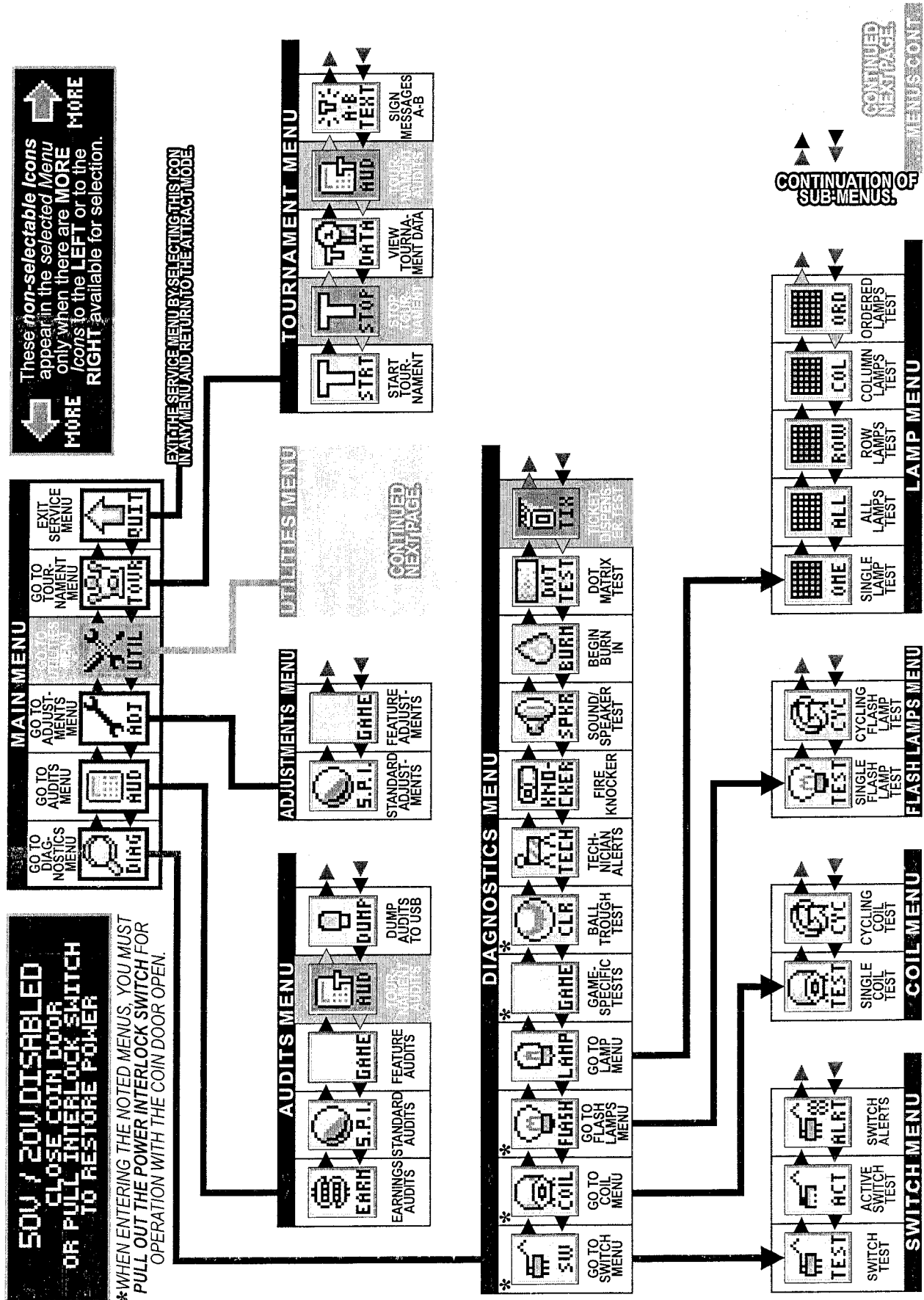
CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Norway</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>France</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

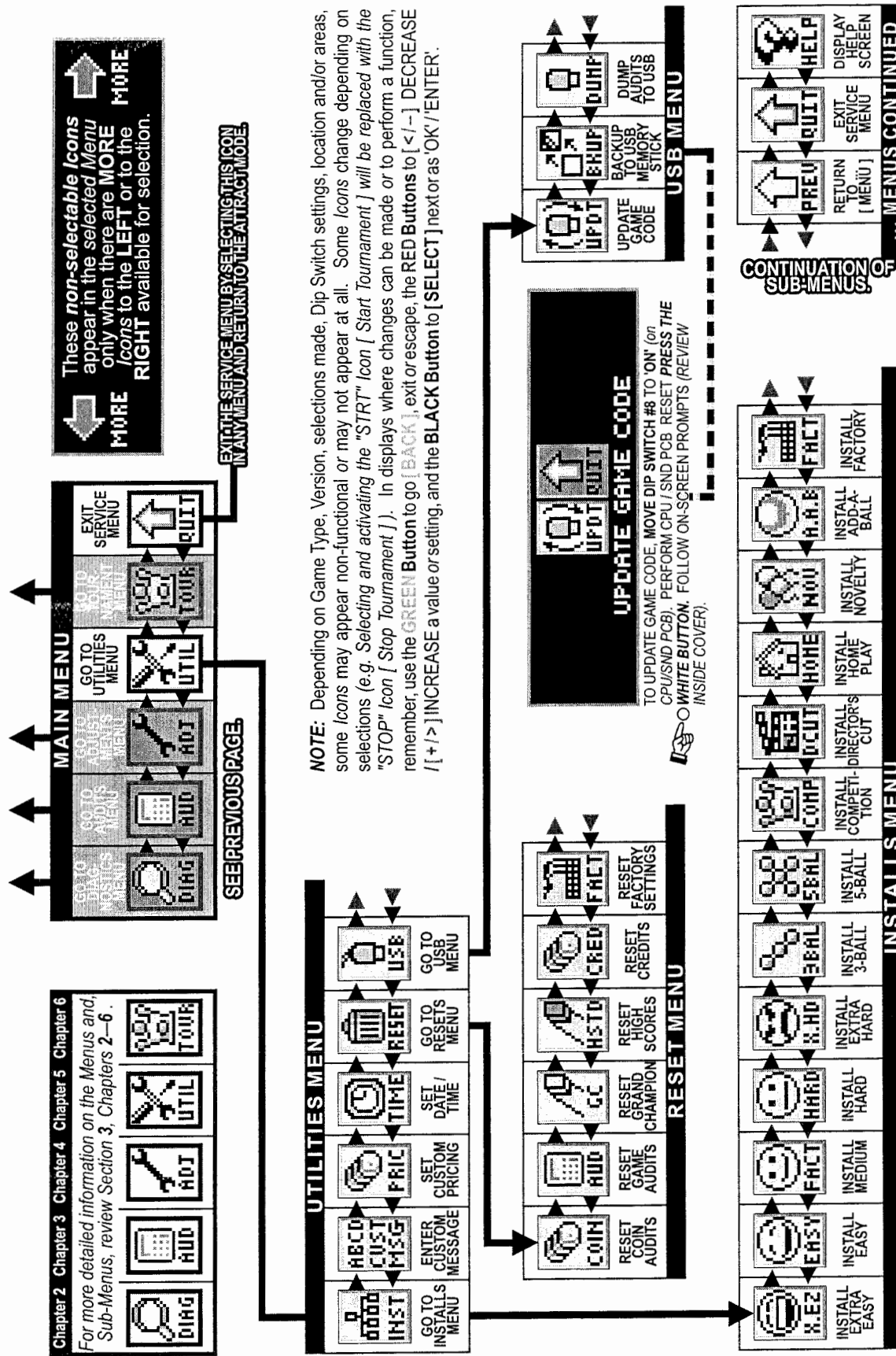
CPU COUNTRY SETTING:	Pos.	1	2	3	4	5	6	7	8
<b>Portugal</b>	ON	▲	▲	▲	▲	▲	▲	▲	▲
	OFF								

**Note:** Slide Dip Switch 8 to Position **ON** (with Dip Switches 1-7 in the **OFF** Position) only to reboot the game with the latest version **BOOT EPROM** installed at **U9** on the CPU/Sound Board (S.A.M. System only). Currently, this is also the procedure to update your game with the latest software code update file. For the latest version, visit our website. If you have questions about updating your game code, call Technical Support for assistance.

# Pinball Service Menu Icon Tree



# Pinball Service Menu Icon Tree Continued



These non-selectable icons appear in the selected Menu only when there are MORE icons to the LEFT or to the RIGHT available for selection.

EXIT THE SERVICE MENU BY SELECTING THIS ICON IN ANY MENU AND RETURN TO THE ATTRACT MODE.

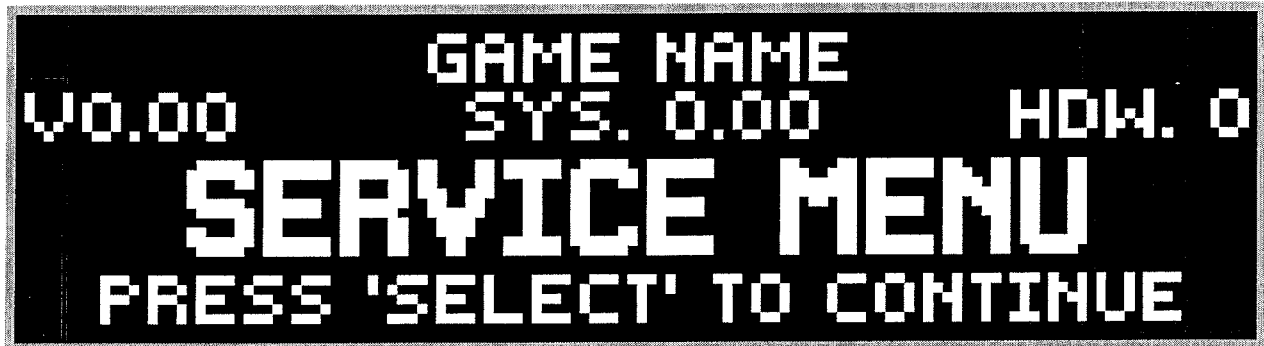
**NOTE:** Depending on Game Type, Version, selections made, Dip Switch settings, location and/or areas, some icons may appear non-functional or may not appear at all. Some icons change depending on selections (e.g. Selecting and activating the "STR7" icon [ Start Tournament ] will be replaced with the "STOP" icon [ Stop Tournament ] ). In displays where changes can be made or to perform a function, remember, use the GREEN Button to go [BACK], exit or escape, the RED Buttons to [ < / - ] DECREASE [ + / > ] INCREASE a value or setting, and the BLACK Button to [ SELECT ] next or as 'OK' / 'ENTER'.

**Note:** Press [ SELECT ] to Install; Press [ BACK ] to cancel. After selection of any of the Install icons, the request is installed and returns to the Install Menu. The last icon activated before exiting this menu will supersede any previous icon selected in the group.

# Service Menu Introduction

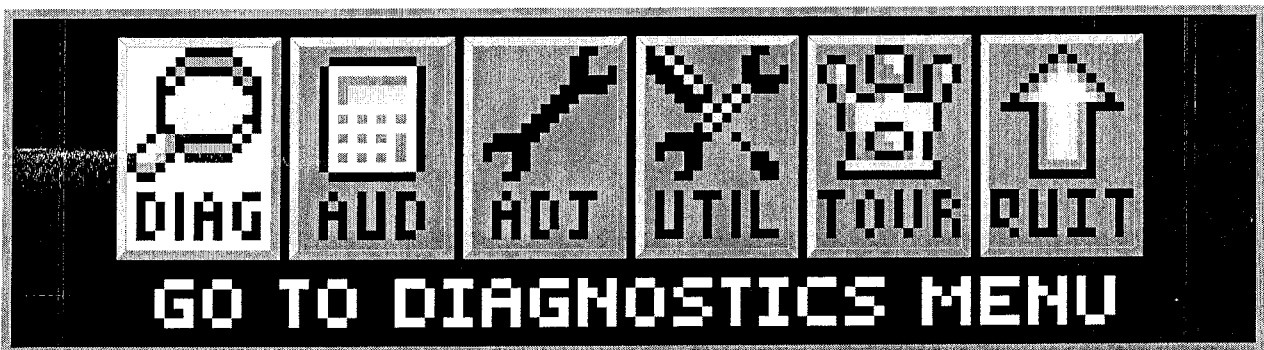
**Important:** The **Switch Bracket** holds the **Playfield Power Interlock**. It is located just inside the **Coin Door** frame (see pictorial of the **Coin Door** on the previous page). The **Button Switch** for the **Playfield Power Interlock Switch** must be pulled out for electro-mechanical device testing or diagnostic purposes (this is required). If this button is pushed in, the **Playfield Power** is disabled while the **Coin Door** is **OPEN**.

To get into the **SERVICE MENU MODE** review "**Function 3: SERVICE MENU**" on the next page. After Power-Up, push down the **Black [ SELECT ] Button** to begin. Looking at the display you will momentarily see "**SERVICE MENU**" followed by the **MAIN MENU**:



Use the **Red [ </- ] / [ +/> ] Buttons** to move the selected **Icon** left or right, and the **Black [ SELECT ] Button** to activate the selected **Icon**.

The **MAIN MENU** now appears with the "**DIAG**" **Icon** (**GO TO DIAGNOSTICS MENU**) highlighted:



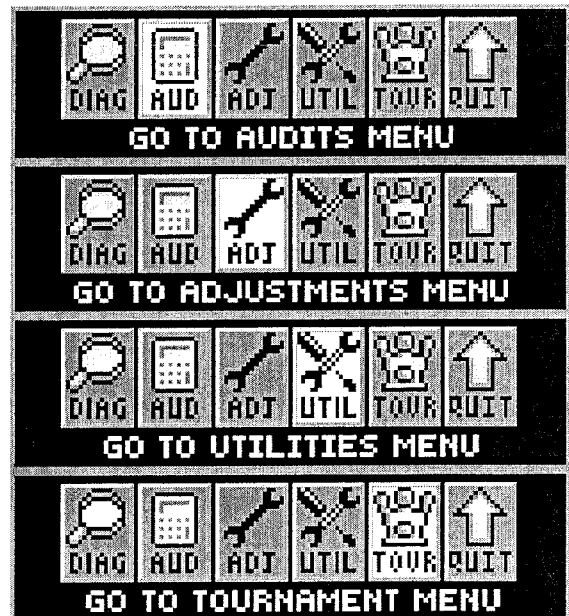
As the operator views the Menu Screen(s), the **MORE MORE** symbols indicates that there are more **Icons** to select in each direction. The **Icon** selected will blink. Pushing the **Black [ SELECT ] Button** will select the **Icon** and the Menu Screen will change to the menu selected. Select the **Green [ BACK ] Button** to move backwards through the menu levels. Press the **Green [ BACK ] Button** repeatedly or select the "**QUIT**" **Icon** to completely exit the **SERVICE MENU** Mode.

View the **SERVICE MENU Icon Tree** on the next pages for a complete overview of all menus used in this system. The "**HELP**" **Icon** provides an explanation of **ICON** usage or any other information in the Menu where the "**HELP**" **Icon** was selected (when available).

- DIAG:** GO TO DIAGNOSTICS MENU
- AUD:** GO TO AUDITS MENU
- ADJ:** GO TO ADJUSTMENTS MENU
- UTIL:** GO TO UTILITIES MENU  
(INSTALLS, CUSTOM MSG., CUSTOM PRICING, SET TIME, RESET & USB)
- TOUR:** GO TO TOURNAMENT MENU (START TOURNAMENT, VIEW TOURNAMENT DATA, SIGN MESSAGES)

>> TO UPDATE THE GAME CODE, REVIEW THE STEPS ON THE INSIDE FRONT COVER OF THIS MANUAL.

Use both the manual and the display to help customize, troubleshoot and/or diagnose faults, if any.

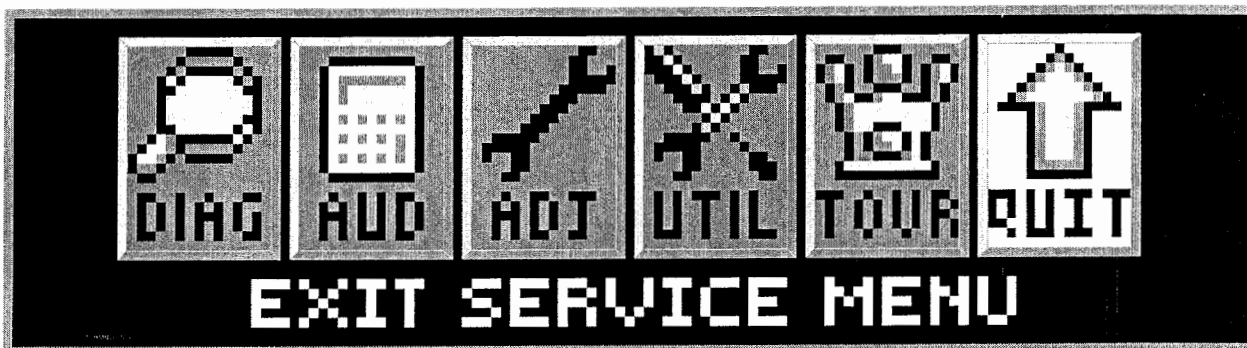






## Exit Service Menu

In the **MAIN MENU** and in all **SUB-MENUS** (where the "QUIT" Icon is present), if the "QUIT" Icon is selected and activated, or the **Green [BACK] Button** is selected repeatedly (depending on which sub-menu you're in...), the **SERVICE MENU Session** will be exited and returned to the **Attract Mode**.



Turning the game on/off will start the *Power-Up Routine*. Upon **Power-Up**, the **DISPLAY** will indicate the **COUNTRY, FILE VERSION** and **LANGUAGE(S)** installed. **LANGUAGE/COUNTRY**: change via Dip Switch.



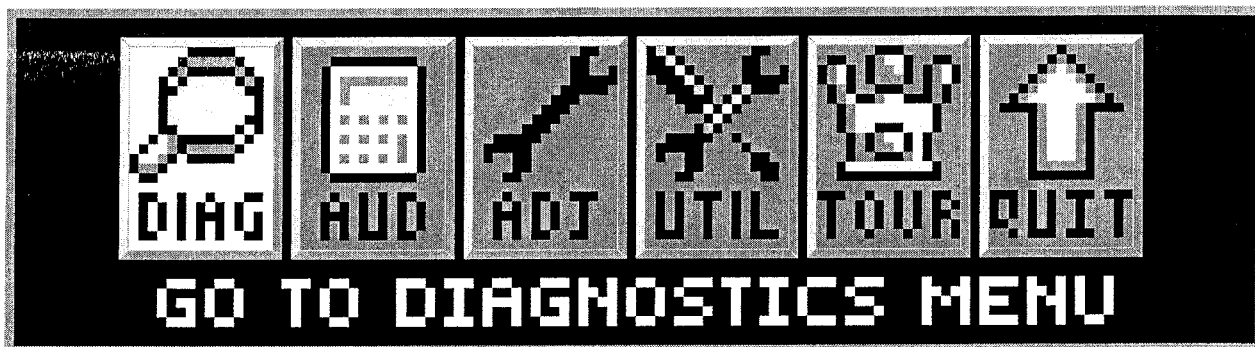
Service Menu Intro.

The below **Problem / Solution Table** was designed to answer some common problems frequently asked.

### Problem / Solution Table

PROBLEM	SOLUTION
Will not enter the <b>SERVICE MENU</b> after depressing the <b>Black [SELECT] Button</b> .	<ul style="list-style-type: none"> <li>• Check the Service Switches [ <b>GREEN, RED (x2) &amp; BLACK Buttons</b> ] for loose connections or bad ground.</li> <li>• Check the associated wiring harness to/from the CPU/Sound Board, Connector <b>J13</b>.</li> <li>• Check CPU/Sound Board for possible failure.</li> </ul>
All <b>Service Buttons [ * * * * Buttons ]</b> appear nonfunctional.	<ul style="list-style-type: none"> <li>• Check the Service Switches wiring harness for poor or no connection and/or broken wires.</li> </ul>
The <b>Green Button</b> in the Attract Mode will not enter the <b>SERVICE CREDITS MENU</b> to add Service Credits.	<ul style="list-style-type: none"> <li>• Check to make sure the Game is not in "<b>Free Play</b>." <i>If the game is set to Free Play, adding Service Credits is not required.</i></li> <li>• Check the Service Switches wiring harness for poor or no connection and/or broken wires.</li> </ul>
The <b>Display</b> "blanks out."	<ul style="list-style-type: none"> <li>• Check the Dot Matrix Display for loose wiring harness for poor or no connection and/or broken wires.</li> <li>• Check <b>F1 (3/4A Fuse)</b> on the Display Power Supply Board. <i>Refer to the Yellow Pages (SCHEMATICS &amp; TROUBLESHOOTING).</i></li> </ul>
Icons " <i>scroll</i> " along continuously in the <b>MAIN MENU</b> .	<ul style="list-style-type: none"> <li>• Check for a stuck switch on either of the <b>Red Buttons</b>.</li> </ul>
The <b>Start and Flipper Buttons</b> do not select or activate <i>Icons</i> in the <b>SWITCH TEST MENU</b> .	<ul style="list-style-type: none"> <li>• This is normal. These switches are deactivated, as they are a part of the Switch Test. <i>Refer to the Diagnostics Section (GO TO DIAGNOSTICS MENU, Switch Test).</i></li> </ul>
Can't move selection of <i>Icon</i> with the <b>Left and/or Right Flipper Buttons</b> .	<ul style="list-style-type: none"> <li>• Check the <b>Flipper Buttons</b> for loose connections or bad Ground and refer to Section 5, Chapter 2, Playfield Wiring, #-Flipper Circuit Wiring Diagram.</li> <li>• This is normal <i>only</i> in <i>Diagnostic's Switch &amp; Active Switch Tests</i> (see previous Problem).</li> </ul>
Some <i>Icons</i> appear non-functional in the <b>MENU</b> or missing.	<ul style="list-style-type: none"> <li>• Some functionality of the Service Menu may not have been completed during development. If exists, it should only be a non-critical function, such as the "<b>HELP</b>" <i>Icon</i>, which will explain the usage of icons. When completed, a software update will correct the problem. Software updates are announced via Service Bulletins (if critical) and on our website <a href="http://www.sternpinball.com/GAME-code.shtml">http://www.sternpinball.com/GAME-code.shtml</a>; view the Game Code Library Message Board Marquee or click <b>Previous Messages</b> for past announcements.</li> </ul>
In <b>COIL TEST MENU</b> , the coils and flashlamps <i>do not</i> fire after pressing the <b>Black [SELECT] Button</b> .	<ul style="list-style-type: none"> <li>• Ensure the <b>POWER INTERLOCK SWITCH</b> is <i>pulled out</i> (see the start of this Chapter).</li> </ul>
In the <b>SERVICE MENU</b> , the volume cannot be adjusted with either of the <b>Red Buttons</b> .	<ul style="list-style-type: none"> <li>• The Volume adjustment can only be made when in the <b>Attract Mode</b> (see the start of this Chapter).</li> </ul>
In the <b>SERVICE MENU</b> , the display seems to lock up, or the Help Display appears to be non-functional.	<ul style="list-style-type: none"> <li>• If you cannot clear the situation by exiting back one Menu, exit completely out of the <b>SERVICE MENU</b>, and re-enter. If the problem persists, call Technical Support for additional help.</li> </ul>

**IF YOU NOTE ANY OTHER PROBLEMS or HAVE ANY SYMPTOMS NOT DESCRIBED ABOVE, PLEASE CALL TECHNICAL SUPPORT 800-542-5377 (708-345-7700 OPTION #1), SO WE MAY ASSIST YOU.**



To initiate, from the **MAIN MENU**, select the "DIAG" *Icon*. The **DIAGNOSTICS MENU** provides tests for switches, coils, flash lamps, lamps, sounds and dots in the Dot Matrix Display. Each feature may be tested manually or automatically after entering the **SERVICE MENU** (see *Service Menu Introduction Section*).

The [ **CYCLING COIL TEST** ] / [ **FLASH LAMP TEST** ] may be used for a quick verification of automatic test functions. The [ **SWITCH TEST** ] / [ **SINGLE COIL TEST** ] / [ **SINGLE LAMP TEST** ] / [ **ALL LAMPS TEST** ] / [ **ROW LAMPS TEST** ] / [ **COLUMN LAMPS TEST** ] / [ **FLASH LAMP TEST** ] may be used for troubleshooting.

All **DIAGNOSTICS MENU** *Icons* and there usages are explained throughout this chapter in the same order as seen in the Dot Matrix Display. **NOTE:** Depending on Game Type, Version, selections made, Dip Switch settings, location and/or areas, some *Icons* may appear non-functional or may not appear at all. Some *Icons* change depending on selections (e.g. *Selecting and activating the "STRT" Icon [ Start Tournament ] will be replaced with the "STOP" Icon [ Stop Tournament ]*). **Icons and/or functions, order and operation are subject to change.**

In displays where changes can be made or to perform a function, use the **GREEN Button** to go [ **BACK** ], exit or escape, the **RED Buttons** to [ < / - ] MOVE BACK / LEFT / DECREASE / [ + / > ] MOVE FORWARD / RIGHT / INCREASE a value or setting, and the **BLACK Button** to [ **SELECT** ] next or as "OK / ENTER / ENERGIZE."

**Important:** Upon **Power-Up** (Game CPU Reset) or opening the **Coin Door** watch the **Display** for any **Alerts**.\*



This **audible / visual alert display** is shown when the **50V / 20V Power** is disabled (by opening the **Coin Door**). **PULL OUT THE INTERLOCK SWITCH ONLY WHILE IN THE SERVICE MENU FOR COIL OR SWITCH TESTING & BURN-IN WHEN THE COIN DOOR IS REQUIRED TO STAY OPEN FOR SERVICE BUTTON USE!** Pulling out the Power Interlock Switch or

pressing the 'escape' **Green [ BACK ] Button** will remove the alert display. Initial display presentation is accompanied by 3 audible tones (the *bright display warning will go dim after approximately 30 seconds*).



This **alert display** is shown momentarily during **Game Mode** or **Power-Up** to alert the operator of a device malfunction (device or mechanism doesn't energize or is energized repeatedly).

**OPERATOR ALERT!** works by monitoring any *switch activated device* that has the potential to trap a ball when disabled (e.g. in the *Shooter Lane, Scoop or Eject Holes, etc.*). This alert can

also appear if a switch associated with a device (e.g. *Ball Trough, Auto Plunger, etc.*) is stuck closed (caused by a *switch jam or stuck ball*); the game will activate the device a predetermined number of times and if the problem is still detected, this device or switch will be noted in **Switch Alerts** (next page) and/or **Technician Alerts**.



Upon entering the **SERVICE MENU**, if an asterisk " \* " is displayed after the words "SERVICE MENU," the game has detected possible faulty devices, switches and/or missing pinballs. Press the either of the **Red Buttons** (short-cut to the **TECHNICIAN ALERTS MENU**) or continue into the **SERVICE MENU** (press the **Black Button** again), select the "DIAG" *Icon*

and "TECH" *Icon* for the **Technician Alerts** information.



**CAUTION!** Remove all pinballs from the Ball Trough prior to lifting the playfield to it's full upright position for servicing. **PULL OUT** the **Power Interlock Switch** for operation. To eject pinballs, select the "DIAG" *Icon* from the **MAIN MENU** to enter the **DIAGNOSTICS MENU**. Select the "CLR" *Icon* to enter the **BALL TROUGH TEST MENU**. Press the **Black [ SELECT ] Button**. To return to the **DIAGNOSTICS MENU**, press the **Green [ BACK ] Button**. This feature also useful to retrieve a pinball for game testing in **Switch** or **Coil Tests**.



## Go To Switch Menu

To initiate, from the **DIAGNOSTICS MENU**, select the "SW" *Icon*. Switches are configured in an 4 X 16 Matrix of Rows [ Switch Drives ] and Columns [ Sw. Returns ] with up to **64** possible switches. Dedicated Switches are configured in a 2 X 16 Matrix of Rows [ Dedicated Sw. Drives / Ground ] and Column [ Ded. Switch Returns ] with up to **32** possible dedicated switches (*includes the 8 dip switch positions*). The **SWITCH TEST MENU** consists of three (3) parts: **Switch & Active Switch Tests** and **Switch Alerts** to test *all* switches.

**Reminder:** The **Flipper & Start Buttons** (part of Switch Tests) are temporarily disabled as **Service Menu Navigation Buttons** during these test(s) so they can be tested and shown on-screen. Pressing the **Green [ BACK ] Button** (Dedicated Switch D-21), Light Green-Black / Black (GND), will exit **Switch Test** or **Active Switch Test**.



## Switch Test

To initiate, from the **SWITCH MENU**, select the "TEST" *Icon*. Ensure the **Power Interlock Switch** is pulled out if testing with the Coin Door open and the activation of coils is required. Upon entering **Switch Test**, you will notice that some switches are already indicated as closed. In the examples, the 4-Ball Trough Switches **#18**, **#19**, **#20** & **#21** are shown closed (*pinballs at rest in the ball trough*), along with the Flipper E.O.S. Dedicated Switches **D-10** & **D-12** (End-of-Stroke Switches are 'normally closed'). If the game has more flippers with E.O.S. Dedicated Switches, CPU Dip Switch Setting *other than 1-8 OFF* or switches stuck closed, more dots will be indicated (*enter Active Switch Test to reveal the names*).

In **Switch Test**, close each switch and observe the display (*switch closure is accompanied by a short audible tone*). In the example, the **Black [ SELECT ] Button** Dedicated Switch **D-24** is pressed. The Dot Matrix Display will light up (*highlight*) the corresponding *dot* in the on-screen matrix, display the *switch name*, *switch number* and the *Switch Drive / Return wire colors*. When not closing a switch, the display indicates **NONE** and the last switch number closure. For the Switch Matrix Grid and Dedicated Switch Grid, see **Find-It-In-Front: Dr. Pinball, DR. 4** or escape out of this test and enter **Active Switch Test** (*described below*) to view the names of the switches closed. **Note:** Pressing the **Green [ BACK ] Button** (Ded. Switch D-21), Lt. Green-Black / Black (GND), will exit the **Switch Test**.

**CAUTION! COIL MECHANISMS WHEN ACTIVATED HAVE FAST MOVING PARTS!** While performing **Switch Test** with the Coin Door closed *or* open (*with the Power Interlock Switch is pulled out*), **DO NOT USE YOUR FINGER** to test switches which are associated with a coil mechanism such as a Vertical Up-Kicker (*hole with a switch*), Slingshots, Bumpers, etc..



## Active Switch Test

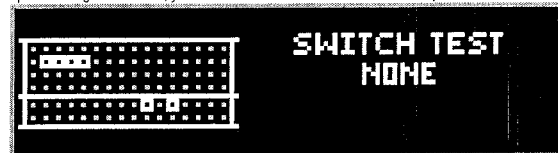
To initiate, from the **SWITCH MENU**, select the "ACT" *Icon*. In **Active Switch Test**, if any switches are stuck closed (*or normally closed from the presence of pinball(s) as in the Ball Trough*), the display will flash the corresponding dot(s) in the on-screen matrix, display the *name* and the *Switch Drive / Return wire colors*. If more than one switch is closed, the switch information will change with each switch. This cycle continues until all switches are cleared *or* until **Active Switch Test** is exited. In the example, the **Black [ SELECT ] Button** Dedicated Switch **D-24** is pressed and held down. The display will cycle and flash each dot, naming each switch which is closed. To determine the *switch number*, compare the highlighted dot to the same position in the Switch Matrix Grid at the beginning of this manual.



## Switch Alerts

To initiate, from the **SWITCH MENU**, select the "ALRT" *Icon*. In **Switch Alerts Menu**, possible inoperable switches are marked with an "X" (OUT OF SERVICE). Mark switches **IN** *or* **OUT OF SERVICE** by pressing the **Black Button** while the intended switch is highlighted and change with either of the **Red Buttons**. Switches which are determined as "OUT OF SERVICE" by the game *or* manually, will be automatically marked as "IN SERVICE" as soon as the game determines a valid switch closure (*after adjusting, fixing or replacing the switch, then testing/actuating the switch*). **Note:** A **Factory Reset** will also put the switch back "IN SERVICE" in which the game will need to redetermine if the switch should be marked **OUT OF SERVICE**.

Upon entering Switch Test, you will notice that some switches are already indicated as 'closed'.



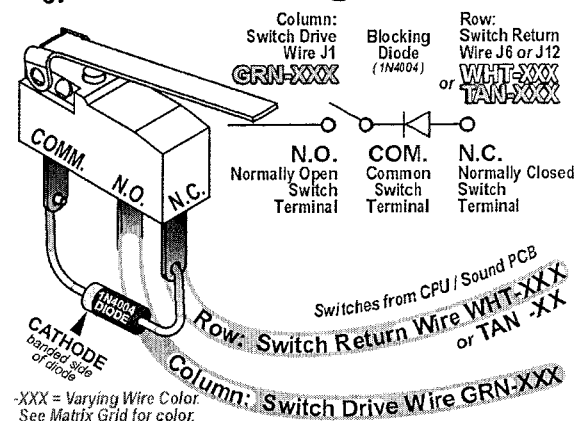
D-24 position is highlighted and accompanied by a short audible tone when pressed.



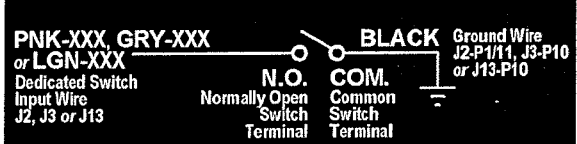
After pressing the switch (to make it close), the display will indicate the last switch number.



## Typical Switch Wiring & Schematic



## Dedicated Switch Schematic



D-24 is held down. The display will cycle and flash each dot, naming each switch ... closed.



**SWITCH MATRIX GRID [ #1 - #64 ] {Switch Locations : next page}**

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
<b>CPU/ Sound Board</b>	IC-U22A RETURNA J6-P9	IC-U22B RETURNA J6-P8	IC-U22C RETURNA J6-P7	IC-U22D RETURNA J6-P6	IC-U16A RETURNA J6-P5	IC-U16B RETURNA J6-P4	IC-U16C RETURNA J6-P3	IC-U16D RETURNA J6-P2	IC-U36A RETURNA J12-P3	IC-U36B RETURNA J12-P2	IC-U36C RETURNA J12-P1	IC-U36D RETURNA J12-P0	IC-U40A RETURNA J12-P4	IC-U40B RETURNA J12-P3	IC-U40C RETURNA J12-P2	IC-U40D RETURNA J12-P1
<b>01</b>	S.W. #1 WELL WALKER 180-5119-02 BELOW P.F.	S.W. #2 WELL WALKER 180-5119-02 BELOW P.F.	S.W. #3 PRISON DOORS CLOSED 180-5119-02 BELOW P.F.	S.W. #4 PRISON DOORS CLOSED 180-5119-02 BELOW P.F.	S.W. #5 WALKER HIT 180-5119-02 BELOW P.F.	S.W. #6 WALKER HIT 180-5119-02 BELOW P.F.	S.W. #7 WALKER HIT 180-5119-02 BELOW P.F.	S.W. #8 WALKER HIT 180-5119-02 BELOW P.F.	S.W. #9 L.T. 3-BANK #1 (BOT) 520-5252-03 BELOW P.F.	S.W. #10 L.T. 3-BANK #2 (MID) 520-5252-03 BELOW P.F.	S.W. #11 L.T. 3-BANK #3 (TOP) 520-5252-03 BELOW P.F.	S.W. #12 STAR ROLLOVER (TOP) 520-5252-03 BELOW P.F.	S.W. #13 STAR ROLLOVER (BOT) 520-5252-03 BELOW P.F.	S.W. #14 TOURN START 180-5174-00 IN CABINET	S.W. #15 TOURN START 180-5174-00 IN CABINET	S.W. #16 TOURN START 180-5174-00 IN CABINET
<b>02</b>	S.W. #17 TROUGH #4 LEFT	S.W. #18 TROUGH #4 LEFT	S.W. #19 TROUGH #3	S.W. #20 TROUGH #2	S.W. #21 TROUGH #1 OPTO RT.	S.W. #22 TROUGH JAM	S.W. #23 SHOOTER LANE	S.W. #24 LEFT OUTLANE	S.W. #25 LEFT LANE	S.W. #26 LEFT SLINGSHOT	S.W. #27 RIGHT SLINGSHOT	S.W. #28 RIGHT RETURN LANE	S.W. #29 RIGHT OUTLANE	S.W. #30 LEFT POP BUMPER 180-5015-04 BELOW P.F.	S.W. #31 RIGHT POP BUMPER 180-5015-04 BELOW P.F.	S.W. #32 TOP POP BUMPER 180-5015-04 BELOW P.F.
<b>03</b>	S.W. #33 UPPER SHOOTER LANE 500-6227-03 BELOW P.F.	S.W. #34 RIGHT RAMP ENTER 180-5187-00 ABOVE P.F.	S.W. #35 LEFT RAMP EXIT 180-5087-00 ABOVE P.F.	S.W. #36 LEFT TOP LANE 500-6227-04 BELOW P.F.	S.W. #37 RIGHT TOP LANE 500-6227-04 BELOW P.F.	S.W. #38 TOWER STANDUP 515-7640-08 BELOW P.F.	S.W. #39 RIGHT LOOP	S.W. #40 LEFT LOOP	S.W. #41 RIGHT RAMP EXIT 180-5087-00 ABOVE P.F.	S.W. #42 LEFT RAMP ENTER 180-5087-00 ABOVE P.F.	S.W. #43 LEFT RAMP ENTER 180-5087-00 ABOVE P.F.	S.W. #44 LT. PRISON STANDUP 515-7561-08 BELOW P.F.	S.W. #45 RT. PRISON STANDUP 515-7581-08 BELOW P.F.	S.W. #46 PRISON DOORS OPTO 500-6775-01 ABOVE P.F.	S.W. #47 CENTER LANE 500-6227-04 BELOW P.F.	S.W. #48 CENTER LANE 500-6227-04 BELOW P.F.
<b>04</b>	S.W. #49 S.W. #49	S.W. #50 S.W. #50	S.W. #51 S.W. #51	S.W. #52 S.W. #52	S.W. #53 S.W. #53	S.W. #54 S.W. #54	S.W. #55 S.W. #55	S.W. #56 S.W. #56	S.W. #57 S.W. #57	S.W. #58 S.W. #58	S.W. #59 S.W. #59	S.W. #60 S.W. #60	S.W. #61 S.W. #61	S.W. #62 S.W. #62	S.W. #63 S.W. #63	S.W. #64 S.W. #64

◀ FOR MORE ABOUT DIODE ON TERMINAL STRIPS & D.I.S., SEE SECTION 6, CHAPTER 2, PAGES 104-105 ▶

Wire Color Abbreviations used:

- BLK Black
- BLU Blue
- BRN Brown
- GRN Green
- GRY Gray
- LGN Light Green
- ORG Orange
- PNK Pink
- RED Red
- TAN Tan
- VIO Violet
- WHT White
- YEL Yellow

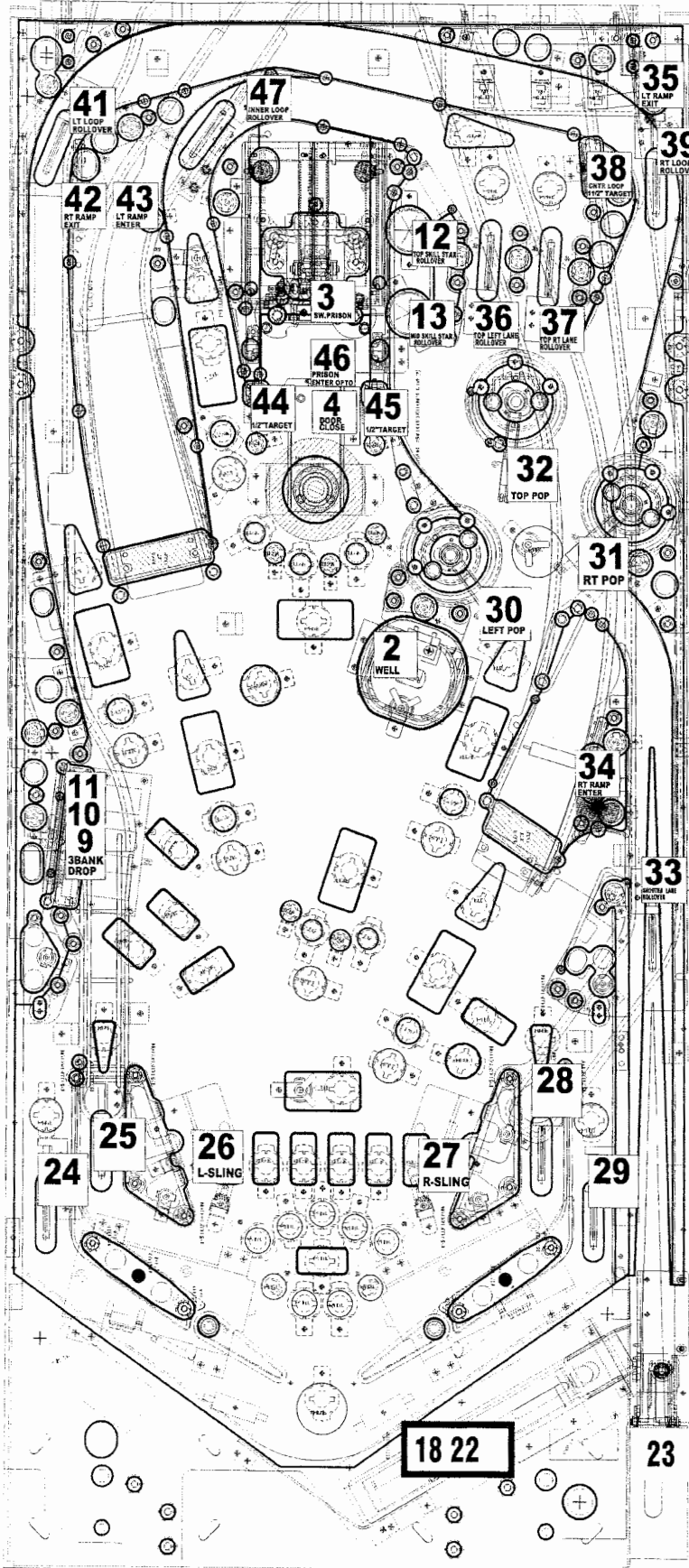
**Dedicated Switches [ #D-1 - #D-32 ] {Dedicated Switch Locations : next page}**

	IC-U2	IC-U2	IC-U2	IC-U2	IC-U2	IC-U2	IC-U2	IC-U2	IC-U4	IC-U4	IC-U4	IC-U4	IC-U4	IC-U4	IC-U4	IC-U4
<b>CPU/SND Board</b>	S.W. D-1 LEFT COIN SLOT	S.W. D-2 CENTER COIN SLOT	S.W. D-3 RIGHT COIN SLOT	S.W. D-4 FORTH COIN SLOT	S.W. D-5 FIFTH COIN SLOT	S.W. D-6 S.W. D-6	S.W. D-7 S.W. D-7	S.W. D-8 S.W. D-8	S.W. D-9 LEFT FLIPPER BUTTON	S.W. D-10 LEFT FLIPPER E.O.S.	S.W. D-11 RIGHT FLIPPER BUTTON	S.W. D-12 RIGHT FLIPPER E.O.S.	S.W. D-13 S.W. D-13	S.W. D-14 S.W. D-14	S.W. D-15 S.W. D-15	S.W. D-16 S.W. D-16
<b>GROUND (BLK) J2-P1/1 &amp; J3-P10</b>	180-5204-00 COIN DOOR	180-5204-00 COIN DOOR	180-5204-00 COIN DOOR	180-5204-00 COIN DOOR	180-5204-00 COIN DOOR	IF USED			500-6880-01 CABINET	180-5149-00 FLIP ASSY.	500-6880-01 CABINET	180-5149-00 FLIP ASSY.				

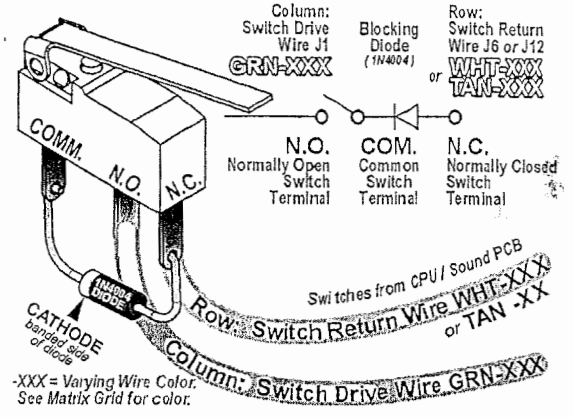
**CPU/SOUND BD. SW1 DIP SWITCH (located between Connectors J3/J13)**

	IC-41	IC-41	IC-41	IC-41	IC-41	IC-41	IC-41	IC-41	IC-41	IC-41	IC-41	IC-41	IC-41	IC-41	IC-41	IC-41
<b>CPU/SND Board</b>	S.W. D-17 TILT PENDULUM	S.W. D-18 SLAM TILT	S.W. D-19 TICKET NOTCH	S.W. D-20 BACK (GREEN)	S.W. D-21 MINUS (RED)	S.W. D-22 PLUS (RED)	S.W. D-23 SELECT (BLACK)	S.W. D-24 S.W. D-24	S.W. D-25 DIP (1)234-5678	S.W. D-26 DIP (2)34-5678	S.W. D-27 DIP (3)45678	S.W. D-28 DIP (4)5678	S.W. D-29 DIP (5)678	S.W. D-30 DIP (6)78	S.W. D-31 DIP (7)8	S.W. D-32 DIP (8)
<b>GROUND (BLK) J13-P10</b>	CABINET IF USED	IF USED	IF USED	180-5192-04 COIN DOOR	180-5192-02 COIN DOOR	180-5192-02 COIN DOOR	180-5192-02 COIN DOOR		#1 ON	#2 ON	#3 ON	#4 ON	#5 ON	#6 ON	#7 ON	#8 ON

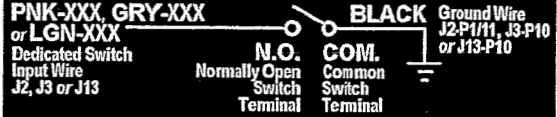




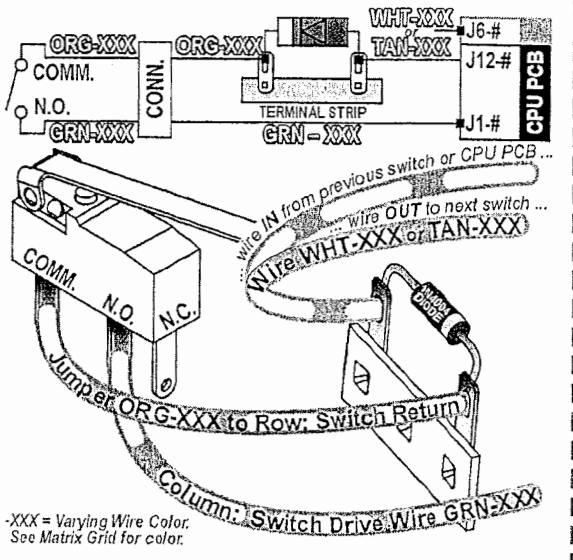
**Typical Switch Wiring & Schematic**



**Dedicated Switch Schematic**



**Typical Switch Wiring & Schematic ... with Switch Diode on a Terminal Strip (DOTS)**





## Go To Coil Menu

To initiate, from the **DIAGNOSTICS MENU**, select the "COIL" *Icon*. Coils #01 – #16 are typically High Current Coils (although Low Current Coils may be used in these positions & will be noted). Coils #17 – #32 are typically Low Current Coils. Flash Lamps are typically used in positions #25 – #32 (although Flash Lamps may be used in any position and will be noted). Auxiliary Coils may be used in positions #33 – #35.

Remember, use the **GREEN Button** to go [ **BACK** ], exit or escape, the **RED Buttons** to [ < / - ] GO BACK [ + / > ] GO FORWARD, and the **BLACK Button** to [ **SELECT** ] ENERGIZE the coil (solenoid) or flash lamp.



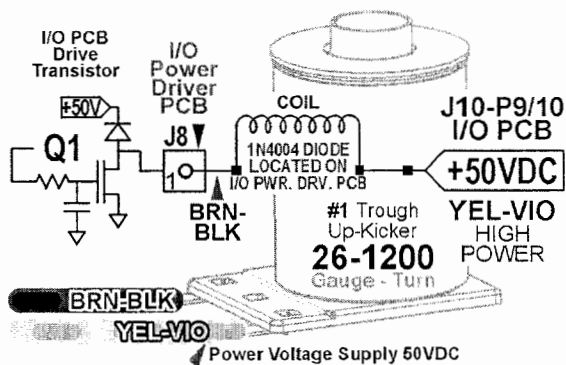
### Single Coil Test

To initiate, from the **COIL MENU**, select the "TEST" *Icon*. Ensure the **Power Interlock Switch** is pulled out if testing with the Coin Door open. Upon entering

**Single Coil Test**, you will notice the #1 coil is shown. The Dot Matrix Display will indicate the coil or flash lamp name, coil (solenoid) or flash lamp number and the Coil or Flash Lamp Power Line / Drive Transistor Control Line wire colors. To determine the "Pin-Outs" from the I/O Power Driver Board, the Coil Voltage Gauge-Turns (e.g. 23-800) or lamp type (e.g. #89 or #906 Bulb), view the Coils Detailed Chart Table at the beginning of this manual or for more on troubleshooting and diagnosing, see the Yellow Pages (Schematics & Wiring).



### Typical Coil Wiring & Schematic



### Cycling Coil Test

To initiate, from the **COIL MENU**, select the "CYC" *Icon*. Ensure the **Power Interlock Switch** is pulled out if testing with the Coin Door open. The test pulses each regular coil or flash lamp sequentially (cycling) on the Playfield

and in the Backbox (if coils or flash lamps are used). The Dot Matrix Display indicates the same information you will find in **Single Coil Test**.



## Go To Flash Lamps Menu

To initiate, from the **DIAGNOSTICS MENU**, select the "FLASH" *Icon*. The two tests allows the technician to easily spot any burned-out flash lamps and replace them. Unlike **Single Coil Test**, which tests *all* coil (solenoids), including flash lamps, **Single and Cycling Flash Lamp Tests**, test only the flash lamps used in the game. Flash Lamps are typically used in positions #25 – #32 (although Flash Lamps may be used in any position and will be noted).

Remember, use the **GREEN Button** to go [ **BACK** ], exit or escape, the **RED Buttons** to [ < / - ] GO BACK / [ + / > ] GO FORWARD, and the **BLACK Button** to [ **SELECT** ] ENERGIZE the flash lamp.



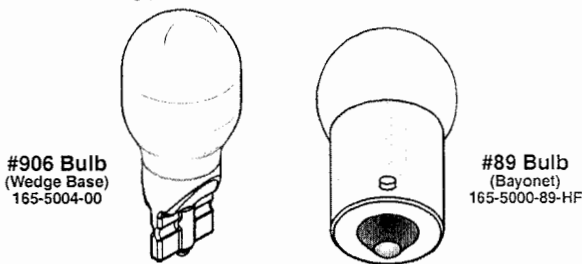
### Single Flash Lamp Test

To initiate, from the **FLASH LAMPS MENU**, select the "TEST" *Icon*. Ensure the **Power Interlock Switch** is pulled out if testing with the Coin Door open. Upon

entering **Single Flash Lamp Test**, you will notice the first Flash Lamp is shown. The Dot Matrix Display will indicate the flash lamp name, flash lamp number and the Flash Lamp Power Line / Drive Transistor Control Line wire colors. To determine the "Pin-Outs" from the I/O Power Driver Board or lamp type (e.g. #89 or #906 Bulb), view the Coils Detailed Chart Table at the beginning of this manual or for more on troubleshooting and diagnosing, see the Yellow Pages (Schematics & Wiring).



### Bulb Types used for Flash Lamps



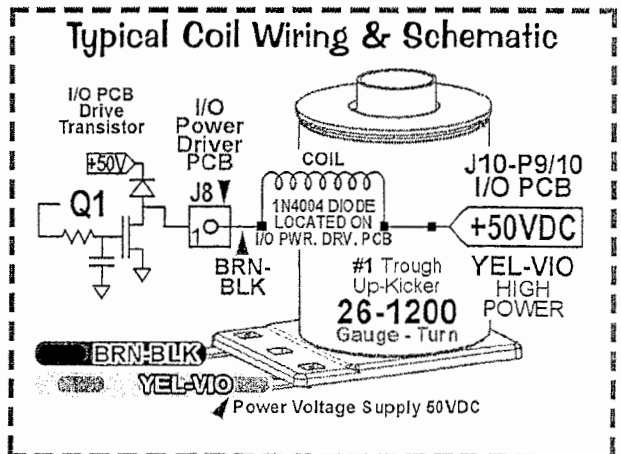
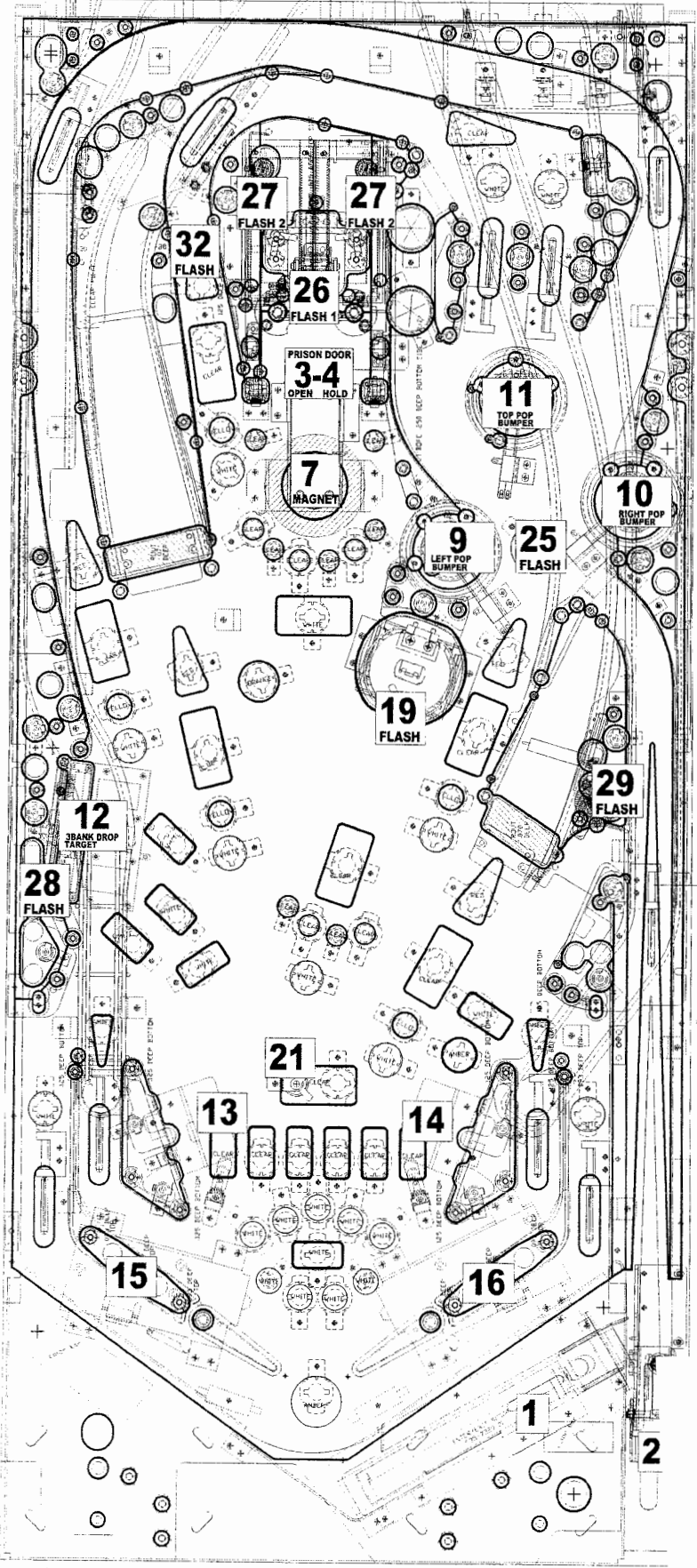
### Cycling Flash Lamp Test

To initiate, from the **FLASH LAMPS MENU**, select the "CYC" *Icon*.

Ensure the **Power Interlock Switch** is pulled out if testing with the Coin Door open. The test pulses each flash lamp sequentially (cycling) on the Playfield and in the Backbox (if flash lamps are used). The Dot Matrix Display indicates the same information you will find in **Single Flash Lamp Test**.

### COILS DETAILED CHART TABLE

High Current Coils Group 1		Drive Transistor	Driver Output PCB	Power Line Color	Power Line Connection	Power Voltage	Drive Transistor Control Line Color	D.T. Control Line Connect	Coil GA-Turn or Bulb Type
#1	TROUGH UP-KICKER	Q1	▲ I/O Power Driver ▼	YEL-VIO	J10-P9/10	50VDC	BRN-BLK	J8-P1	28-1200 090-5044-ND
#2	AUTO LAUNCH	Q2		YEL-VIO	J10-P9/10	50VDC	BRN-RED	J8-P3	23-800 090-5001-ND
#3	PRISON DOORS ( POWER)	Q3		YEL-VIO	J10-P9/10	50VDC	BRN-ORG	J8-P4	DUAL WIND 090-5083-00
#4	PRISON DOORS ( HOLD)	Q4		YEL-VIO	J10-P9/10	50VDC	BRN-YEL	J8-P5	DUAL WIND 090-5083-00
#5		Q5				50VDC	BRN-GRN	J8-P6	
#6		Q6				50VDC	BRN-BLU	J8-P7	
#7	PRISON MAGNET	Q7		VIO/YEL	J10-P8	50VDC	BRN-VIO	J8-P8	22-850 511-5065-ND
#8	SHAKER MOTOR (OPTIONAL)	Q8		RED-WHT	J17-P7	16VAC	BRN-GRY	J8-P9	502-5027-00
High Current Coils Group 2		Drive Transistor	Driver Output PCB	Power Line Color	Power Line Connection	Power Voltage	Drive Transistor Control Line Color	D.T. Control Line Connect	Coil GA-Turn or Bulb Type
#9	LEFT POP BUMPER	Q9	▲ I/O Power Driver ▼	YEL-VIO	J10-P9/10	50VDC	BLU-BRN	J8-P1	28-1200 090-5044-ND
#10	RIGHT POP BUMPER	Q10		YEL-VIO	J10-P9/10	50VDC	BLU-RED	J8-P2	28-1200 090-5044-ND
#11	TOP POP BUMPER	Q11		YEL-VIO	J10-P9/10	50VDC	BLU-ORG	J8-P4	28-1200 090-5044-ND
#12	LEFT 3- BANK DROP TARGET	Q12		YEL-VIO	J10-P9/10	50VDC	BLU-YEL	J8-P5	25-1240 090-5034-ND
#13	LEFT SLINGSHOT	Q13		YEL/VIO	J10-P9/10	50VDC	BLU-GRN	J8-P6	28-1200 090-5044-ND
#14	RIGHT SLINGSHOT	Q14		YEL/VIO	J10-P9/10	50VDC	BLU-BLU	J8-P7	28-1200 090-5044-ND
#15	LEFT FLIPPER (50V RED/YEL)	Q15		GRY-YEL-3A Fuse-RED-YEL	J10-P6/7	50VDC	ORG-GRY	J8-P8	22-1080 090-5032-ND
#16	RIGHT FLIPPER (50V RED/YEL)	Q16		BLU-YEL-3A Fuse-RED-YEL	J10-P6/7	50VDC	ORG-VIO	J8-P9	22-1080 090-5032-ND
Low Current Coils Group 1		Drive Transistor	Driver Output PCB	Power Line Color	Power Line Connection	Power Voltage	Drive Transistor Control Line Color	D.T. Control Line Connect	Coil GA-Turn or Bulb Type
#17		Q17	▲ I/O Power Driver ▼				VIO-BRN	J7-P2	
#18		Q18					VIO-RED	J7-P3	
#19	FLASH: WELL WALKER	Q19		ORG	J6-P10	20VDC	VIO-ORG	J7-P4	LED 113-5034-02
#20		Q20					VIO-YEL	J7-P6	
#21	FLASH: HORDE	Q21		ORG	J6-P10	20VDC	VIO-GRN	J7-P7	LED 113-5034-08
#22		Q22					VIO-BLU	J7-P8	
#23		Q23					VIO-BLK	J7-P9	
#24	OPTIONAL (e.g. COIN METER)	Q24		RED	J16-P4-8	5VDC	VIO-GRY	J7-P10	COIN METER
Low Current Coils Group 2		Drive Transistor	Driver Output PCB	Power Line Color	Power Line Connection	Power Voltage	Drive Transistor Control Line Color	D.T. Control Line Connect	Coil GA-Turn or Bulb Type
#25	FLASH: POP BUMPERS	Q25	▲ I/O Power Driver ▼	ORG	J6-P10	20VDC	BLK-BRN	J6-P1	LED 113-5034-08
#26	FLASH: PRISON (TOP)	Q26		ORG	J6-P10	20VDC	BLK-RED	J6-P2	LED 113-5034-08
#27	FLASH: PRISON (BOTTOM) (X2)	Q27		ORG	J6-P10	20VDC	BLK-ORG	J6-P3	LED 112-5044-02
#28	FLASH; LEFT DOME	Q28		ORG	J6-P10	20VDC	BLK-YEL	J6-P4	LED 113-5034-08
#29	FLASH: RIGHT DOME	Q29		ORG	J6-P10	20VDC	BLK-GRN	J6-P5	LED 113-5034-08
#30		Q30					BLK-BLU	J6-P6	
#31	FLASH: LEFT LOOP	Q31					BLK-VIO	J6-P7	
#32	FLASH: CENTER LOOP	Q32		ORG	J6-P10	20VDC	BLK-GRY	J6-P8	LED 113-5034-08







# Go To Lamp Menu

To initiate, from the **DIAGNOSTICS MENU**, select the "LAMP" *Icon*. Controlled lamps are configured in and 8 X 10 Matrix of Rows [ Lamp Returns / Ground ] and Columns [ Lamp Drives / 18VDC ] with up to **80 lamps possible**. The **LAMP TEST MENU** consists of five (5) parts: **Single Lamp Test**, **Test All Lamps**, **Row Lamps Test**, **Column Lamps Test** and **Ordered Lamps Test\*** to test *all* lamps.

Remember, use the **GREEN Button** to go [ **BACK** ], exit or escape, the **RED Buttons** to [ **< / -** ] **GO BACK / LEFT** / [ **+ / >** ] **GO FORWARD / RIGHT**, and the **BLACK Button** to [ **SELECT** ] next or as "OK / ENTER."

Upon entering **Single Lamp Test**, ... the #1 lamp is shown. .... Display will light up ... the dot ... ▶



## Single Lamp Test

To initiate, from the **LAMP MENU**, select the "ONE" *Icon*. As each lamp is selected, the lamp will light at its location on the playfield as well as the Dot Matrix

Display. Upon entering **Single Lamp Test**, you will notice the #1 lamp is shown. The Dot Matrix Display will light up (*highlight*) the corresponding *dot* in the on-screen matrix, display the *lamp name*, *lamp number* and the *Lamp Return / Drive wire colors*. For the Lamp Matrix Grid, see the beginning section of this Service Game Manual.



Upon entering **All Lamps Test**, ... the Dot Matrix Display is flashing "ALL LAMPS ON" ... ▶

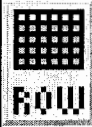


## All Lamps Test

To initiate, from the **LAMP MENU**, select the "ALL" *Icon*. Upon entering **All Lamps Test**, you will notice the Dot Matrix Display is flashing **ALL LAMPS ON** and the lamps on the playfield will be lit, alternating between the rows in the Lamp Matrix Grid. The Dot Matrix Display will light up (*highlight*) all of the *dots* in the on-screen matrix.



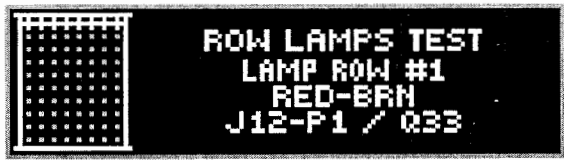
Upon entering **Row Lamps Test**, you will notice the #1 lamp row is shown. ▶



## Row Lamps Test

To initiate, from the **LAMP MENU**, select the "ROW" *Icon*. As each lamp row is selected, the lamps in the row will light on the playfield as well as the Dot Matrix

Display. Upon entering **Row Lamps Test**, you will notice the #1 lamp row is shown. The Dot Matrix Display will light up (*highlight*) the corresponding row of *dots* in the on-screen matrix, display the *lamp row number*, the *Lamp Return wire colors*, the *I/O PCB Connector* and *transistor number*.



Upon entering **Column Lamps Test**, you will notice the #1 lamp column is shown. ▶



## Column Lamps Test

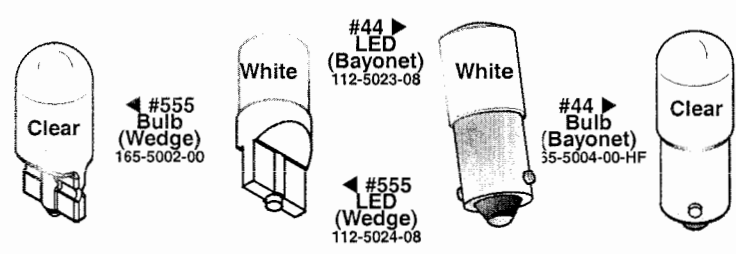
To initiate, from the **LAMP MENU**, select the "COL" *Icon*. As each lamp column is selected, the lamps in the column will light on the playfield as well as the Dot

Matrix Display. Upon entering **Column Lamps Test**, you will notice the #1 lamp column is shown. The Dot Matrix Display will light up (*highlight*) the corresponding row of *dots* in the on-screen matrix, display the *lamp column number*, the *Lamp Drive (18VDC) wire colors*, the *I/O PCB Connector* and *IC number*.

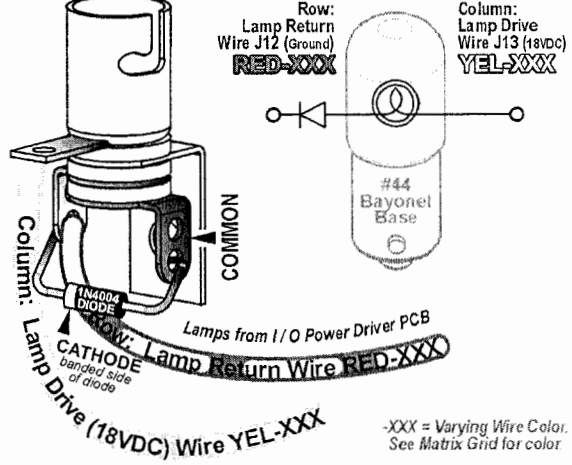


Diagnostics

## Bulb Types used for Control Lamps



## Typical Lamp Wiring & Schematic



\* If not required in this game, *Icon* will not be shown.



## Ordered Lamps Test

To initiate, from the **LAMP MENU**, select the "ORD" *Icon*. If required, this *Icon* will appear in the **LAMP MENU**. Identical to **Single Lamp Test**, however, the lamps lit are not in the Lamp Matrix numeric order, but ordered or arranged in separate localized grouping(s) for easier lamp checking.

-XXX = Varying Wire Color. See Matrix Grid for color

LAMP MATRIX GRID [ #1 - #80 ] {Lamp Locations : next page}

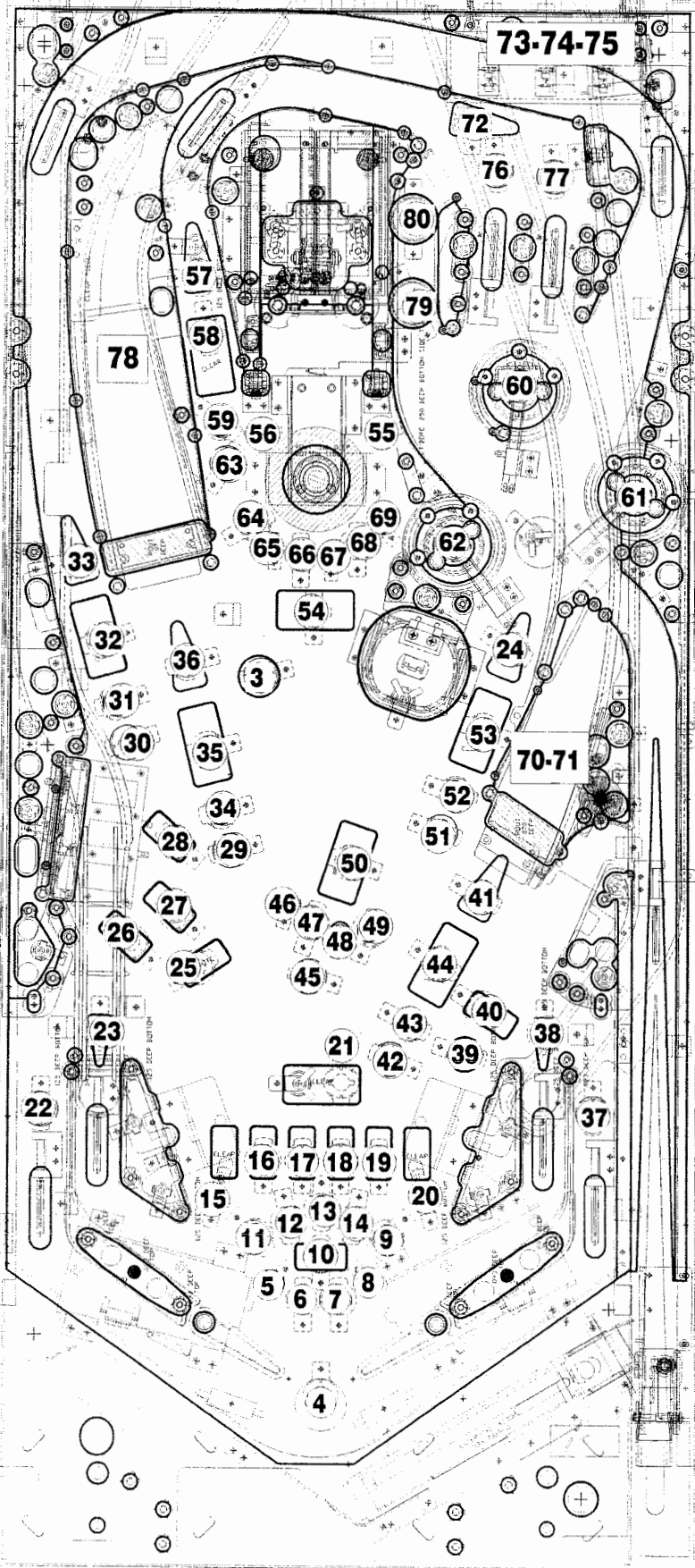
I / O	01	02	03	04	05	06	07	08
Power Driver Board	IC-U17	IC-U16	IC-U15	IC-U14	IC-U13	IC-U12	IC-U11	IC-U10
	18VDC YEL-BRN J13-P9	18VDC YEL-RED J13-P8	18VDC YEL-ORG J13-P7	18VDC YEL-BLK J13-P6	18VDC YEL-GRN J13-P5	18VDC YEL-BLU J13-P4	18VDC YEL-VIO J13-P3	18VDC YEL-GRY J13-P1
01	LED L.P. #1	LED L.P. #2	LED L.P. #3	LED L.P. #4	LED L.P. #5	LED L.P. #6	LED L.P. #7	LED L.P. #8
GROUND	START BUTTON	TOURN BUTTON	2X PLAYFIELD VALUES	SHOOT AGAIN	4 WALKERS KILLED	3 WALKERS KILLED	2 WALKERS KILLED	1 WALKER KILLED
RED-BRN J12-P1	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5034-08	112-5033-08	112-5033-08	112-5033-08
02	LED L.P. #9	LED L.P. #10	LED L.P. #11	LED L.P. #12	LED L.P. #13	LED L.P. #14	LED L.P. #15	LED L.P. #16
GROUND	40 WALKERS KILLED	KILLING SPREE	5 WALKERS KILLED	10 WALKERS KILLED	20 WALKERS KILLED	30 WALKERS KILLED	HAMMER MULTI-KILL	KATANA MULTI-KILL
RED-BLK J12-P2	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5034-08	112-5033-08
03	LED L.P. #17	LED L.P. #18	LED L.P. #19	LED L.P. #20	LED L.P. #21	LED L.P. #22	LED L.P. #23	LED L.P. #24
GROUND	CROSSBOW MULTI-KILL	PISTOL MULTI-KILL	KNIFE MULTI-KILL	CHAIR MULTI-KILL	<b>HORDE</b>	LEFT OUTLANE	LEFT RETURN LANE	RT. LOOP ARROW
RED-ORG J12-P3	112-5033-08	112-5033-08	112-5033-08	112-5034-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08
04	LED L.P. #25	LED L.P. #26	LED L.P. #27	LED L.P. #28	LED L.P. #29	LED L.P. #30	LED L.P. #31	LED L.P. #32
GROUND	BLOOD BATH	FIRST AID	<b>WEAPONS</b>	<b>FOOD</b>	LT. RAMP WALKER KILL	LT. LOOP WALKER KILL	LT. LOOP MULTI-KILL	BARN MODE
RED-YEL J12-P4	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08
05	LED L.P. #33	LED L.P. #34	LED L.P. #35	LED L.P. #36	LED L.P. #37	LED L.P. #38	LED L.P. #39	LED L.P. #40
GROUND	LT. LOOP ARROW	LT. RAMP MULTI-KILL	CDC MODE	LT. RAMP ARROW	RIGHT OUTLANE	RT. RETURN LANE	EXTRA BALL	WELCOME TO WOODBURY
RED-BLU J12-P5	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08
06	LED L.P. #41	LED L.P. #42	LED L.P. #43	LED L.P. #44	LED L.P. #45	LED L.P. #46	LED L.P. #47	LED L.P. #48
GROUND	RT. RAMP ARROW	RT. RAMP WALKER KILL	RT. RAMP MULTI KILL	ARENA MODE	WELL WALKER KILL	<b>(W)ELL</b>	<b>W(ELL)</b>	<b>WE(L)L</b>
RED-BLU J12-P6	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08
07	LED L.P. #49	LED L.P. #50	LED L.P. #51	LED L.P. #52	LED L.P. #53	LED L.P. #54	LED L.P. #55	LED L.P. #56
GROUND	<b>WEL(L)</b>	WELL WALKER	RT. LOOP WALKER KILL	RT. LOOP MULTI-KILL	TUNNEL MODE	<b>SIEGE</b>	RT. PRISON STANDUP	LT. PRISON STANDUP
RED-VIO J12-P8	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5033-08	112-5034-08	112-5034-08
08	LED L.P. #57	LED L.P. #58	LED L.P. #59	LED L.P. #60	LED L.P. #61	LED L.P. #62	LED L.P. #63	LED L.P. #64
GROUND	CENTER LANE ARROW	RIOT MODE	CENTER LANE MULTI-KILL	POP BUMPER	RIGHT POP BUMPER	LEFT POP BUMPER	CENTER LANE WALKER KILL	<b>(P)RISON</b>
RED-GRY J12-P9	112-5033-08	112-5033-08	112-5033-08	112-5033-02	112-5033-02	112-5033-02	112-5033-08	112-5033-08
09	LED L.P. #65	LED L.P. #66	LED L.P. #67	LED L.P. #68	LED L.P. #69	LED L.P. #70	LED L.P. #71	LED L.P. #72
GROUND	<b>P(R)ISON</b>	<b>PR(I)SON</b>	<b>PR(S)ON</b>	<b>PRIS(O)N</b>	<b>PRISO(N)</b>	<b>CROSSBOW</b>	<b>FISH TANK</b>	<b>TOWER</b>
RED-WHT J12-P10	112-5034-08	112-5033-08	112-5034-08	112-5033-08	112-5034-08	520-5307-00	520-5307-00	112-5033-08
10	LED L.P. #73	LED L.P. #74	LED L.P. #75	LED L.P. #76	LED L.P. #77	LED L.P. #78	LED L.P. #79	LED L.P. #80
GROUND				LEFT TOP LANE	RIGHT TOP LANE	BICYCLE GIRL	STAR ROLLOVER (BOT)	STAR ROLLOVER (TOP)
RED J12-P11				112-5033-08	112-5033-08	520-5307-00	520-6624-1X	520-6624-1X

« FOR MORE ABOUT DIODE ON TERMINAL STRIPS «D.O.T.S.» SEE SEC.5, CHP.2, PAGES 104-105 »

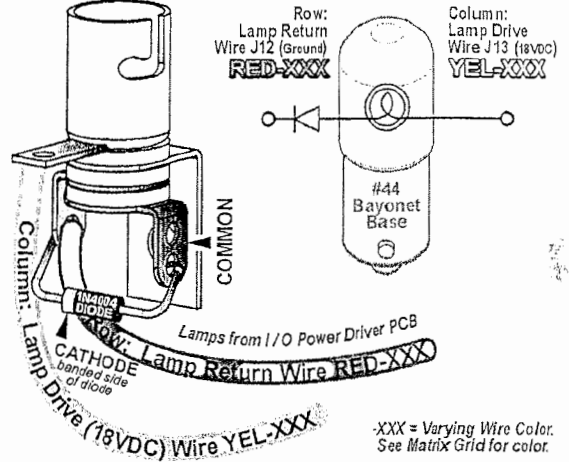
Wire Color Abbreviations used:

- BLK Black
- BLU Blue
- BRN Brown
- GRY Gray
- GRN Green
- ORG Orange
- RED Red
- VIO Violet
- WHT White
- YEL Yellow

LAMP MENU: ONE, ALL, ROW, COLUMN & ORDERED

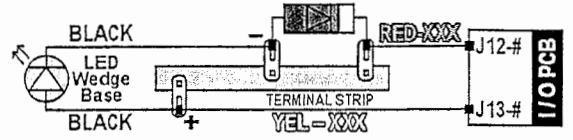


**Typical Lamp Wiring & Schematic**



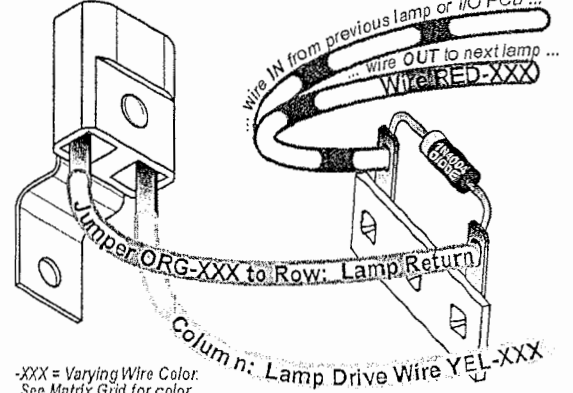
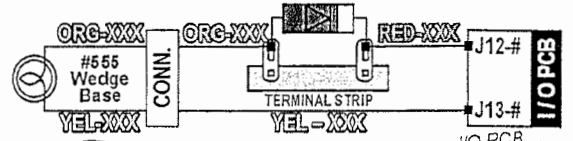
**Typical Lamp Wiring & Schematic**

... with Lamp Diode on a Terminal Strip (DOTS)  
 Usually when an LED Module is used as a Controlled Lamp for a Pop Bumper.



... with Lamp Diode on a Terminal Strip (DOTS)

Usually when a #555 Bulb is used as a Controlled Lamp for a Spot Light.



## Game-Specific Tests

GAME

To initiate, from the **DIAGNOSTICS MENU**, select the "GAME" *Icon*. Ensure the Power Interlock Switch is pulled out when testing with the Coin Door open. This Menu is provided to allow the technician a simple method of testing game specific coils and/or switches, if required. If used, select the *Icon* (and Sub-Menu *Icons*, if any) and follow on-screen prompts.



## Ball Trough Test

To initiate, from the **DIAGNOSTICS MENU**, select the "CLR" *Icon*. Ensure the **Power Interlock Switch** is pulled out if testing with the Coin Door open. This Menu is provided to allow the technician a simple method of removing the balls from the trough and also, to test functionality of the trough, ensuring proper trough operation. Upon entering **Ball Trough Test**, you will notice that four switches are already indicated as closed. In the example, the 4-Ball Trough Switches #18, #19, #20 & #21 are shown closed (*pinballs at rest in the ball trough*). To return to the **DIAGNOSTICS MENU**, press the **Green [ BACK ] Button**.

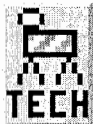


Press the **Black [ SELECT ] Button** to eject the ball in the first position Switch #21 (VUK OPTO Trough #1 (R)). Simultaneously, the Dot Matrix Display and the playfield will eject the ball to the Trough Up-Kicker, eject from the Trough Up-Kicker into the Shooter Lane, momentarily closing Switch #23 (*Shooter Lane*), and is ejected onto the playfield where the technician can easily

retrieve the pinball or allow the ball(s) to re-enter the trough to continue **Ball Trough Test**. The Dot Matrix Display indicates Switch #18 (4-Ball Trough #4 (L)) as open as the remaining three (3) pinballs shift over one (1) position to the right. If the technician allows the ejected pinball to reenter the ball trough, the Dot Matrix Display will indicate Switch #18 as closed. **REMINDER:** Switch #22 is the stacking OPTO switch; If more than five (5) pinballs are used, the additional switches will be noted. Typically, four (4) pinballs are used and required for proper operation; if this amounts differs, it will be noted on the front page of this Service Game Manual.



**CAUTION!** Continuous use off the above test may overheat the Trough Up-Kicker Coil.



## Technician Alerts

To initiate, from the **DIAGNOSTICS MENU**, select the "TECH" *Icon*. This Menu is provided to show any switch or solenoid problems and/or missing pinballs. If upon entering the **SERVICE MENU** the display indicated an asterisk (\*) and "USE +/- TO VIEW TECH. ALERTS", alerts are present.

TECHNICIAN ALERT - (0/0)

NO TECHNICIAN ALERTS

PRESS 'BACK' TO EXIT



After pressing either **Red [ </- ] / [ +/> ] Button** or selecting this *Icon* in the **DIAGNOSTICS MENU**, the display will indicate the alert(s). If there are 2 alerts present, the display will indicate (1/2) with the 1st alert on the display. Press the **Red [ +/> ] Button** to view the second alert (2/2). The second number in the parenthesis ( ) after the slash (/) indicates how many alerts are

present. Refer to the start of this chapter regarding "Upon entering the **SERVICE MENU \***" indication and to **SWITCH ALERTS**. To return to the **DIAGNOSTICS MENU**, press the **Green [ BACK ] Button**. **Note:** While in this menu, an option may be present to jump (short-cut) to the appropriate Testing Menu (e.g. Coil Test, Switch Test, Game Specific Test or Ticket Dispenser Test, if installed).

**NOTE ON SWITCH DETECTION :** During game play, activation of switches are continuously monitored. For a switch to be determined as inoperable or **OUT OF SERVICE**, up to twenty games or so must be played for a switch to be automatically marked as **OUT OF SERVICE**. In programming, if a switch is determined to be faulty, game play is compensated. Switches noted as **OUT OF SERVICE** are determined to be stuck closed or open depending on switch usage. Free up the switch actuator, adjust or replace, if necessary. Performing a valid switch closure will put the switch back "IN SERVICE."

Determination of switch usage can be checked in **Audits** (*review the Audits Section*). Find the associated Audit with the switch in question and check usage; compare the numbers to commonly used switches. After any switch is checked and repaired or replaced, it's suggested to test the switch in the **Switch Test** or **Single Coil Test** (*reviewed earlier in this section*) where the associated coil to the switch can be tested as well. After correcting the problem, the switch will marked "IN SERVICE" and the switch is again monitored as specified above. *Only you can determine if a switch marked OUT OF SERVICE is actually inoperable, or if it is just not getting actuated during game play.*

## NOTE ON PINBALL DETECTION :

While in **TECHNICIAN ALERTS MENU**, if the following is displayed, the game has detected one (1) or more pinball(s) missing and has compensated for the lost pinball(s) to provide normal game play.

*Technician Alerts continued on the next page.*





### Technician Alerts continued from previous page.

During game play, a pinball can get trapped or stuck. If after approximately 15 seconds of inactivity or "no scoring," **Ball Search** is started. **Note:** If the pinball is in the Plunger Lane or "held" on the flipper, no **Ball Search** will be performed. The game will perform one **Ball Search** in an attempt to "find" or free-up the pinball.



If the game does not see a switch closure (indicating the pinball has not been found), the Dot Matrix Display may indicate [ **LOCATING PINBALLS PLEASE WAIT ...** ], during which **Ball Search** will continue until the timer runs out (this feature will not happen if the game is in Competition Mode; **Ball Search** will continue until the pinball is found, unstuck and/or replaced manually). The display will momentarily acknowledge the missing pinball(s). The game will provide another pinball into play and will compensate for the lost pinball. Game play will appear normal.

**Note:** This detection and compensation will happen with every pinball, if each suffers the same fate of a ball trap. If all balls get trapped, the game cannot be played or started until the situation is rectified.

**Important:** Determine where the pinball is! **Do not add pinball(s)** until it is determined the pinball(s) are indeed missing and not just stuck. The most common places for a pinball to be stuck is in device holes (ejects and VUKs) or ball troughs. Determine that all devices are functionally properly. Check around plastic pieces and ramps to see if the pinball got jammed or stuck.

When the found pinball or a replacement pinball is added to the Ball Trough, the **Technician Alert** will immediately clear and will then indicate any remaining alerts (if present) or **NO TECHNICIAN ALERTS**.

Enter the **BALL TROUGH TEST** (review the previous page) to cycle the pinballs and to check proper switch and coil operation. If a pinball was added, and the originally stuck pinball has freed itself at a later time, the game will not operate correctly.



**NOTE ON DEVICE MALFUNCTION :** While in **TECHNICIAN ALERTS MENU**, if the following is displayed, the game has detected a "device malfunction." Check the device indicated (coil and/or switch).



### Knocker Test

To initiate, from the **DIAGNOSTICS MENU**, select the "KNO-CKER" *Icon*. The digitally mastered "Knocker" is sounded. The *knocker sound* is used to alert the player if he/she has received a special, replay or a credit from the Match Award feature. Press the **Black [ SELECT ] Button** to activate the knocker. To return to the **DIAGNOSTICS MENU**, press the **Green [ BACK ] Button**.

**FACTOID:** The knocker got it's name from the 'original knocker' (20th century pinball games), which used a coil and when energized (fired), the plunger would strike a wood panel inside the cabinet.



### Sound / Speaker Test

To initiate, from the **DIAGNOSTICS MENU**, select the "SPKR" *Icon*. This system produces true digital stereo sound from Backbox & Cabinet Speakers or "Mono" on the Cabinet Speaker (when used by itself). This Menu is provided to allow the technician a simple method of testing the speakers if rewired or replaced.



Upon entering **Sound / Speaker Test**, you will notice the Dot Matrix Display indicating the first option of *available* music and/or sound(s) in this test. Press the **Red [ + / > ] Button** to cycle through the *available* music and/or sounds, and press the **Black [ SELECT ] Button** to play the option shown in the Dot Matrix Display. Press the **Green [ BACK ] Button** to exit.

### Speaker Phase Testing

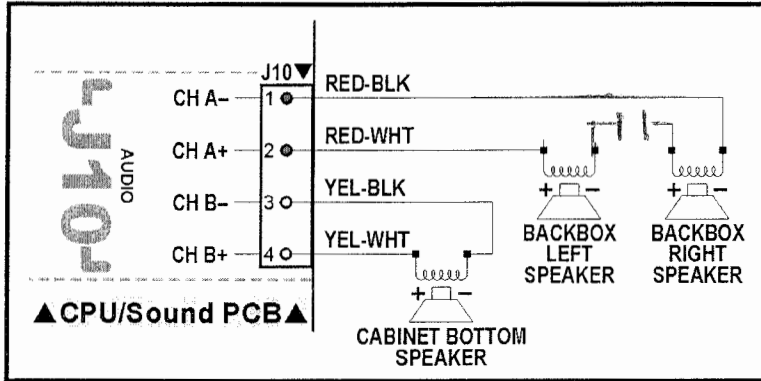
Connections to each of speakers are polarized and each must be connected appropriately for the best quality sound. If one speaker has the positive and negative connections reversed with respect to the other one, bass frequencies will not be produced properly and the overall sound quality will be poor. To test for proper speaker phasing, use the **Sound / Speaker Test** to cycle through the available music and sound.

*Speaker Phase Testing cont. next page.*



### Speaker Phase Testing continued from previous page.

If the sound is not balanced or doesn't sound correct, check the speaker wiring.



1. Check each speaker for polarity markings. If the speakers have polarity markings, verify that the Backbox Speaker's **RED-BLK** Wires and the Cabinet Speaker **YEL-BLK** Wire(s) are connected to the negative (-) terminal.

2. Disconnect the speaker output **Connector J10 (AUDIO)** from the CPU / Sound PCB (*in the Backbox*) and connect a 1.5-volt battery across each speaker pair one at a time while observing the speakers.

3. Make sure the positive (+) battery terminal is connected to the positive lead [ J10, Pin-2, **CH A+** ] (**RED-WHT**) or [ J10, Pin-4, **CH B+** ]

(**YEL-WHT**) each time. As the connection is made, check speaker cone movement; proper connections are indicated by outward movement.



### Begin Burn-In

To initiate, from the **DIAGNOSTICS MENU**, select the "BURN" *Icon*. After selecting this *Icon*, press the **Black [ SELECT ] Button** to begin (initiate) the **Burn-In Test**. Ensure the **Power Interlock Switch** is pulled out if testing with the Coin Door open (*required for coil function*). Upon entering **Burn-In Test**, the game will exercise all CPU I/O Functions: **Dot Matrix Display Test, Coil Cycling Testing, All Lamps Test and Sound / Speaker Test**. Press the **Green [ BACK ] Button**, to pause and to view the cumulative Burn-In minutes. Press the **Green [ BACK ] Button** again to return to the **DIAGNOSTICS MENU**.

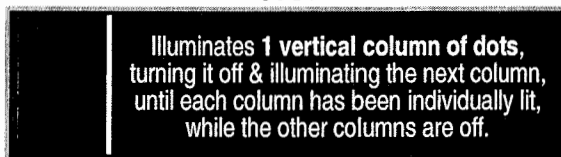
**Note:** To reset Burn-In minutes back to **0:00**, see Section 3, Chapter 5, **GO TO RESET MENU** (via the **UTILITIES MENU**), **Reset Factory Settings**. **CAUTION:** Performing a **FACTORY RESET** will reset all other information as well (read the Utilities Section (**GO TO RESET MENU**), for more information).



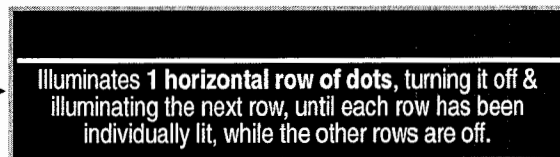
### Dot Matrix Test

To initiate, from the **DIAGNOSTICS MENU**, select the "DOT TEST" *Icon*. After selecting this *Icon* the **Dot Matrix Test** immediately begins. The Dot Matrix Display will immediately and continuously illuminate and cycle each of the **5 Tests for 1 pass each**. To return to the **DIAGNOSTICS MENU**, press the **Green [ BACK ] Button**.

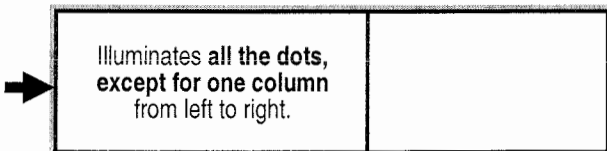
#### Test 1



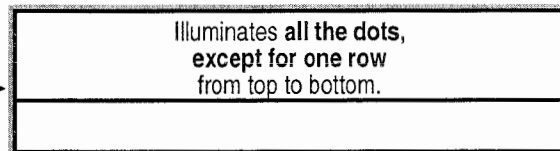
#### Test 2



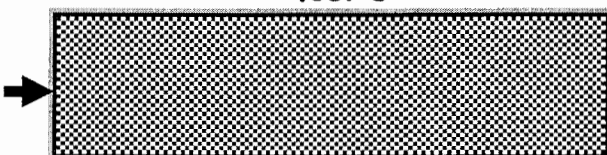
#### Test 3



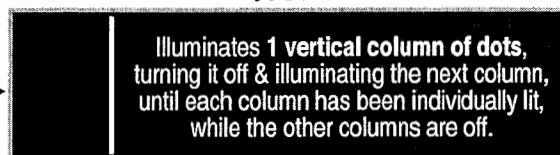
#### Test 4



#### Test 5



#### Test 1





## Ticket Dispenser Test

To initiate, from the **DIAGNOSTICS MENU**, select the "TIX" *Icon*. This Menu (*Icon*) will only appear if **Standard Adjustment 56, Ticket Dispenser**, is set to **YES** (Default = **NO\***). **\*Note:** *Some games shipped from the factory with a unique Dip Switch Setting will default to YES*). To view and/or change your setting, see *Adjustments Section (GO TO ADJUSTMENTS MENU)*. Please remember, if you install an optional Ticket Dispenser, and your default setting is "NO," you will have to reset it back to "YES" if a **Factory Reset** is performed.

After selecting this *Icon*, the **Ticket Dispenser Test** will start. With the Ticket Dispenser properly installed, manually feed your tickets into the dispenser. The dispenser will activate and pull in the first ticket. Press the **Black [ SELECT ] Button** (which energizes Coil #35, Aux 3: Switched Ground) to advance a ticket. Feeding your Tickets into the dispenser works because Coil #33, Aux 1: Ticket Advance (Enable) is always 'energized'. With a Ticket Meter installed, as one Ticket Passes through the Ticket Dispenser, one 'click' is fired to the Meter (Coil #34, Aux 2: Ticket Meter) for each ticket passing through. Dedicated Switch **D-19, Ticket Notch**, will also be indicated on-screen (*in combination with a audible sound*) as "closing" as the notch between the tickets passes through. In this test you can clear ticket jams and check and/or clear tickets in Escrow, if necessary. To return to the **DIAGNOSTICS MENU**, press the **Green [ BACK ] Button**.



CHOOSE EARNINGS or STANDARD AUDITS

## GO TO AUDITS MENU: EARNINGS AUDITS [ #1 – #13 ] / STANDARD AUDITS [ #1 – #59 ]

Perform the below steps to review the audits. Enter the **SERVICE MENU**, then enter the **EARNINGS AUDITS** or **STANDARD AUDITS** MENUS. For audit definitions or summary, review the Audits Section (**GO TO AUDITS MENU**). Try the **"DUMP AUDITS TO USB"** Feature to create a text file of your audits. Don't forget to set the **DATE** & **TIME** in the **UTILITIES MENU**. See the Utilities Section (**GO TO UTILITIES MENU**).

**Step 1** Press [ **SELECT** ].  
Press [ **BACK** ] to exit for escape at any time.

Audit Number →  
Audit Name →  
Audit Result →



**Step 2** Press [ > ]. Go to the "AUD" icon.  
Press [ **SELECT** ].

### EARNINGS AUDITS [ #1 – #13 ] ▼

**Step 3** Press [ > ]. Go to the "EARN" or "S.P.I." icon.  
Press [ **SELECT** ].

Nr.	EARNINGS AUDIT NAME	YOUR RESULT
1	TOTAL PAID CREDITS	
2	FREE GAME PERCENTAGE	
3	AVERAGE BALL TIME	
4	AVERAGE GAME TIME	
5	COINS THROUGH LEFT SLOT	
6	COINS THROUGH RIGHT SLOT	
7	COINS THROUGH CENTER SLOT	

Nr.	EARNINGS AUDIT NAME	YOUR RESULT
8	COINS THROUGH FOURTH SLOT	
9	COINS THROUGH FIFTH SLOT	
10	TOTAL COINS	
11	TOTAL EARNINGS	
12	METER CLICKS	
13	SOFTWARE METER	

**Step 4** Press [ < ] [ > ] to move between audits.

### STANDARD AUDITS [ #1 – #59 ] ▼

Nr.	STANDARD AUDIT NAME	YOUR RESULT
1	TOTAL BALLS PLAYED	
2	TOTAL EXTRA BALLS	
3	EXTRA BALL PERCENTAGE	
4	REPLAY 1 AWARDS	
5	REPLAY 2 AWARDS	
6	REPLAY 3 AWARDS	
7	REPLAY 4 AWARDS	
8	TOTAL REPLAYS	
9	REPLAY PERCENTAGE	
10	TOTAL SPECIALS	
11	SPECIAL PERCENTAGE	
12	TOTAL MATCHES	
13	HIGH SCORE AWARDS	
14	HIGH SCORE PERCENT	
15	TOTAL FREE PLAYS	
16	TOTAL PLAYS	
17	0.0M – 1.99M SCORES	
18	2.0M – 3.99M SCORES	
19	4.0M – 5.99M SCORES	
20	6.0M – 7.99M SCORES	

Nr.	STANDARD AUDIT NAME	YOUR RESULT
21	8.0M – 9.99M SCORES	
22	10.0M – 12.49M SCORES	
23	12.5M – 14.99M SCORES	
24	15.0M – 17.49M SCORES	
25	17.5M – 19.99M SCORES	
26	20.0M – 24.99M SCORES	
27	25.0M – 29.99M SCORES	
28	30.0M – 39.99M SCORES	
29	40.0M – 49.99M SCORES	
30	50.0M – 74.99M SCORES	
31	75.0M – 99.99M SCORES	
32	100.0M – 149.99M SCORES	
33	150.0M+ SCORES	
34	AVERAGE SCORES	
35	SERVICE CREDITS	
36	BALL SEARCH STARTED	
37	LOST BALL FEEDS	
38	LOST BALL GAME STARTS	
39	LEFT DRAINS	
40	CENTER DRAINS	

Nr.	STANDARD AUDIT NAME	YOUR RESULT
41	RIGHT DRAINS	
42	TILTS	
43	TOTAL BALLS SAVED	
44	LEFT FLIPPER USED	
45	RIGHT FLIPPER USED	
46	0 – 1 MINUTE GAMES	
47	1 – 1.5 MINUTE GAMES	
48	1.5 – 2 MINUTE GAMES	
49	2 – 2.5 MINUTE GAMES	
50	2.5 – 3 MINUTE GAMES	
51	3 – 3.5 MINUTE GAMES	
52	3.5 – 4 MINUTE GAMES	
53	4 – 5 MINUTE GAMES	
54	5 – 6 MINUTE GAMES	
55	6 – 8 MINUTE GAMES	
56	8 – 10 MINUTE GAMES	
57	10 – 15 MINUTE GAMES	
58	15+ MINUTE GAMES	
59	RECENT REPLAY PERCENT	

Note: Audits are subject to change (with or without notice).

## STANDARD ADJUSTMENTS [ #1 – #63 ] ▼

Nr.	STANDARD ADJUSTMENT NAME	USA DEFAULT	YOUR SETTING	Nr.	STANDARD ADJUSTMENT NAME	USA DEFAULT	YOUR SETTING
1	REPLAY TYPE	AUTO		32	HIGH SCORE #1	.,000,000	
2	‡ REPLAY PERCENTAGE	10%		33	HIGH SCORE #2	.,000,000	
3	‡ REPLAY AWARD	CREDIT		34	HIGH SCORE #3	.,000,000	
4	‡ REPLAY LEVELS	1		35	HIGH SCORE #4	.,000,000	
5	‡ AUTO REPLAY START	.,000,000		36	HSTD INITIALS	3 INITIALS	
6	‡ DYNAMIC REPLAY START	.,000,000		37	HSTD RESET COUNT	2000	
7	‡ REPLAY LEVEL #1	.,000,000		38	FREE PLAY	NO	
8	‡ REPLAY LEVEL #2	.,000,000		39	LANGUAGE	ENGLISH	
9	‡ REPLAY LEVEL #3	.,000,000		40	PLAYER LANGUAGE SELECT	YES	
10	‡ REPLAY LEVEL #4	.,000,000		41	CUSTOM MESSAGE	ON	
11	‡ REPLAY BOOST	YES		42	FLASH LAMP POWER	NORMAL	
12	SPECIAL LIMIT	1		43	COIL PULSE POWER	NORMAL	
13	‡ SPECIAL PERCENTAGE	10%		44	KNOCKER VOLUME	NORMAL	
14	SPECIAL AWARD	CREDIT		45	GAME RESTART	YES	
15	FREE GAME LIMIT	5		46	BILL VALIDATOR	NO	
16	EXTRA BALL LIMIT	5		47	MUSIC VOLUME	1	
17	‡ EXTRA BALL PERCENTAGE	25%		48	BALL SAVE TIME	0:05	
18	GAME PRICING	USA 10		49	TIMED PLUNGER	OFF	
19	MATCH PERCENTAGE	9%		50	FLIPPER BALL LAUNCH	OFF	
20	MATCH AWARD	CREDIT		51	COINDOOR BALL SAVER	NO	
21	BALLS PER GAME	3		52	COMPETITION MODE	NO	
22	TILT WARNINGS	2		53	CONSOLATION BALL	YES	
23	CREDIT LIMIT	30		54	FAST BOOT	YES	
24	ALLOW HIGH SCORES	YES		55	Q24 OPTION	COIN METER	
25	HIGH SCORE AWARD	CREDIT		56	TICKET DISPENSER	NO	
26	GRAND CHAMPION AWARDS	1		57	PLAYER COMPETITION	YES	
27	HIGH SCORE #1 AWARDS	1		58	TEAM SCORES	NO	
28	HIGH SCORE #2 AWARDS	0		59	LOCATION ID	0	
29	HIGH SCORE #3 AWARDS	0		60	GAME ID	0	
30	HIGH SCORE #4 AWARDS	0		61	TIME FORMAT	12-HOUR	
31	GRAND CHAMPION SCORE	.,000,000		62	COIN INPUT DELAY	30	
				63	LOST BALL RECOVERY	YES	

*Factory Defaults Settings are subject to change during production (especially Standard Adjustments 2, 4, 5, 13, 16-17, 19, 31-35 & 47).*

*‡ Not all Standard Adjustments are shown. Depending on the setting (whether Factory Default or if changed by the operator), associated adjustments do not appear, if not required. **Note:** If **Game Dip Switch** other than USA is installed, different Defaults will appear.*



## Feature Adjustments [ #1 – #+ ]

**GAME** To initiate, from the **ADJUSTMENTS MENU**, select the "GAME" *Icon*. The Dot Matrix Display will indicate the *adjustment number (in this group), adjust. name, adjust. setting and comment line*. The current adjustment will remain on the display until the next adjustment is viewed or when this sub-menu is exited.

>>> **FACTORY RESET or CODE UPDATE NOTE:** Don't forget, any changes you make to your adjustments will revert back to the Factory Default settings if you perform a Factory Reset or update your Game Code. *See Utilities Section (GO TO RESETS MENU and GO TO USB MENU).*

View the **Coils Detailed Chart Menu** to see if this game is **Shaker Motor Enabled**. *If it is, set the options in the Feature Adjustment as seen below. (typically the last one).*

# **SHAKER MOTOR (OPTIONAL) :** Set to **NONE, MINIMAL USE, MODERATE USE or MAXIMAL USE**.  
 Factory Default = **MODERATE USE**. *Set to any of the varying "... USES" if an Optional Shaker Motor Kit (SPI Part Number 502-5027-00) was installed correctly in this pinball machine. See the assembly (kit) on the last page of Blue Pages (Major Assemblies). Also see Shaker Motor Coil (Q8) in the Coils Detailed Chart Table at the beginning of this Service Game Manual or the beginning of the Yellow Pages.*



CPU/SOUND PCB DIP SWITCH SW1 SETTING		COUNTRY SETTING OPTION(S)	COIN MECHANISMS (SWITCHES)					PRICING SCHEME				Requires SPI Coin Card(s) Part Number				
			COINS THRU ... SLOT:					Number of Plays (Credits) for Price Amount Shown See "Appendix J" for Coin Cards Examples & Info!								
			LEFT	CENTER	RIGHT	4TH	USD // UNITED STATES DOLLAR // [ \$ ]									
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	USA 1	0.25	1.00	0.25	4TH	1/0.25				755-5400-01-Y					
ON		USA 2					1/0.50				755-5400-09-Y					
OFF	▼▼▼▼▼▼▼▼	USA 3					1/0.50				755-5400-02-Y					
<b>HIGHLIGHTED</b>		USA 4					1/0.50				755-5400-02-Y					
= Factory Default		USA 5					1/0.50   2/1.00				755-5400-08-Y					
<b>HIGHLIGHTED</b>		USA 6					1/0.50   2/1.00				755-5400-08-Y					
= Not Shown on Coin Card		USA 7					1/0.50   2/1.00				755-5400-00-Y					
		USA 8					1/1.00				755-5400-07-Y					
		USA 9					1/0.75				755-5400-11-Y					
		USA 10					1/1.00									
		USA 11					1/1.00									
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	AUSTRALIA 1	0.20	1.00	2.00	4TH	AUD // AUSTRALIAN DOLLARS // [ \$AUS ]				755-5406-00-Y					
ON	▲▲▲▲	AUSTRALIA 2					1/1.00				(1 Side)					
OFF	▼▼▼▼▼▼▼▼	AUSTRALIA 3					1/2.00									
		AUSTRALIA 4					1/2.00				2/4.00					
		AUSTRALIA 5					1/3.00				2/5.00					
		AUSTRALIA 6					1/2.00				2/3.00					
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	CANADA 1 [25¢ door]	0.25	0.25	1.00	2.00	CAD // CANADIAN DOLLARS // [ \$CAN ]				755-5400-00-Y					
ON	▲▲▲▲	CANADA 2 [dollar door]					1/0.50				2/0.75	3/1.00	-01-Y or -02-Y			
OFF	▼▼▼▼▼▼▼▼		1.00				1/1.00				3/2.00	755-5400-10-Y				
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	CROATIA	1	2	5	4TH	HRK // CROATIAN KUNA // [ kuna ]				755-5410-00-Y					
ON	▲▲▲▲		1				1/3				2/5	(2-Sided)				
OFF	▼▼▼▼▼▼▼▼															
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	DENMARK 1	1	5	10	20	DKK // DANISH KRONER // [ Kr ]				755-5402-00-Y					
ON	▲▲▲▲	DENMARK 2					1/2				2/4	3/5	4/7	5/9	7/10	(2-Sided)
OFF	▼▼▼▼▼▼▼▼															
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	JAPAN 1	100		100	4TH	JPY // JAPANESE YEN // [ ¥ ]				755-5408-01-Y					
ON	▲▲▲▲	JAPAN 2					1/100				1/100				3/200	(2-Sided)
OFF	▼▼▼▼▼▼▼▼															
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	LITHUANIA	1	2	5	4TH	LTL // LITHUANIA LITAI // [ Lt ]				755-5416-00-Y					
ON	▲▲▲▲		1				1/2				(1 Side)					
OFF	▼▼▼▼▼▼▼▼															
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	MIDDLE EAST	token		token	4TH	TOKEN // Middle East currency used to buy token // [ TOKEN ]				755-5416-00-Y					
ON	▲▲▲▲		token				1/1				(use Side 1)					
OFF	▼▼▼▼▼▼▼▼															
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	NEW ZEALAND 1	1		2	4TH	NZD // NEW ZEALAND DOLLAR // [ \$NZD ]				755-5406-00-Y					
ON	▲▲▲▲	NEW ZEALAND 2					1/1				1/1				3/2	(Side 2)
OFF	▼▼▼▼▼▼▼▼															
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	NORWAY 1	10	5	20	4TH	NOK // NORWEGIAN KRONE // [ Kr ]				755-5403-01-Y or					
ON	▲▲▲▲	NORWAY 2					1/10				1/10				3/20	-02-Y / (2-Sided)
OFF	▼▼▼▼▼▼▼▼	NORWAY 3					1/20				1/20				3/40	755-5403-03-Y
		NORWAY 4					1/10				1/10				3/20	(2-Sided)
		NORWAY 5					1/10				1/10				3/20	
		NORWAY 6														
		NORWAY 7														
		NORWAY														
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	RUSSIA	▼ LEFT SWITCH CAN BE WIRED TO BILL ACCEPTOR ▼					RUB // RUSSIAN RUBLE // [ Ruble ]				755-5411-00-Y				
ON	▲▲▲▲		10				1/5				(2-Sided)					
OFF	▼▼▼▼▼▼▼▼															
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	SO. AFRICA 1	0.50	1.00	2.00	5.00	ZAR // SOUTH AFRICAN RAND // [ R ]				755-5409-01-Y					
ON	▲▲▲▲	SO. AFRICA 2					1/2.00				1/3.00				2/5.00	(2-Sided)
OFF	▼▼▼▼▼▼▼▼															
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	SWEDEN 1	1	5	10	4TH	SEK // SWEDISH KRONOR // [ Kr ]				755-5404-00-Y					
ON	▲▲▲▲	SWEDEN 2					1/10				1/5				2/15	3/20
OFF	▼▼▼▼▼▼▼▼															
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	SWITZERLAND 1	1	2	5	4TH	CHF // SWISS FRANCS // [ F ]				755-5405-00-Y					
ON	▲▲▲▲	SWITZERLAND 2					1/1				1/1				3/2	5/3
OFF	▼▼▼▼▼▼▼▼															
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	TAIWAN	10		10	4TH	TWD // TAIWANESE DOLLAR // [ TWD ]				755-5412-00-Y					
ON	▲▲▲▲		10				1/10				(use Side 1)					
OFF	▼▼▼▼▼▼▼▼															
Pos. 1 2 3 4 5 6 7 8	Default Highlighted	UK 1	▼ 5TH COIN SLOT NOT AVAILABLE WITH CUSTOM PRICING ▼					GBP // UNITED KINGDOM POUNDS // [ £ ]				755-5407-00-Y				
ON	▲▲▲▲	UK 2	LEFT	CENTER	RIGHT	4TH	5TH	3/1.00				7/2.00	755-5407-01-Y*			
OFF	▼▼▼▼▼▼▼▼	UK 3	0.10				4/1.00				5/2.00	755-5407-01				
		UK 4	0.50				1/0.50				2/1.00	3/1.50	5/2.00	755-5407-01-Y*		
		UK 5	1.00				1/0.30				2/0.60	3/0.90	4/1.00	755-5407-01-Y*		
		UK 6	0.20				1/1.00				3/2.00		755-5407-01			
		UK 7	2£				2/2.00						755-5407-01-Y*			
		UK 8	Coin Only													



Standard Adjustment 18, Game Pricing, continued.

**Euro 1-12 Summary & International (Euro) Standard Pricing Select Table**

CPU/SOUND PCB DIP SWITCH SW1 SETTING		COUNTRY SETTING OPTION(S)	COIN MECHANISMS (SWITCHES) COINS THRU ... SLOT:				PRICING SCHEME	Requires SPI Coin Card(s) Part Number			
Pos.	1 2 3 4 5 6 7 8	Default Highlighted	LEFT	CENTER	RIGHT	4TH	Number of Plays (Credits) for Price Amount Shown See "Appendix J" for Coin Cards Examples & Info!				
ON	S E E B E L O W	Euro 1	0.50	1.00	2.00	0.20 <i>optional</i>	EUR // EUROPEAN UNION EUROS // (€)			755-5401-01-Y	
OFF	S E T T I N G S	Euro 2					1/0.50	2/1.00	3/1.50	5/2.00	755-5401-02-Y
		Euro 3					1/0.50	3/1.00			755-5401-03-Y
		Euro 4					1/0.50	2/1.00	3/1.50	6/2.00	755-5401-04-Y
		Euro 5					1/0.50	3/1.00	4/1.50	7/2.00	755-5401-05-Y
		Euro 6					2/0.50				755-5401-06-Y
		Euro 7					1/1.00	2/2.00	3/3.00	5/4.00	755-5401-07-Y
		Euro 8					1/1.00	3/2.00			755-5401-08-Y
		Euro 9					1/1.00	2/1.50	3/2.00		755-5401-09-Y
		Euro 10					1/1.00	3/2.00	7/3.00		755-5401-10-Y
		Euro 11					1/1.00	4/2.00			755-5401-11-Y
		Euro 12					2/1.00	4/2.00	6/3.00	9/4.00	755-5401-12-Y

For a different Euro Pricing Scheme (other than Factory Default listed below), scroll through Standard Adjustment 18: Euro 1-12 or CUSTOM\* for new setting (reference above Euro 1-12 Summary). Keep the Country Dip Switch Setting the same as listed below.

Pos.	1 2 3 4 5 6 7 8	Default Highlighted	EUR // EUROPEAN UNION EUROS // (€)				755-5401-09-Y	
ON	▲	AUSTRIA	0.50	1.00	2.00	1/1.00	2/1.50	3/2.00
OFF	▼	Euro 9						
Pos.	1 2 3 4 5 6 7 8	Default Highlighted	EUR // EUROPEAN UNION EUROS // (€)				755-5401-01-Y	
ON	▲	BELGIUM	0.50	1.00	2.00	1/0.50		
OFF	▼	Euro 1						
Pos.	1 2 3 4 5 6 7 8	Default Highlighted	EUR // EUROPEAN UNION EUROS // (€)				755-5401-08-Y	
ON	▲	FINLAND	0.50	1.00	2.00	1/1.00	3/2.00	
OFF	▼	Euro 8						
Pos.	1 2 3 4 5 6 7 8	Default Highlighted	EUR // EUROPEAN UNION EUROS // (€)				755-5401-10-Y	
ON	▲	FRANCE	0.50	1.00	2.00	1/1.00	3/2.00	7/3.00
OFF	▼	Euro 10						
Pos.	1 2 3 4 5 6 7 8	Default Highlighted	EUR // EUROPEAN UNION EUROS // (€)				755-5401-01-Y	
ON	▲	GERMANY 1				1/0.50		
OFF	▼	GERMANY 2	0.50	1.00	2.00	1/0.50	2/1.00	3/1.50
		GERMANY 3				5/2.00	6/2.00	
Pos.	1 2 3 4 5 6 7 8	Default Highlighted	EUR // EUROPEAN UNION EUROS // (€)				755-5401-08-Y	
ON	▲	GREECE	0.50	1.00	2.00	1/1.00	3/2.00	
OFF	▼	Euro 8						
Pos.	1 2 3 4 5 6 7 8	Default Highlighted	EUR // EUROPEAN UNION EUROS // (€)				755-5401-01-Y	
ON	▲	ITALY 1	0.50		0.50	1/0.50		
OFF	▼	ITALY 2				1/1.00	3/2.00	
Pos.	1 2 3 4 5 6 7 8	Default Highlighted	EUR // EUROPEAN UNION EUROS // (€)				755-5401-03-Y	
ON	▲	NETHERLANDS	0.50	1.00	2.00	1/0.50	3/1.00	
OFF	▼	Euro 3						
Pos.	1 2 3 4 5 6 7 8	Default Highlighted	EUR // EUROPEAN UNION EUROS // (€)				755-5401-01-Y	
ON	▲	PORTUGAL	0.50		0.50	1/0.50		
OFF	▼	Euro 1						
Pos.	1 2 3 4 5 6 7 8	Default Highlighted	EUR // EUROPEAN UNION EUROS // (€)				755-5401-08-Y	
ON	▲	SPAIN	0.50	1.00	2.00	1/1.00	3/2.00	
OFF	▼	Euro 8						

**HIGHLIGHTED** = Factory Default      **HIGHLIGHTED** = Not Shown on Coin Card

For the associated Coinage Card required if the Factory Default Setting was changed, view on-line at:

<http://www.sternpinball.com/coinagecards.shtml>

You can download and print the replacement card. Adobe® Reader 5.0 or higher required (links on site). Use Yellow Card Stock: ASTROBRIGHTS® SOLAR YELLOW #65 FROM WAUSAU PAPER PRODUCTS (Stock #22731)

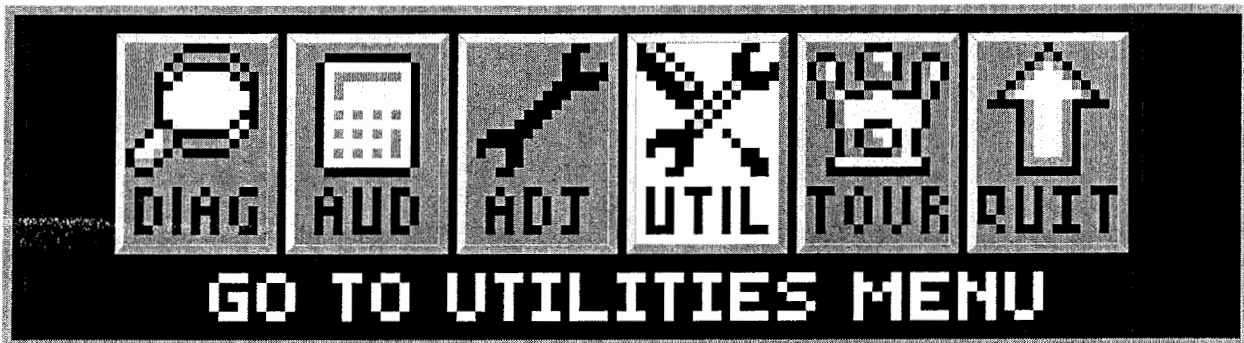
#19 **MATCH PERCENTAGE:** Set between 0% – 10% or OFF. Factory Default = 9%. At 0% the Match Animation Feature occurs at the end of the game but never awards the Match Award (Standard Adjustment 20). Set to OFF, no Match Animation Feature is shown.

#20 **MATCH AWARD:** Set to CREDIT, TICKET\* or TOKEN\*. Factory Default = CREDIT. This adjustment is not shown if OFF is installed in Match Percentage (Standard Adjustment 19).

\*Note: If TICKET or TOKEN is selected, the game will require an optional Ticket or Token Dispenser and then Q24 Option (Standard Adj. 55) must be changed accordingly.

#21 **BALLS PER GAME:** Set between 1 – 10. Factory Default = 3. Set the number of balls per game.

Standard Adjustments 22-36 continued on the next page. Standard Adjustments continued.



To initiate, from the **MAIN MENU**, select the "UTIL" *Icon*. The **UTILITIES MENU** provides ways to quickly and easily customize your game with **Installs** (*pre-sets for game Standard & Feature Adjustments*), set-up a **Custom Message** (*short-cut to Standard Adjustment 41, Custom Message*), set-up **Custom Pricing** (*short-cut to Standard Adjustment 18, to the Custom Pricing Sub-Menu*), set-up the **Date and Time** (*required if the date and time is needed to be accurate for data dumps and for tournaments*), reset certain particular game data or perform a complete **Factory Reset** and to download game data, update or backup game code in the **USB MENU**.

All **UTILITIES, INSTALLS, RESETS MENU** and **USB MENU** *Icons* and there usages are explained throughout this chapter in the same order as seen in the Dot Matrix Display. **NOTE:** Depending on Game Type, Version, selections made, Dip Switch settings, location and/or areas, some *Icons* may appear non-functional or may not appear at all. **Installs (Adjustments), Icons and/or functions, order and operation are subject to change. If in doubt use the Factory Default Settings (review Install Factory on the next page).**

In displays where changes can be made or to perform a function, use the **GREEN Button** to go [ **BACK** ], exit or escape, the **RED Buttons** to [ **</-** ] MOVE BACK / LEFT / [ **+ / >** ] MOVE FORWARD / RIGHT to view the next audit in the group, and the **BLACK Button** to [ **SELECT** ] the sub-menus.



## Go To Installs Menu

To initiate, from the **UTILITIES MENU**, select the "INST" *Icon*. The **INSTALLS MENU** provides 13 **Installs** to vary **Game Play Difficulty** (*set with Feature Adjustments*) or **Game Play Type** and **Install Factory** (*restores all adjustments to Factory Defaults*).

For **detailed customization** or to check current **Adjustments Defaults** (*either changed by YOU in the Adjustments Menu or by this INSTALLS MENU or for Factory Default Settings*), see **Section 3, Chapter 4, GO TO ADJUSTMENTS MENU**. After completing one or more of the **Installs** in this chapter, go back to the **ADJUSTMENTS MENU** to see which **Standard and/or Feature Adjustments** have changed (*Feature Adjustments and/or settings are subject to change during production, and may differ than what is described in the tables at the end of this chapter*). The **Dot Display** will indicate if a setting is a **Factory Default** or not. If the settings are not to your liking, perform **one** of the following:

- 1.: **Manually change the Standard & Feature Adjustments Settings** (*perform this task in the ADJUSTMENTS MENU, see the Adjustments Section*).
- 2.: **Install Factory** (*see the last install*) on how to reset all of the **Standard & Feature Adjustments** back to the **Factory Default Settings**.

Multiple **Installs can be set** to vary game play; however, for **Installs** that have *one or more* Adjustments in common, the **last** "Install" selected & **activated**, will **supersede** any previously changed Adjustment(s) from any prior **Installs**. Any adjustments which you changed and are not affected by the Install will remain as set.

For example, if you want a **5-BALL Game** set to **EXTRA EASY**: Select and **activate** the "5BAL" *Icon first* (which will typically change any **Feature** Difficulty Adjustments to **HARD**), **then** select & **activate** the "X.EZ" *Icon* to **change back** the Difficulty Adjustments to **EXTRA EASY**. However, if the "X.EZ" *Icon* was selected & **activated** first, **then** the "5BAL" *Icon* was selected & **activated**, the game will be set to a **5-BALL Game** set to **HARD**.

Remember, use the **GREEN Button** to go [ **BACK** ], exit or escape and the **BLACK Button** to [ **SELECT** ] to **INSTALL** your new setting(s).

## Install Extra Easy

To initiate, from the **INSTALLS MENU**, select the "X.EZ" *Icon*. The **Dot Matrix Display** will indicate the **INSTALL EXTRA EASY**. Follow the on-screen prompts to perform the **Install**. Set the **Game Play Difficulty** level.

*Installs Menu continued on the next page.*

*Installs Menu continued from previous page.*



### Install Easy

To initiate, from the **INSTALLS MENU**, select the "EASY" *Icon*. The Dot Matrix Display will indicate the **INSTALL EASY**. Follow the on-screen prompts to perform the **Install**. Set the **Game Play Difficulty** level.



### Install Medium (Normal or Factory Settings)

To initiate, from the **INSTALLS MENU**, select the "FACT" *Icon*. The Dot Matrix Display will indicate the **INSTALL MEDIUM**. Follow the on-screen prompts to perform the **Install**. Set the **Game Play Difficulty** level.



### Install Hard

To initiate, from the **INSTALLS MENU**, select the "HARD" *Icon*. The Dot Matrix Display will indicate the **INSTALL HARD**. Follow the on-screen prompts to perform the **Install**. Set the **Game Play Difficulty** level.



### Install Extra Hard

To initiate, from the **INSTALLS MENU**, select the "X.HD" *Icon*. The Dot Matrix Display will indicate the **INSTALL EXTRA HARD**. Follow the on-screen prompts to perform the **Install**. Set the **Game Play Difficulty** level.



### Install 3-Ball or 5-Ball

To initiate, from the **INSTALLS MENU**, select either the "3BAL" or "5BAL" *Icons*. The Dot Matrix Display will indicate the **INSTALL 3-BALL** or **5-BALL** depending on choice. Follow the on-screen prompts to perform the **Install**. Set the **Game Play Type** to 3 Balls per game

*(Factory Default is 3 Balls per game, not including extra balls earned by the player, if any).*



### Install Competition

To initiate, from the **INSTALLS MENU**, select the "COMP" *Icon*. The Dot Matrix Display will indicate the **INSTALL COMPETITION**. Follow the on-screen prompts to perform the **Install**. Set the **Game Play Type** to "Tournament" Rules. *Programming varies and is subject to change.*



### Install Director's Cut

To initiate, from the **INSTALLS MENU**, select the "DCUT" *Icon*. The Dot Matrix Display will indicate the **INSTALL DIRECTOR'S CUT**. Follow the on-screen prompts to perform the **Install**. Set the **Game Play Type** to programmer's choice. *Programming varies and is subject to change.*



### Install Home Play

To initiate, from the **INSTALLS MENU**, select the "HOME" *Icon*. The Dot Matrix Display will indicate the **INSTALL HOME PLAY**. Follow the on-screen prompts to perform the **Install**. Set the **Game Play Type** to "Home" Rules. *Programming varies and is subject to change.*



### Install Novelty

To initiate, from the **INSTALLS MENU**, select the "NOV" *Icon*. The Dot Matrix Display will indicate the **INSTALL NOVELTY**. Follow the on-screen prompts to perform the **Install**.

\*\*\*\*\* This setting is recommended where local laws restrict certain game features. \*\*\*\*\*  
Set the **Game Play Type** to "Restricted" Rules. *Programming varies and is subject to change.*



### Install Add-A-Ball

To initiate, from the **INSTALLS MENU**, select the "A.A.B." *Icon*. The Dot Matrix Display will indicate the **INSTALL ADD-A-BALL**. Follow the on-screen prompts to perform the **Install**.

\*\*\*\*\* This setting is recommended where local laws restrict certain game features. \*\*\*\*\*  
Set the **Game Play Type** to "Restricted" Rules. *Programming varies and is subject to change.*



### Install Factory

To initiate, from the **INSTALLS MENU**, select the "FACT" *Icon*. The Dot Matrix Display will indicate the **INSTALL FACTORY**. Follow the on-screen prompts to perform the **Install**. **CAUTION!** All **Standard and Feature Adjustments** which were changed in the **INSTALLS MENU** or **ADJUSTMENTS MENU** are returned to the **Factory Defaults** (as indicated in the Dot Display in the **ADJUSTMENTS MENU**). *Note: To perform a complete Factory Reset, GO TO THE RESETS MENU. Escape back to the UTILITIES MENU, select the "RESET" Icon, then select the "FACT" Icon in the RESETS MENU (review the end of this section, Reset Factory Settings).*



## Enter Custom Message

To initiate, from the **UTILITIES MENU**, select the "ABCD CUST MSG" *Icon*. The **SET CUSTOM MESSAGE** (a short-cut for Standard Adjustment 41, **Custom Message**) provides an opportunity to have a text message appear in the the **Attract Mode**. Follow the on-screen prompts to complete [ END ].

Remember, use the **GREEN Button** to go [ **BACK** ], exit or escape, the **RED Buttons** to [ </- ] MOVE LEFT / CHOOSE NEXT [ +/ > ] MOVE RIGHT / CHOOSE PREVIOUS, and the **BLACK Button** to [ **SELECT** ] as 'OK'.



## Set Custom Pricing

To initiate, from the **UTILITIES MENU**, select the "PRIC" *Icon*. The **CUSTOM PRICING MENU** (a short-cut for Standard Adjustment 18, **Game Pricing**, and setting selected is **CUSTOM**) provides an opportunity to set **Custom Pricing**.

**Note !** MONETARY AMOUNT MUST BE SELECTED FIRST! Press [ **BACK** ] to - DECREASE or [ **SELECT** ] to + INCREASE the [ < \$ > ] **monetary amount** (e.g. look at the right side of the display from **\$0.25** to **\$0.50** ). Press [ </ - ] to - DECREASE or [ +/ > ] to + INCREASE the **credit quantity** (e.g. look at the left side of the display from **0 CREDITS AT:** to **1 CREDIT AT:**).

### REMINDER

In these menus:

Press [ **BACK** ] to - DECREASE [ < \$ ]

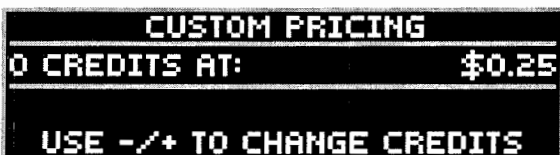
Press [ **SELECT** ] to + INCREASE [ \$ > ]

**IF EXAMPLE CUSTOM PRICING SETTING DESIRED IS :**

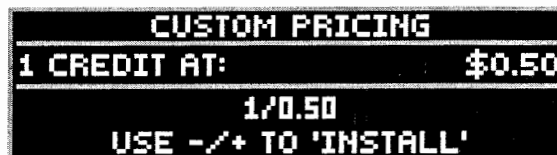
1 Play for \$0.50, 3 Plays for \$1.00 and 7 Plays for \$2.00

**THEN YOU WILL NEED TO PERFORM THE FOLLOWING :**

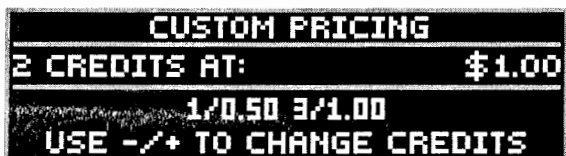
**Step 1** The starting display appears as below if no prior **Custom Pricing** was installed.



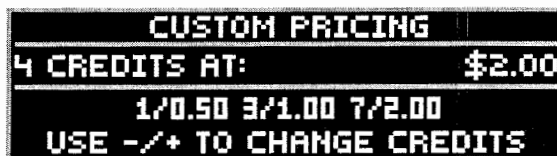
**Step 2** Press [ **SELECT** ] to + INCREASE to **\$0.50**. Press [ +/ > ] to + INCREASE to **1 CREDIT AT:**



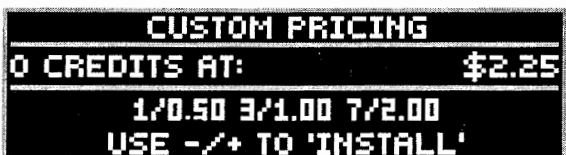
**Step 3** Press [ **SELECT** ] to + INCREASE to **\$1.00**. Press [ +/ > ] to + INCREASE to **2 CREDITS AT:**



**Step 4** Press [ **SELECT** ] to + INCREASE to **\$2.00**. Press [ +/ > ] to + INCREASE to **4 CREDITS AT:**



**Step 5** Press [ **SELECT** ] to + INCREASE the amount once (example = **\$2.25**).



**Step 6** Press [ **SELECT** ] to **INSTALL**. Press [ </ - ] / [ +/ > ] or [ **BACK** ] to edit.



Press [ </ - ] once or press [ +/ > ] eleven times until **INSTALL** appears.

**Step 7** Press [ **SELECT** ], press [ **BACK** ] twice to exit the **SERVICE MENU** with your **Custom Pricing** installed.



To correct or make new changes, reenter, which brings you to **Step 6**. Press [ **BACK** ] repeatedly until the monetary amount shown is the desired amount and then continue following the above steps with your new or corrected settings. *If you are still having difficulty or if you have any questions, please call Technical Support 800-542-5377 or 708-345-7700, option 1.*





## Set Date / Time

To initiate, from the **UTILITIES MENU**, select the "TIME" *Icon*. The **SET TIME MENU** appears with the **MONTH** flashing. Setting the date and time is required for 'Data Dumps' and Tournament Start and End Dates. If the setting of Standard Adjustment 61, **Time Format**, is set to **12-HOUR** (*Factory Default*) the time will be expressed in the **AM / PM format**. If Standard Adjustment 61, **Time Format**, is set to **24-HOUR** the time will be expressed in the **24-hour format**.



## Go To Resets Menu

To initiate, from the **UTILITIES MENU**, select the "RESET" *Icon*. The **RESETS MENU** provides six (6) functions to reset *only the Coin Audits*, reset *only the Game Audits*, reset *only the Grand Champion Score*, reset *only the High Score(s)*, reset *only the paid Credits (includes Service Credits)* or to reset **ALL DATA** back to the **Factory Default Settings**.



### Reset Coin Audits

To initiate, from the **RESET MENU**, select the "COIN" *Icon*. **▲ ONLY the Coin Audits** [ Earnings Audits 5–12 ], will be reset to zero (0), *Factory Default Settings*. Follow the on-screen prompts to perform the **Reset**.



### Reset Game Audits

To initiate, from the **RESET MENU**, select the "AUD" *Icon*. **▲ ONLY the Game Audits** [ Earnings Audits 1–4, Standard Audits 1–59 and Feature Audits 1–XX\* ], will be reset to zero (0), *Factory Default Settings*. Follow the on-screen prompts to perform the **Reset**. \*varies per game title.



### Reset Grand Champion (Score)

To initiate, from the **RESET MENU**, select the "GC" *Icon*. **▲ ONLY the Grand Champion Score** [ adjustable via Standard Adjustment 31 ], will be reset to *Factory Default Setting*. Follow the on-screen prompts to perform the **Reset**.



### Reset High Scores

To initiate, from the **RESET MENU**, select the "HSTD" *Icon*. **▲ ONLY the High Score(s)** [ adjustable via Standard Adjustments 32–35 ], will be reset to *Factory Default Setting(s)*. Follow the on-screen prompts to perform the **Reset**. **Note:** *High Scores (but not Grand Champion Score) are reset automatically every 2,000 games (Factory Default Setting) [adjustable via Standard Adjustment 37, HSTD Reset Count ]*.



### Reset Credits

To initiate, from the **RESET MENU**, select the "CRED" *Icon*. **▲ ONLY the Credits** (*includes Service Credits*) [ adjustable via Standard Adjustment 23, **Credit Limit** ], will be reset to zero (0), *Factory Default Settings*. Follow the on-screen prompts to perform the **Reset**.



### Reset Factory Settings

To initiate, from the **RESET MENU**, select the "FACT" *Icon*. **▲ ALL GAME DATA IS RESET!** (*with the exception of Earnings Audit 13, Software Meter*). **NOTE: IF YOU HAD SET-UP CUSTOM PRICING OR HAD CHANGED ANY ADJUSTMENTS OR PERFORMED INSTALLS, IT IS SUGGESTED TO WRITE DOWN YOUR CHANGES PRIOR TO THE FACTORY RESET.** Follow the on-screen prompts to perform the **Reset**.



## Go To USB Menu

To initiate, from the **UTILITIES MENU**, select the "USB" *Icon*. The **USB MENU** provides three (3) functions to download game data, update your game code or backup your code onto a USB Memory Stick. *Review the inside cover for information on how to update your game code.*



### Update Game Code

To initiate, from the **USB MENU**, select the "UPDT" *Icon*. Follow the on-screen prompts or review the inside cover for more information.



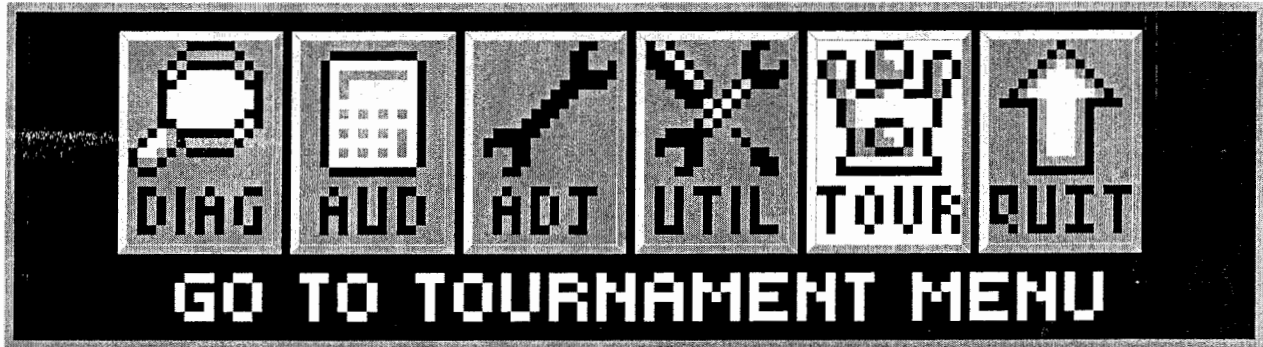
### Dump Audits to USB

To initiate, from the **USB MENU**, select the "DUMP" *Icon*. Follow the on-screen prompts to perform a **Data Dump** (download). **Note:** *If Icon is not present, access via the Audits Menu, see the Audits Section.*



### Backup to USB Memory Stick

To initiate, from the **USB MENU**, select the "BKUP" *Icon*. Follow the on-screen prompts to perform a **Backup** (game code only). This backup feature does not retain adjustments and/or settings changes made.



To initiate, from the **MAIN MENU**, select the "TOUR" *Icon*. The **TOURNAMENT MENU** provides ways to quickly and easily start and stop a tournament. Also, tournament data can be viewed (*audits, prize info, etc.*).

All **TOURNAMENT MENU** *Icons* and there usages are explained throughout this chapter in the same order as seen in the Dot Matrix Display. **NOTE:** Depending on Game Type, Version, selections made, Dip Switch settings, location and/or areas, some *Icons* may appear non-functional or may not appear at all. *Icons and/or functions, order and operation are subject to change.*

In displays where changes can be made or to perform a function, use the **GREEN Button** to go [ **BACK** ], exit or escape, the **RED Buttons** to [ < / - ] **HIGHLIGHT PREVIOUS** or **DECREASE** / [ + / > ] **HIGHLIGHT NEXT** or **INCREASE** to highlight the desired option, and the **BLACK Button** to [ **SELECT** ] it or activate.

**T** Start Tournament

To initiate, from the **TOURNAMENT MENU**, select the "STRT" *Icon*. The **START TOURNAMENT MENU** allows the operator to start a tournament. Select **QUICK START** or **CUSTOM** Tournament Start. For the first time Tournament Set-Up, it is recommended to select **CUSTOM**. Follow the on-screen prompts. After completion of all options in **QUICK START** or **CUSTOM**, the Tournament is started, the **START TOURNAMENT MENU** is exited and returns to the **TOURNAMENT MENU**.

**QUICK START :**

- Increase or decrease the: • **DAYS, HOURS and MINUTES** • **PRIZE POOL \$ (DOLLAR) and ¢ (CENT) AMOUNT**
- **INCREMENT THE PRIZE POOL PER PLAY INCREASES \$ and ¢ AMOUNT**

**CUSTOM START :**

- Confirm the current date and time (*if it was not set previous via the UTILITIES MENU it can be set-up in this display as well*). Enter the **MONTH, DAY, YEAR** and **TIME**
- Choose the Tournament **Start Date: MONTH, DAY, YEAR** and **TIME**
- Choose the Tournament **End Date: MONTH, DAY, YEAR** and **TIME**
- Choose the **CREDITS** per play desired (01-10). Set the maximum number of *Credits* that may be accumulated per game. **Note:** *The current pricing is displayed; to change pricing GO TO THE ADJUSTMENTS MENU.*

- Increase or decrease the: • **PRIZE POOL \$ (DOLLAR) and ¢ (CENT) AMOUNT**
- **INCREMENT THE PRIZE POOL PER PLAY INCREASES \$ and ¢ AMOUNT**
- **MAXIMUM (CAP) PRIZE POOL \$ and ¢ AMOUNT.**

- Increase or decrease the number of **PRIZES** (01-05 **HIGH SCORE**; 02-05 **B'N'W**). Set the maximum # of *Prize Positions* to be awarded during a Tournament. **Selections are as follows** (*% distribution cannot be changed*):

		HIGH SCORE:		BUMP N' WIN :	
Set to 01	1 Winner	100% (1)	Prize Pool	Cannot set to 01.	Minimum of 2 winners required.
Set to 02	2 Winners	65% (1)	35% (2)	Set to 02	2 Winners 65% (1) 35% (2)
Set to 03	3 Winners	50% (1)	30% (2) 20% (3)	Set to 03	3 Winners 50% (1) 25% (2) 25% (3)
Set to 04	4 Winners	50% (1)	25% (2) 15% (3) 10% (4)	Set to 04	4 Winners 40% (1) 20% (2) 20% (3) 20% (4)
Set to 05	5 Winners	50% (1)	20% (2) 15% (3) 10% (4) 5% (5)	Set to 05	5 Winners 40% (1) 15% (2) 15% (3) 15% (4) 15% (5)

- Select the **AWARD TYPE** (**CASH, POINTS, PRIZE, TICKETS** or **NONE**). Select **CASH** for the displays to represent the Prize Pool amount (*based on Jackpot Base and Max.*) in **\$Dollars**. Select **POINTS** for the display to represent the Prize Pool amount in *Points*. Select **PRIZE**, if applicable. Select **TICKET** for the display to represent the Prize Pool amount in *Tickets*. Select **NONE NOT TO** represent anything.

*Custom Start continued on the next page.*

# POWER REQUIREMENTS



This game **must be connected to a properly grounded outlet to reduce shock hazard** and insure proper game operation. See the Yellow Pages (Schematics & Wiring), for transformer connections required for **Normal, High, and Low Line** conditions.



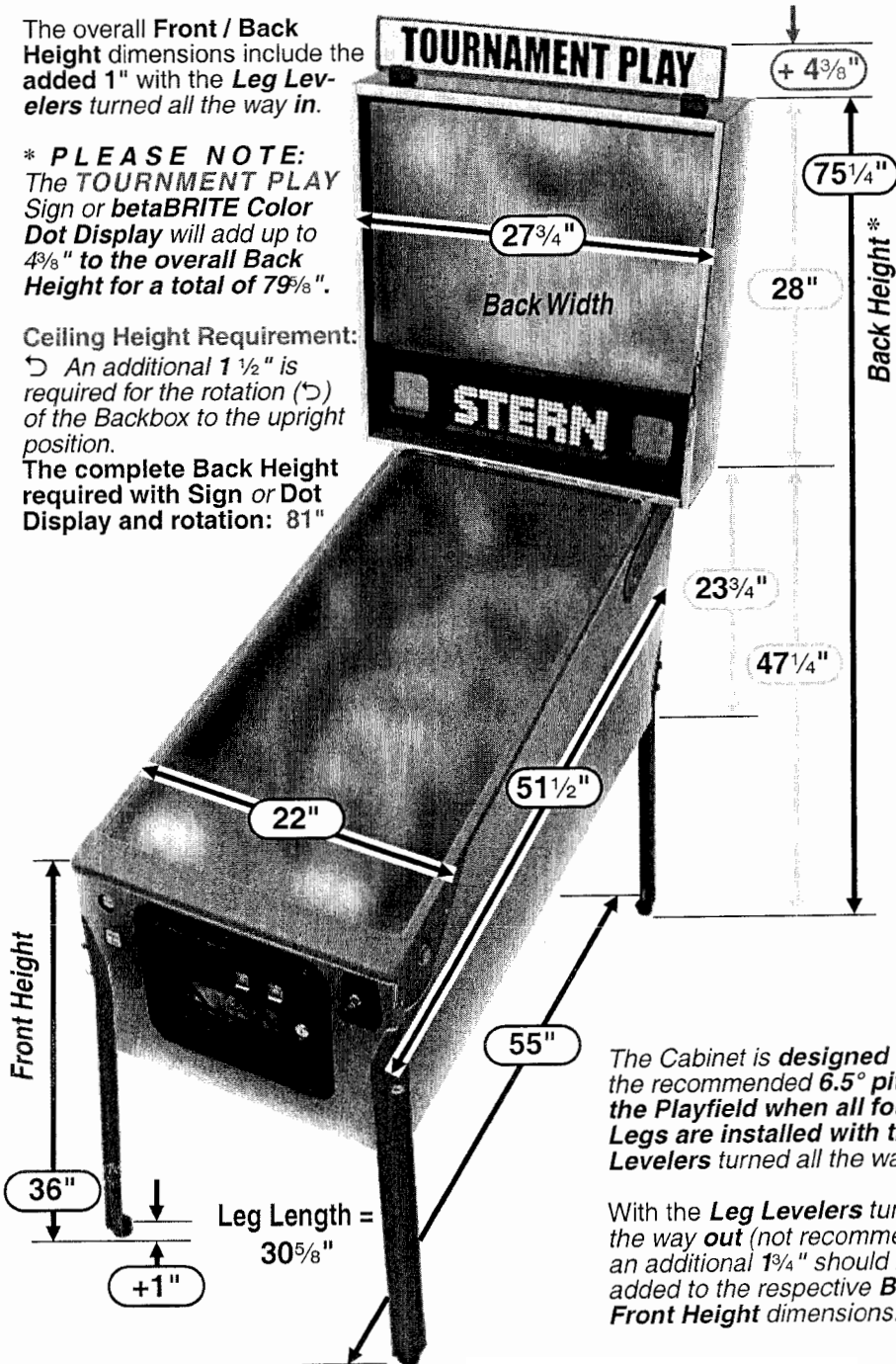
Normal Line:		110v AC - 125v AC @ 60Hz	
<b>Domestic</b> use an 8AMP 250v Slo-Blo Fuse.	<b>AVG OPERATION</b>		<b>MAX OPERATION</b>
	CURRENT: 2.8AMP WATTAGE: 329w		CURRENT: 8AMP WATTAGE: 940w
High Line:		218v AC - 240v AC @ 50Hz	
<b>Export</b> use 2x 5AMP 250v Slo-Blo Fuses. (*England & Hong Kong use an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

# GAME DIMENSIONS      TRANSPORTATION

The overall **Front / Back Height** dimensions include the added 1" with the **Leg Levelers** turned all the way in.

**\* PLEASE NOTE:**  
 The **TOURNAMENT PLAY Sign** or **betaBRITE Color Dot Display** will add up to  $4\frac{3}{8}$ " to the overall **Back Height** for a total of  $79\frac{3}{8}$ ".

**Ceiling Height Requirement:**  
 An additional  $1\frac{1}{2}$ " is required for the rotation (↶) of the **Backbox** to the upright position.  
 The complete **Back Height** required with **Sign** or **Dot Display** and rotation: 81"



To reduce the possibility of damage, observe **ALL** precautions whenever transporting the game.

**Read & follow the next page on How to Secure the Backbox for Transporting.** Remove the legs and secure the game within the transporting vehicle.

**SAVE AND RETAIN ALL PRINTED INFORMATION INSIDE THE CABINET !**

The Cabinet is **designed** to give the recommended **6.5° pitch** to the **Playfield** when all four (4) **Legs** are installed with the **Leg Levelers** turned all the way in.

With the **Leg Levelers** turned all the way **out** (not recommended), an additional  $1\frac{3}{4}$ " should be added to the respective **Back** or **Front Height** dimensions.

**Shipping Box Dimensions**

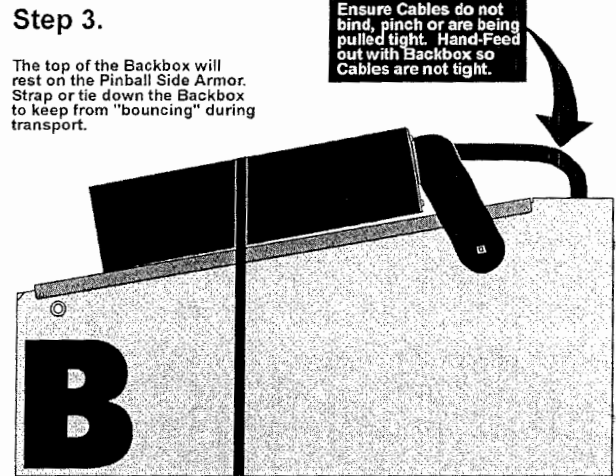
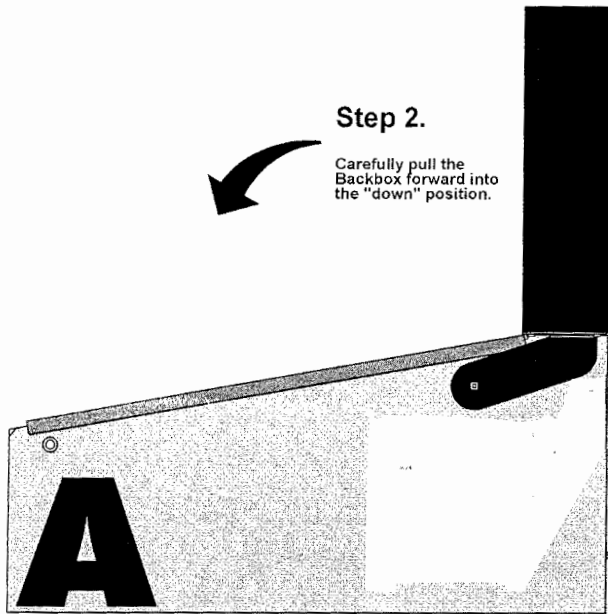
Height 56" Width 31"  
 Depth 31"  
 Approx. Unboxed Weight:  
 260lbs. (+/- 10)  
 Boxed Weight:  
**Wt. 290lbs. (+/- 15)**

**CAUTION**

At least 2 people are required to move and maneuver this game. Use proper moving equipment & extreme care while handling!

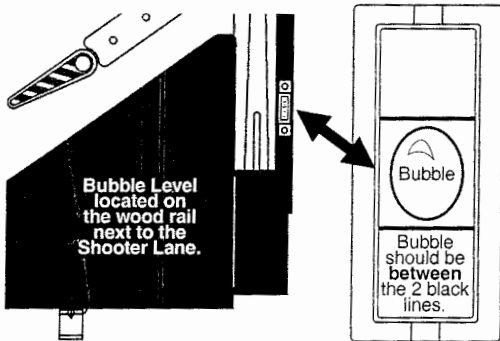
# How to Secure the Backbox for Transporting

For more Backbox details & part numbers, see the Pink Pages (Parts Identification & Location, Backbox ...).



## Leg Leveler Adjustment

Attach the four (4) Leg Assemblies to cabinet corners with the eight (8) leg bolts provided .



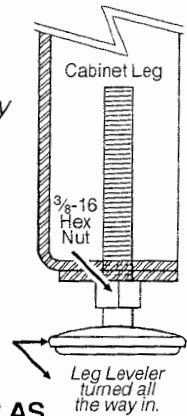
**Start** adjustment with the leg levelers turned *all the way in*.

**View** the *bubble* in the level provided on the right side wood rail.

**Adjust** the front or rear levelers as necessary to cause the bubble to float between the two (2) black lines.

**Use** a pinball to roll down the center of the playfield for side-to-side leveling.

**YOUR PLAYFIELD PITCH IS NOW AT 6.5° AS REQUIRED FOR PROPER GAME PLAY!**



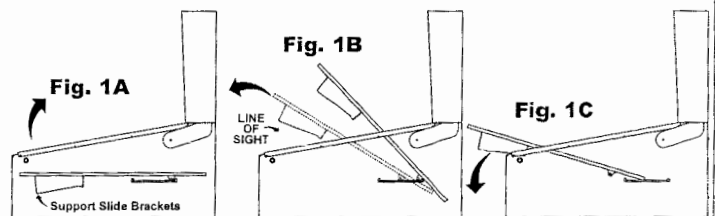
*Note:* For custom adjustment greater than >6.5° can be achieved by turning out the rear leg leveler(s), however, it is **not recommended**.

## Easy Access Service System - 2 Positions

With the front molding & glass removed, carefully lift the playfield (take care when using the Bottom Arch to hoist).

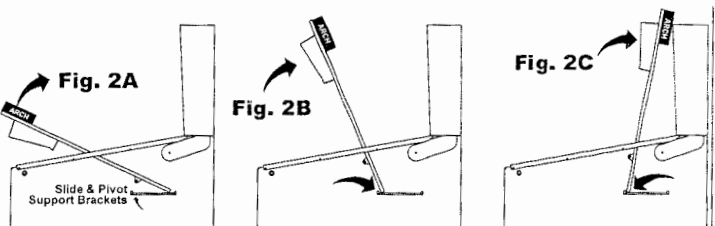
### Position 1

When lifted high enough, the **Playfield Support Slide Brackets** (Fig. 1A) can be seen and can clear the cabinet front (Fig. 1B). At this time, pull the playfield toward the front of the cabinet, checking that the mechanical components clear the cabinet front, then rest the playfield on the **Playfield Support Slide Brackets** at the front channel of cabinet (Fig. 1C);



### Position 2

With the playfield at rest, hold the sides & pull toward the front of the cabinet (approx. 6" to 8"), until resistance is felt from **Edge Slide Brackets** stopping against the **Slide & Pivot Support Brackets** located on either side of the cabinet (Fig. 2A). At this time, swivel the playfield toward the Backbox, then rest on the top edge (Fig. 2B & 2C).

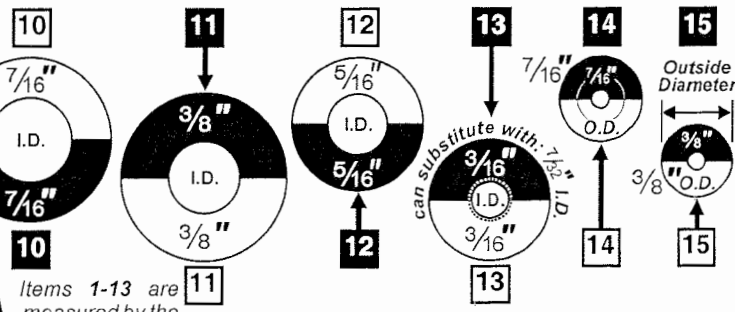
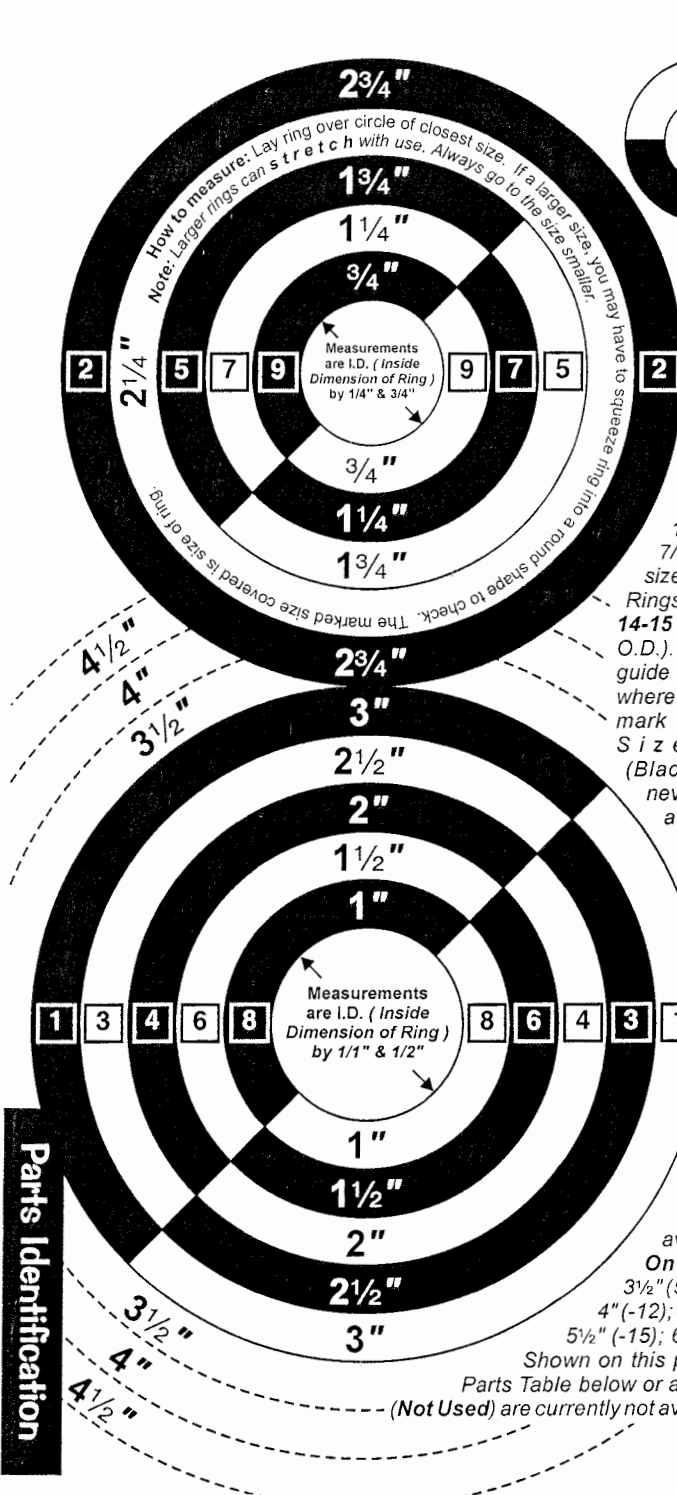


## SAM System Circuit Board and BOOT ROM Compatibility Chart

Game Name	CPU Bd. No.	I/O PWR DRV Bd. No.	U9 Pinball Boot ROM
World Poker Tour	520-5246-00	520-5249-00	V3.1
Pirates Of The Caribbean	520-5246-00	520-5249-00	V3.1
Family Guy	520-5246-00	520-5249-00	V3.1
Spider-Man	520-5246-00	520-5249-00	V3.1
Wheel Of Fortune	520-5246-00	520-5249-00	V3.1
NBA	520-5246-00	520-5249-00	V3.1
CSI	520-5246-00	520-5249-00	V3.1
Batman	520-5246-00	520-5249-00	V3.1
Indiana Jones	520-5246-00	520-5249-00	V3.1
Shrek	520-5246-00	520-5249-00	V3.1
24	520-5246-00	520-5249-00	V3.1
Avatar	520-5246-00	520-5249-00	V3.1
Avatar 2nd run	520-5246-02	520-5249-00	V2.0
Big Buck Hunter	520-5246-00	520-5249-00	V3.1
Iron Man	520-5246-00	520-5249-00	V3.1
Iron Man 2nd run	520-5352-00	520-5249-00 (REV. D)	V1.0 (64M)
The Rolling Stones	520-5246-00	520-5249-00	V3.1
Tron	520-5246-00	520-5249-00	V3.1
Tron 2nd run	520-5246-02	520-5249-00	V2.0
Avatar L/E	520-5303-03	520-5249-00	V3.1
The Rolling Stones L/E	520-5303-03	520-5249-00	V3.1
Tron L/E	520-5303-03	520-5317-00	V3.1
Transformers	520-5246-02	520-5249-00	V2.0
Transformers L/E	520-5303-04	520-5317-00	V2.0
AC/DC	520-5337-01	520-5249-00	AC/DC 1.0
AC/DC (L/E)	520-5337-00	520-5317-00	AC/DC 1.0
X-MEN	520-5246-02	520-5249-00	V2.0
X-MEN (L/E)	520-5303-04	520-5317-00	V2.0
Avengers	520-5246-02	520-5249-00	V2.0
Avengers L/E	520-5303-04	520-5317-00	V2.0
Metallica	520-5337-01	520-5249-00	V1.0
Metallica L/E	520-5337-00	520-5317-00	V1.0
Star Trek	520-5352-00	520-5249-00 (REV. D)	V1.0 (64M)
Star Trek L/E	520-5352-01	520-5317-00	V1.0 (64M)
Mustang	520-5352-00	520-5249-00 (REV. D)	V1.0 (64M)
Mustang L/E	520-5352-01	520-5249-00 (REV. D)	V1.0 (64M)
The Walking Dead	520-5337-01	520-5249-00 (REV. D)	V1.0 (64M)
The Walking Dead L/E	520-5337-00	520-5249-00 (REV. D)	V1.0 (64M)
Batman (Standard)	520-5303-00	520-5249-00	V3.1
Iron Man (Classic)	520-5303-01	520-5304-00	Not Used
The Simpsons Kooky Carnival (RED)	520-5246-00	520-5249-00	V3.1



Playfield - Rubber Parts Black ■, White □ & Blue ■ (Rings Actual Size) †



Items 1-13 are measured by the Inside Diameter (I.D.). Items 1-9 and 11 are approximately 1/4" thick. Items 10, 12-15 are approximately 3/16" thick. Item 13 can also be a 7/32" I.D. Ring. The size is imprinted on all Rings except for Items 14-15 (7/16" O.D. & 3/8" O.D.). Use this page as a guide to measure rings where the size imprint or mark does not exist. Size 2 1/4" I.D. (Black or White) was never used. Choose a Ring Size +/- 1/4" I.D. if required.

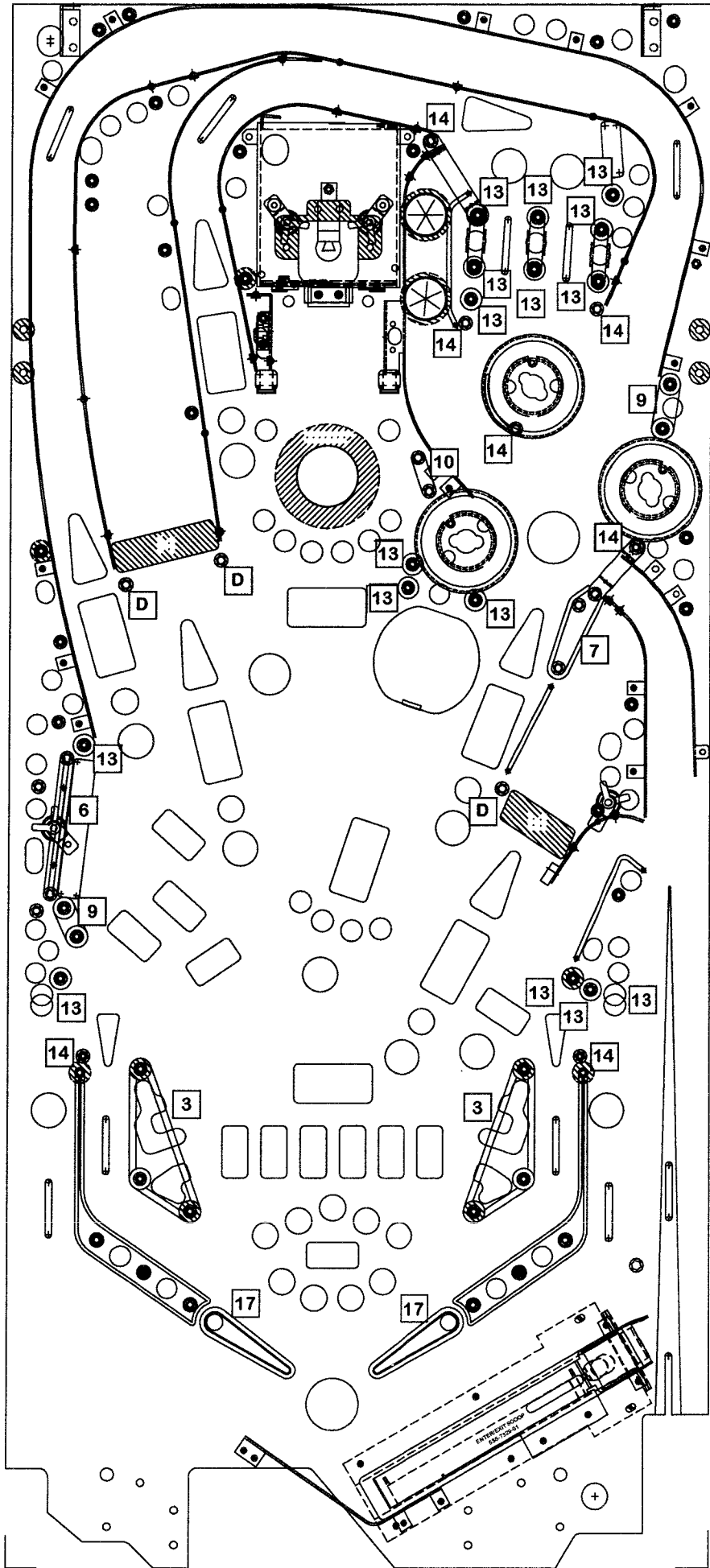
Note: Sizes larger than 3" I.D. currently available in Black Only (Not Used): 3 1/2" (545-5348-11); 4" (-12); 4 1/2" (-13); 5" (-14); 5 1/2" (-15); 6" (-16). Sizes Not Shown on this page, listed in the Parts Table below or are noted with N/U (Not Used) are currently not available.

Nr.	RUBBER RINGS	QTY.	SPI PART Nr.
1	3" I.D. Rubber Ring BLACK		545-5348-10
	3" I.D. Rubber Ring WHITE		545-5348-60
2	2 3/4" I.D. Rubber Ring BLK		545-5348-20
		N/U	
3	2 1/2" I.D. Rubber Ring BLK		545-5348-09
	2 1/2" I.D. Rubber Ring WHT		545-5348-59
4	2" I.D. Rubber Ring BLACK	3	545-5348-08
	2" I.D. Rubber Ring WHITE		545-5348-58
5	1 3/4" I.D. Rubber Ring BLK		545-5348-21
		N/U	
6	1 1/2" I.D. Rubber Ring BLK		545-5348-07
	1 1/2" I.D. Rubber Ring WHT		545-5348-57
7	1 1/4" I.D. Rubber Ring BLK		545-5348-06
	1 1/4" I.D. Rubber Ring WHT		545-5348-56
8	1" I.D. Rubber Ring BLACK		545-5348-05
	1" I.D. Rubber Ring WHITE		545-5348-55
9	3/4" I.D. Rubber Ring BLACK	3	545-5348-04
	3/4" I.D. Rubber Ring WHITE		545-5348-54
10	7/16" I.D. Rubber Ring BLK		545-5348-18
	7/16" I.D. Rubber Ring WHT		545-5348-68
11	3/8" I.D. Rubber Ring BLACK		545-5348-03
		N/U	
12	5/16" I.D. Rubber Ring BLK	3	545-5348-02
	5/16" I.D. Rubber Ring WHT		545-5348-52
13	3/16" I.D. Rubber Ring BLK	8	545-5348-01
	3/16" I.D. Rubber Ring WHT		545-5348-51
14	7/16" O.D. Rubber Ring BLK	9	545-5348-17
	7/16" O.D. Rubber Ring WHT		545-5348-67
			Note: Item 14, 7/16" O.D. Black Rings (Qty. 44 of 49) are used to cushion the Bayonet Sockets under the playfield (between bracket & playfield).
15	3/8" O.D. Rubber Ring BLK		545-5348-19
	3/8" O.D. Rubber Ring WHT		545-5348-69
16	Small Flipper BLACK Ring (Soft Duro)		545-5207-00
	Small Flipper RED Ring (Soft Duro)		545-5207-22
	Large Flipper BLACK Ring (50 Duro)	2	545-5277-00
	Large Flipper YELLOW Ring (50 Duro) (use -06 40 Duro)		545-5277-04
17	Large Flipper WHITE Ring (50 Duro)		545-5277-08
	Large Flipper RED Ring (Soft Duro)		545-5277-22

Take Note:

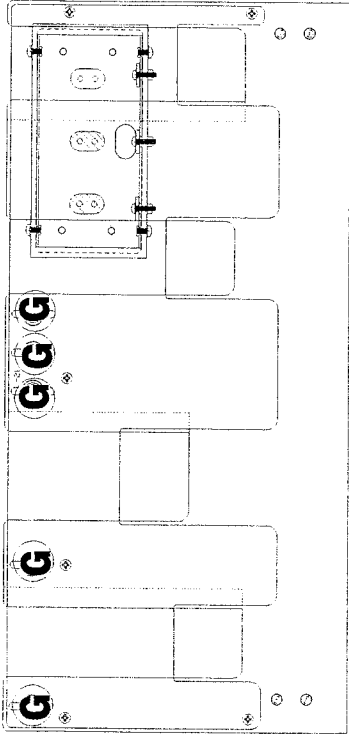
For Blue Rubber Pads, see the next page and/or the Blue Pages for the assembly the pads are found on for the part number.

Nr.	RUBBER BUMPER PADS	QTY.	SPI PART Nr.	Nr.	RBR. BUMPER POST SLVS.	QTY.	SPI PART Nr.
A*	Bumper BLK Pad (Lg. w/ grommet)	3	545-5428-00	D*	Bumper BLACK Post Sleeve (Tall)	3	545-5308-65
	Item A are located on Flipper Assemblies. See next page for location.				Item D in RED use 545-5308-22; Item D in WHITE use 545-5308-08.		
B*	Bumper BLK Pad (Sm. w/ grommet)	3	545-5105-00	E*	Bumper Post Sleeve (Short)		545-5151-00
	Item B are located on multiple assemblies. See next page for location.						



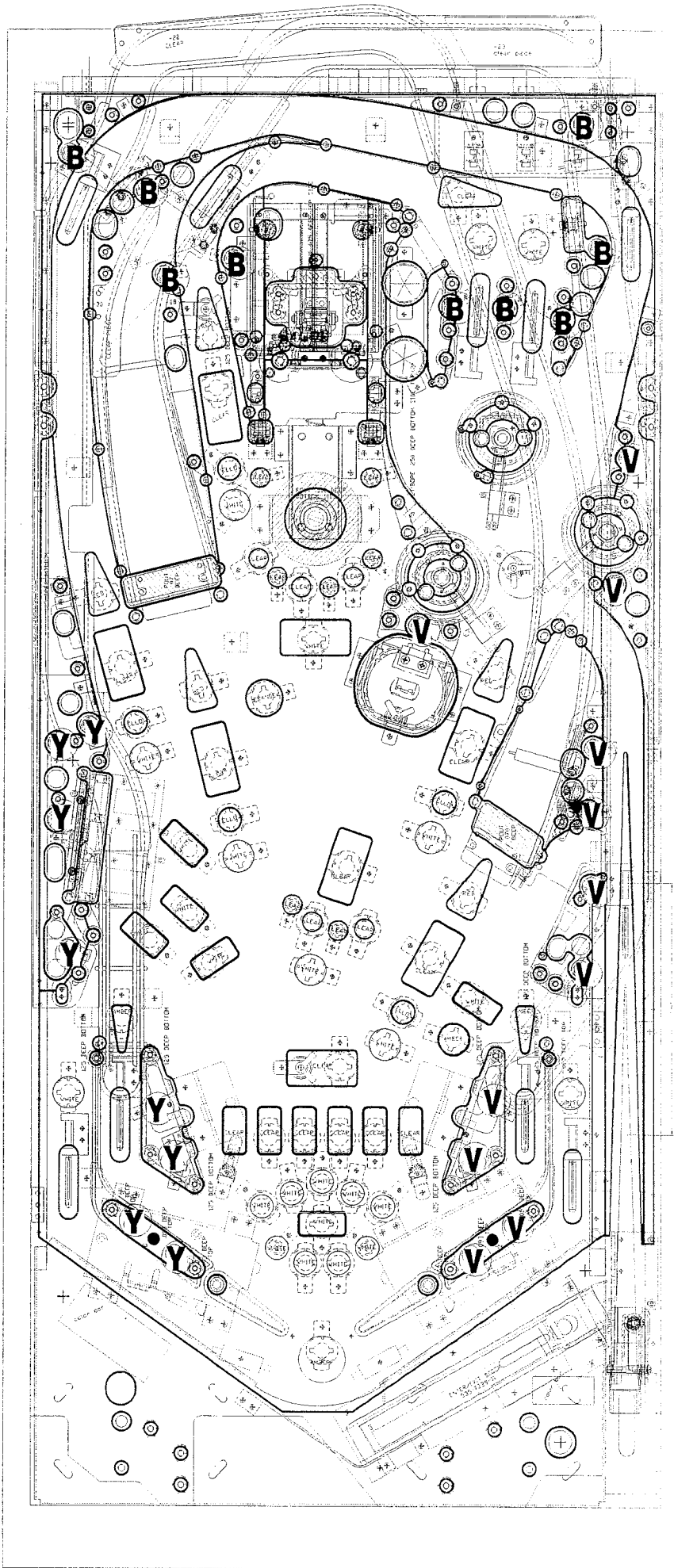
077-5000-00 471  
TABLE BAYONET COCKET

5 BAYONET 112-5034-08 LED(WHT)



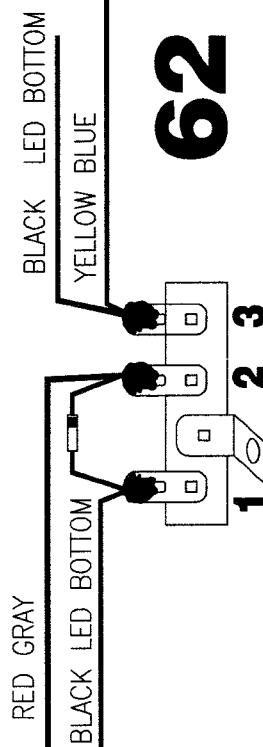
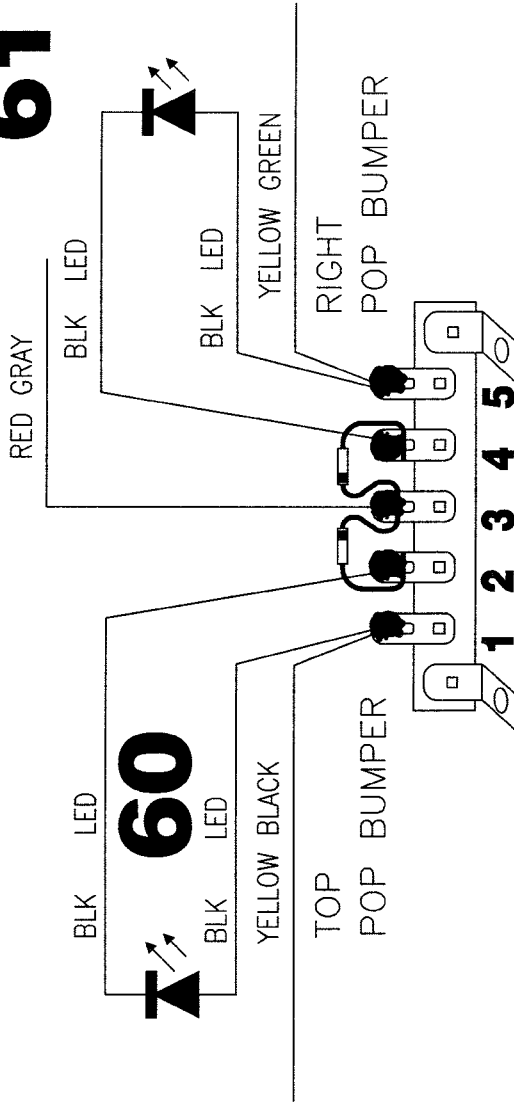
G/I Map

28 BAYONET 112-5034-08 LED(WHT)



# DTS LAMP

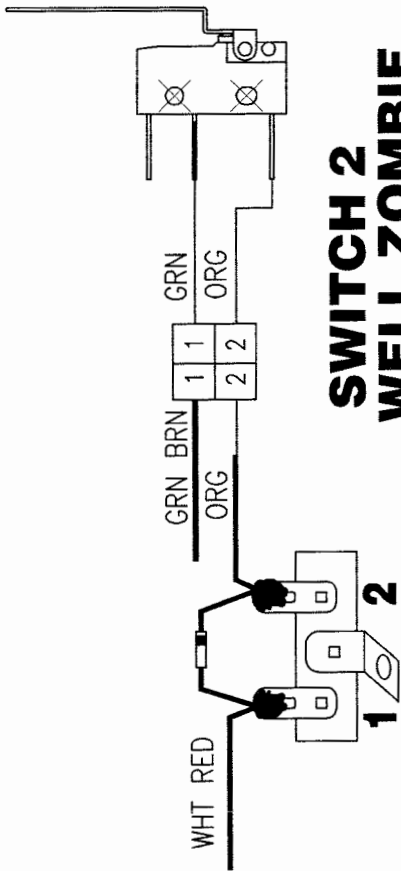
## 61



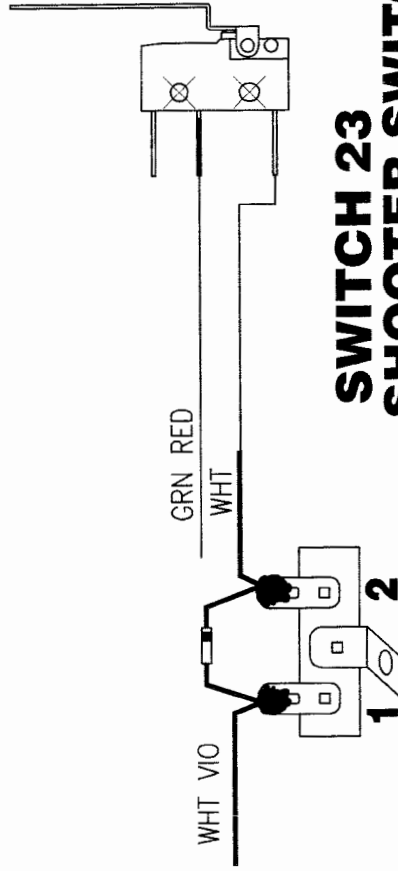
## 62

### LEFT POP BUMPER

DWN: REYNA	DATE: 05-15-14	TITLE: DTS Configuration
1st USE	SCALE: 1:1	WALKING DEAD (PRO)
Stern Pinball, Inc		PART NO. DTS-MAP
2020 JANICE AVE., MELROSE PARK, IL. 60160		



**SWITCH 2  
WELL ZOMBIE**

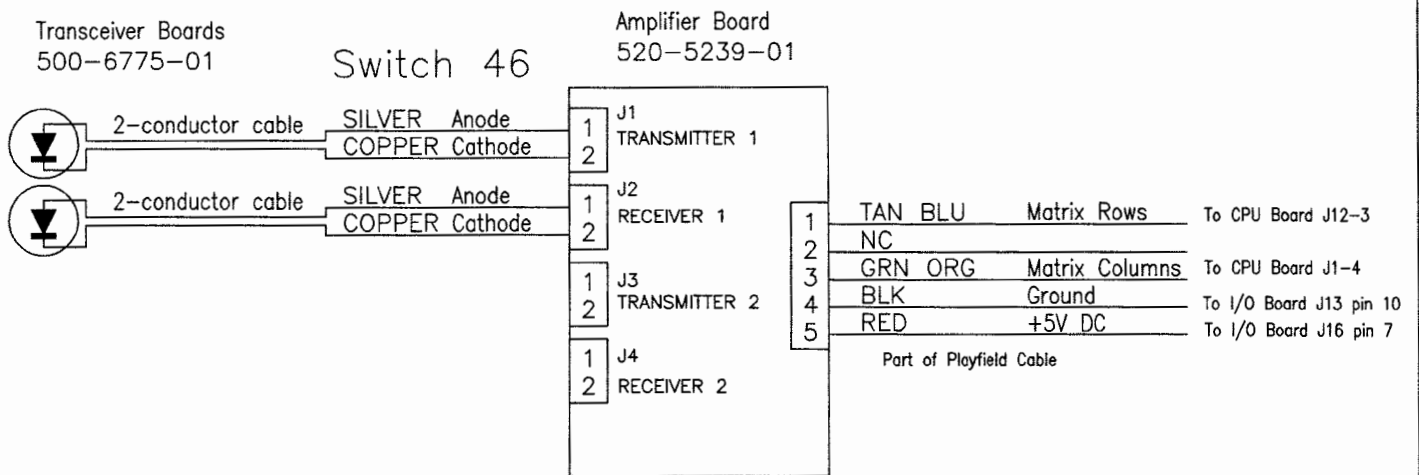


**SWITCH 23  
SHOOTER SWITCH**

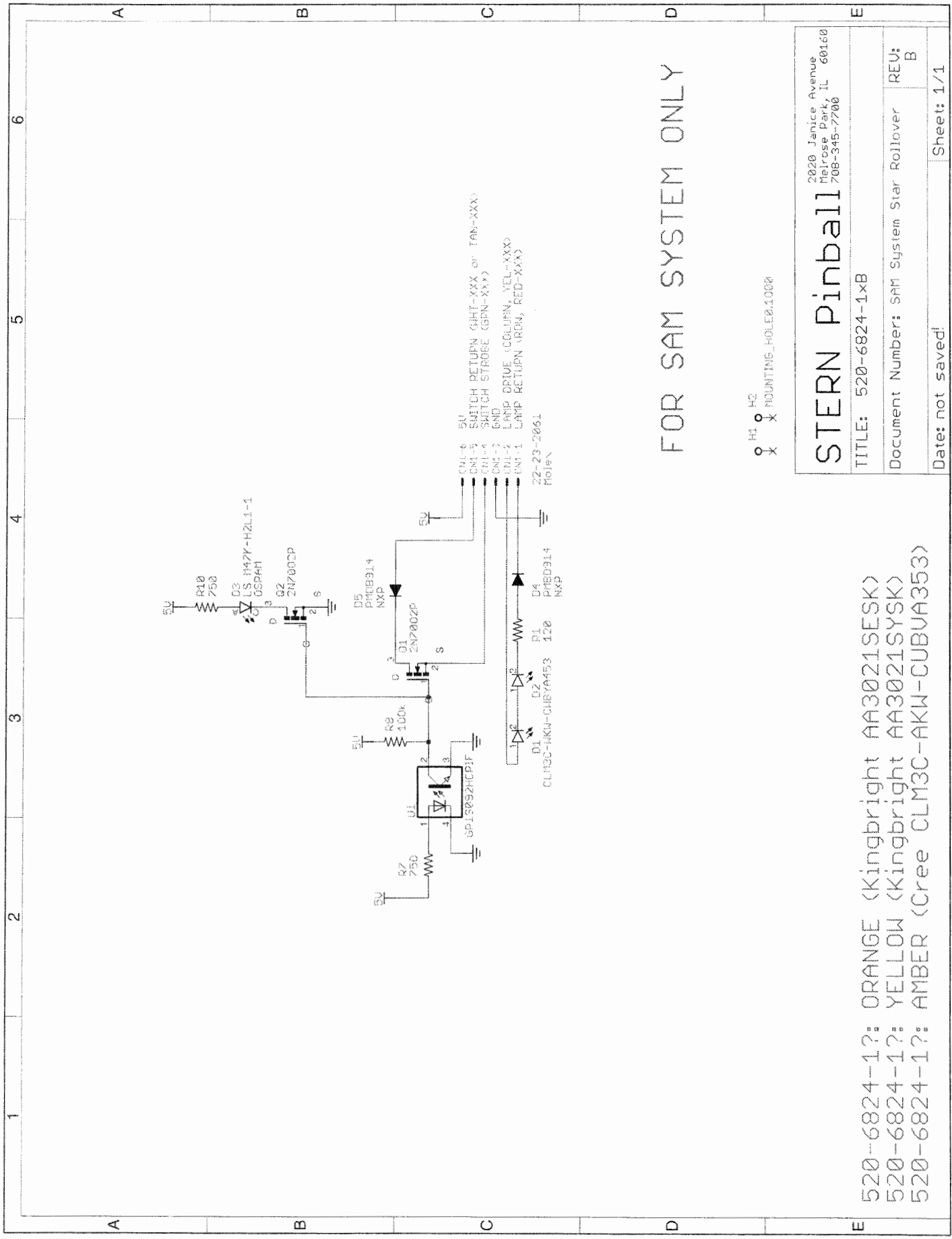
DWN. REYNA	DATE	TITLE	
	04-25-14	DTS Configuration	
1st USE	SCALE	REV	WALKING DEAD (PRO)
	1:1	-	
Stern Pinball, Inc		PART NO.	
2020 JANICE AVE., MELROSE PARK, IL. 60160		DTS-MAP	



# Walking Dead Opto Amplifier Board Wiring Configuration



Date: <b>06-05-14</b>		TITLE	
Scale: <b>N/S</b>	Rev: <b>-</b>	<b>Opto Amplifier Board 5 Wiring</b>	
<b>STERN</b>		DWN. <b>REYNA</b>	PART NO.
		1st USE <b>Walking Dead</b>	
<b>PINBALL, INC.</b>			



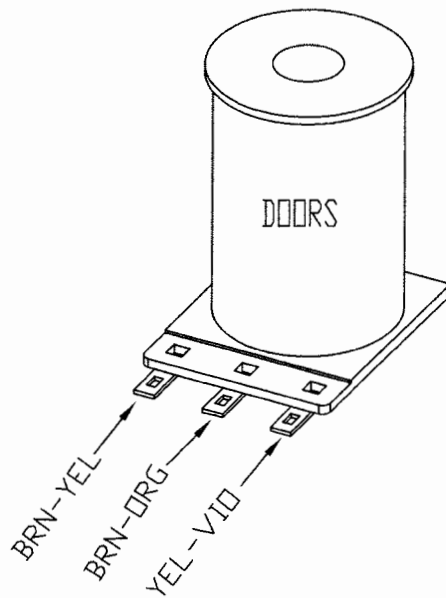
FOR SAM SYSTEM ONLY

H1 H2  
 X X COUNTING\_HOLE0.1000

<b>STERN Pinball</b>		2020 Janice Avenue Metross Park, IL 60160 708-345-7700	
TITLE: 520-6824-1xB		Document Number: SAM System Star Rollover	REV: B
Date: not saved!		Sheet: 1/1	

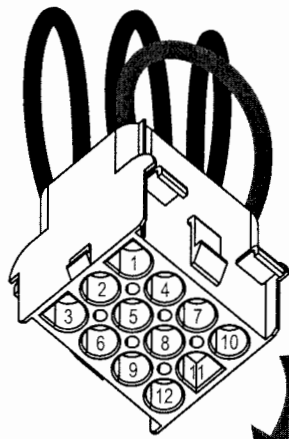
- 520-6824-1?: ORANGE (Kingbright AA3021SESK)
- 520-6824-1?: YELLOW (Kingbright AA3021SYSK)
- 520-6824-1?: AMBER (Cree CLM3C-AKW-CUBVA353)

# **WALKING DEAD TYPICAL DUAL WINDING COIL 090-5083-00-ND WIRING**

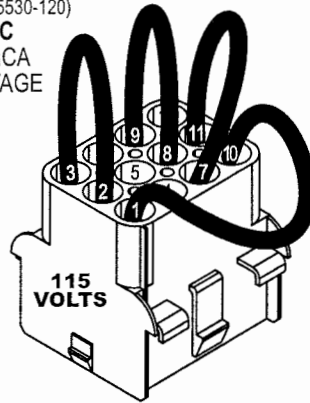


**PRISON  
DOORS**

Cabinet Universal Voltage Jumper Plugs (for use with Universal AC Cable, 036-5530-00 ONLY)

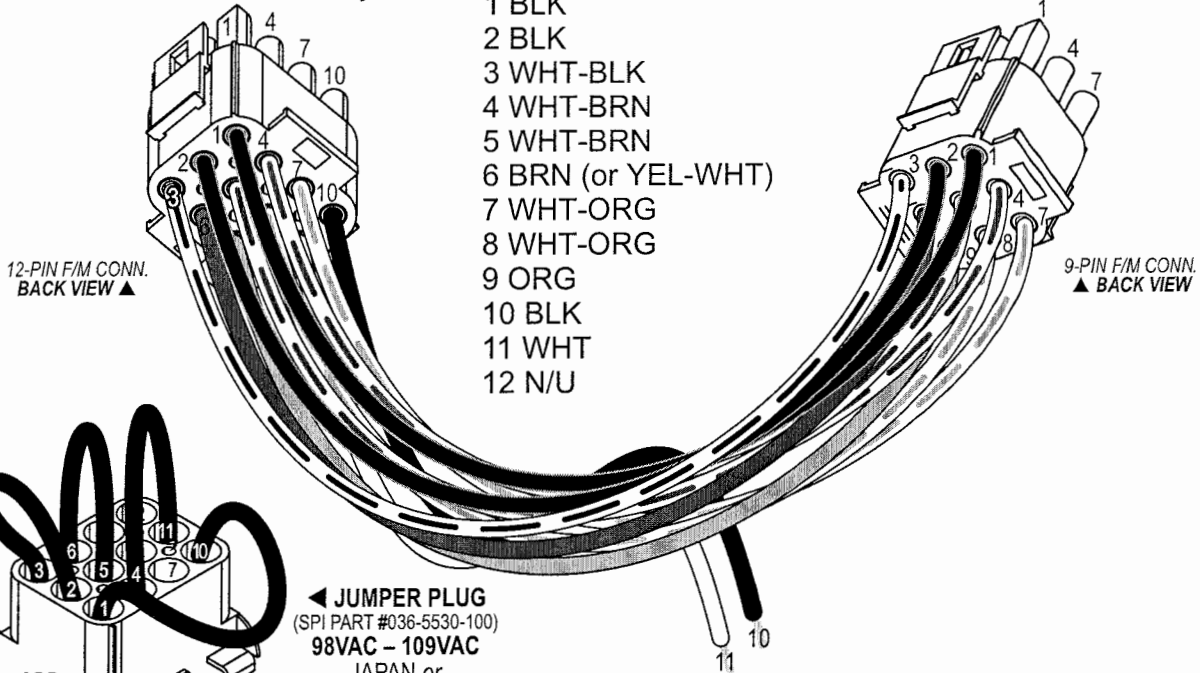


**JUMPER PLUG ▼**  
(SPI PART #036-5530-120)  
**110+VAC**  
N. AMERICA  
LINE VOLTAGE



12-PIN FEMALE SIDE TO JUMPER  
12-PIN MALE SIDE CONNECTOR

9-PIN MALE SIDE TO TRANSFORMER  
9-PIN FEMALE SIDE CONN.

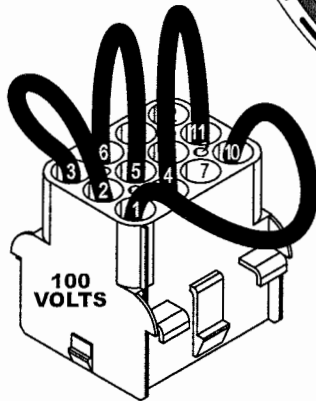


- 1 BLK
- 2 BLK
- 3 WHT-BLK
- 4 WHT-BRN
- 5 WHT-BRN
- 6 BRN (or YEL-WHT)
- 7 WHT-ORG
- 8 WHT-ORG
- 9 ORG
- 10 BLK
- 11 WHT
- 12 N/U

12-PIN F/M CONN.  
BACK VIEW ▲

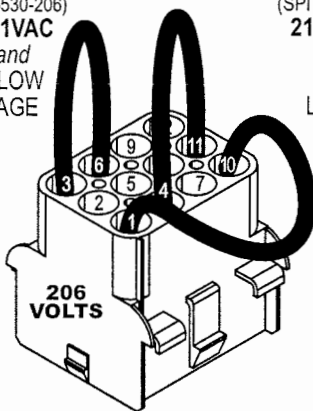
9-PIN F/M CONN.  
▲ BACK VIEW

Black & White wires from  
the POWER BOX, cabinet bottom  
to 12-Pin Conn., Pins 10 & 11..

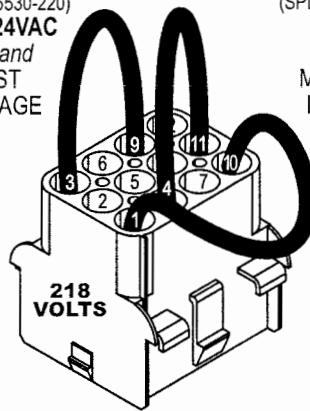


**JUMPER PLUG** ◀  
(SPI PART #036-5530-100)  
**98VAC - 109VAC**  
JAPAN or  
N. AMERICA LOW  
LINE VOLTAGE

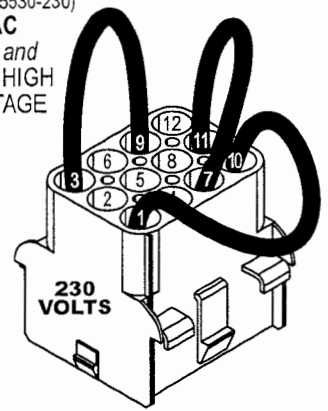
**JUMPER PLUG ▼**  
(SPI PART #036-5530-206)  
**200VAC - 211VAC**  
EUROPE and  
MID. EAST LOW  
LINE VOLTAGE



**JUMPER PLUG ▼**  
(SPI PART #036-5530-220)  
**212VAC - 224VAC**  
EUROPE and  
MID. EAST  
LINE VOLTAGE



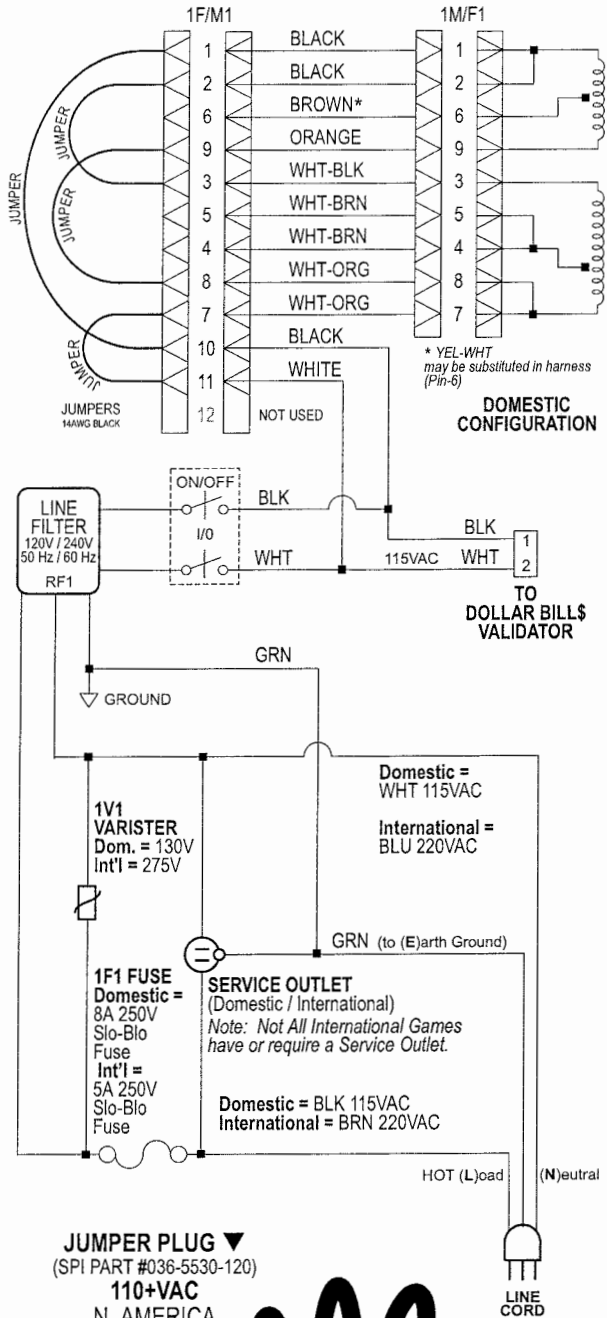
**JUMPER PLUG ▼**  
(SPI PART #036-5530-230)  
**225+VAC**  
EUROPE and  
MID. EAST HIGH  
LINE VOLTAGE



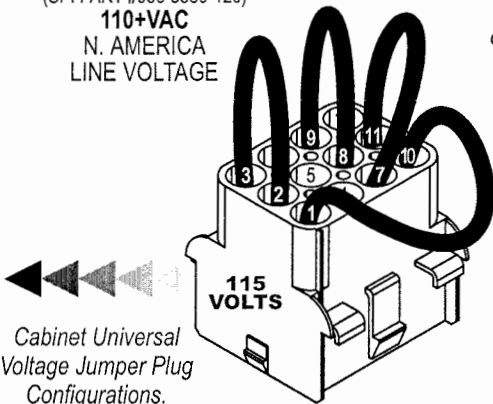
Cabinet Wiring

Cabinet and Coin  
Door Wiring

## Transformer Power Wiring Diagram

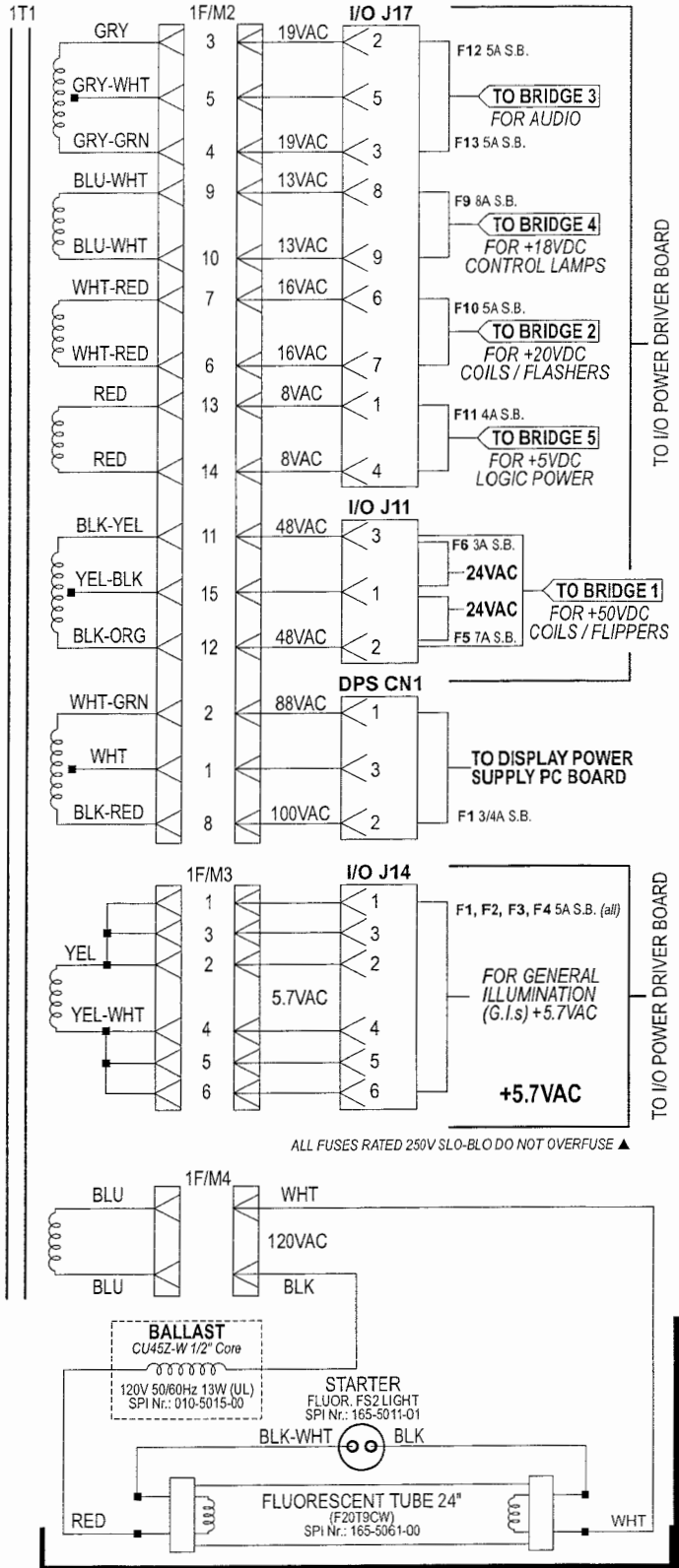


**JUMPER PLUG** ▼  
 (SPI PART #036-5530-120)  
**110+VAC**  
 N. AMERICA  
 LINE VOLTAGE



Cabinet Universal Voltage Jumper Plug Configurations.

## Cabinet and Coin Door Wiring



FLUORESCENT TUBE, STARTER & BALLAST LOCATED IN THE BACKBOX

**Cabinet Wiring**



# Technicians Notes

# STERN® PINBALL, INC. LIMITED WARRANTY

Stern® Pinball, Inc., ("seller") warrants only to the initial purchaser of its products that the items listed below are free from defects in material and workmanship under normal use and service for the *warranty period specified*:

Printed Circuit Boards PCBs (game logic):	2 months
Dot Matrix Display PCB:	9 months

No other parts of seller's product are warranted. Warranty periods are effective from the initial date of shipment from seller to its authorized distributors.

Seller's sole liability shall be, at its option, to repair or replace products which are returned to seller during the warranty periods specified, provided:

1. Seller is notified promptly upon discovery by purchaser that stated products are defective.
2. Such products are properly packaged and then returned freight prepaid, to seller's plant.


This warranty does not apply to any parts damaged during shipment and/or due to improper handling, or due to improper installation or usage, or alteration. In no event shall the seller be liable for any anticipated profits, loss of profits, loss of use, accidental or consequential damages or any other losses incurred by the customer in connection with the purchase of a Stern® Pinball, Inc. product.

## WARRANTY DISCLAIMER

Except as specifically provided in a written contract between seller and purchaser, there are no other warranties, express or implied, including any implied warranties of merchantability or fitness for a particular purpose.

## CAUTIONS, WARNINGS & NOTICES

For safety and reliability, substitute parts and equipment modifications are not recommended (*and may void any warranties*).

 Use of non-Stern® Pinball Inc. parts or modifications of game circuitry, may adversely affect game play, or may cause injuries. Transport pinball games with hinged backbox in the down position only! Always take great care when servicing any game. Always read the service manual before replacing or servicing components. **SUBSTITUTIONS OF PARTS OR EQUIPMENT MODIFICATIONS** may void FCC Type acceptance.



**Always disconnect the line voltage before servicing. Some parts may still hold current when unplugged.**

## WARNING

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a class a computing device pursuant to SUBPART J OF PART 15 OF FCC RULES, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

**RF INTERFERENCE NOTICE:** Cable harness placements and ground strap routing on this game have been designed to keep RF radiation and conduction within levels accepted by the FCC rules. To maintain these levels, reposition harnesses and reconnect ground straps to their original placements, if they become disconnected during maintenance.



- (a) "The appliance has to be placed in a horizontal position."  
(b) "This appliance is not to be cleaned by a *Water Jet*."

603335-7.12.1 (i) "Do not locate this appliance in an area where a *Water Jet* is used." (ii) "Do not clean this appliance with a *Water Jet*." 603335-7.12.5 (b) If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

IEC 60825-1 2ND EDITION AND WAS ISSUED IN 2007

## NOTICES

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**Patrick Powers**  
Director of Technical Support



**Dorothy Brown**  
Part Sales Supervisor



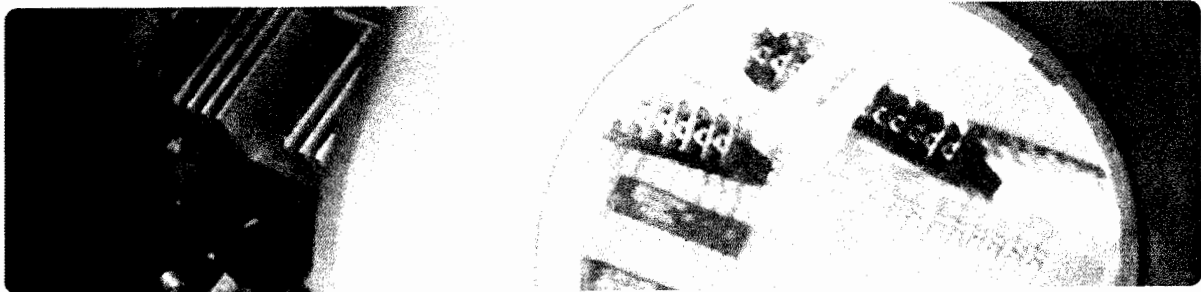
**Chas Siddiqi**  
Technical Support Engineer



**Angel Hernandez**  
Shipping Clerk



## SERVICE & SUPPORT



### Service Bulletins

Click Here to view Our Service Bulletins

- Cautions, Warnings & Notices (Image file from the last page in Service Game Manual.)

### Coins & Coin Inserts

Click Here to view Our Full List of Schematics, Theory of Operation and Troubleshooting Tips.

- Current S.A.M. System Games complete Schematic Section
- Archived Drawings for the White Star Board System™

### Manuals & Downloads

Click Here to view Our Coin Card Charts

- Offering a range of Coinage Cards for download
- Country Setting, Pricing Scheme, Dip Switch Setting
- New Default Pricing to USA 10 (for USA Games ONLY)
- Custom Pricing Demonstration (for S.A.M. System)

### Game Code Library

Click Here to view Our Game Code Library

- Offering S.A.M. System Game Code
- Offering archived White Star Game Code for all Data East®, Sega™ and STERN® Pinballs (EPROM Programmer required)

### Parts

Click Here to view Our Parts information

- 2006 - 2008+ Complete Pinball Service Game Manuals in PDF Format available (includes parts and schematics).
- 2004 - 2005 Select Pinball Service Game Manual Excerpts only : Parts Identification & Location (The Pink Pages), Drawings for Major Assemblies & Ramps (The Blue Pages)
- Appendixes A - J (updated with each game)

### Repair

- NTE Semi-Conductor Cross Reference
- Audio Shack Component Catalogue

### Warranty

Check Here to fill out our online warranty card.

### Tricks & Tips

Click Here to view Our Full List of Tricks & Tips

- Pinball Machine Foam Cushion Packing
- 1st Time Pinball Set-Up & Preventative Maintenance
- Pinball Location Maintenance
- How to Update Your Game Code (S.A.M. System)

U.S. Customary Inch Ruler



# 800-KICKERS

5 4 2 5 3 7 7

**SPI Part Number**  
780-50F8-00