

You can get this game at [www.magic-play.eu](http://www.magic-play.eu)



**PRO**

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#### **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 of 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  
**780-50E4-00**

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# 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**

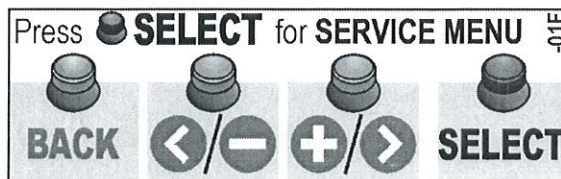
\* to get the Data Storage Device with the latest **Game Code** copied to it, add "game title" to above part number.

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).

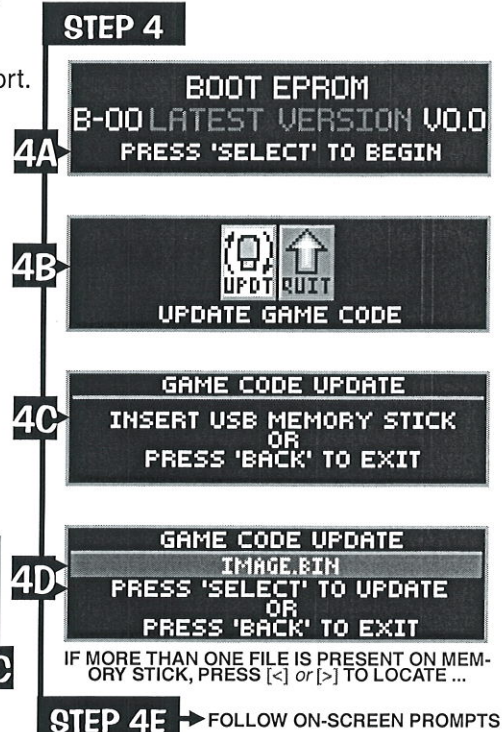
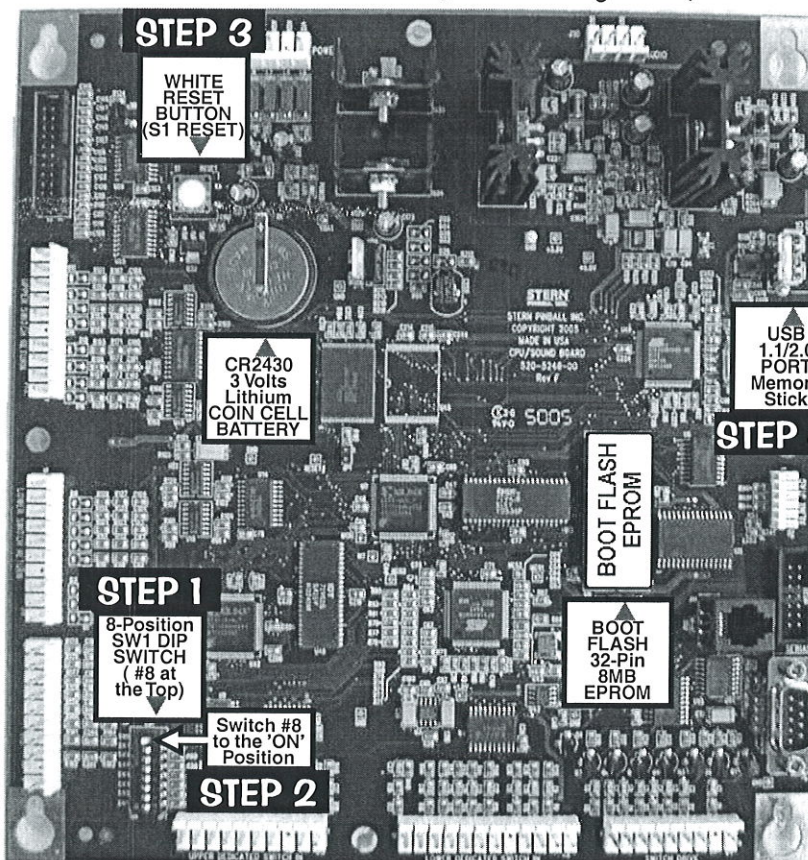
Upon power-up the display will describe the version of code installed in your game. When directed to do so (via Service Bulletin or website announcement) you will need to update your code ... with the **BOOT FLASH EPROM**\* installed, here's how:

- 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).



### Optional Kits available through your Distributor:

Flipper Rebuild Kit (Left) ..... 500-6307-10

Flipper Base Plate Kit (Left)..... 515-6617-01

*Kit includes:* Flipper Base Plate (Left) pre-threaded with securing hardware; see the Flipper Drawing for view.

Flipper Rebuild Kit (Right) ..... 500-6307-00

Flipper Base Plate Kit (Right)..... 515-6617-00

*Kit includes:* Flipper Base Plate (Left) pre-threaded with securing hardware; see the Flipper Drawing for view.

Pinball Location Maintenance Standard Kit (for STAR TREK LE Pinball) ..... 502-6002-E6

*Standard Kit includes :* 8 oz. Novus Wax #2 Fine (Red) (675-0003-01), Cloth, Rubber Rings (used above playfield), Bulbs (Bulb quantities vary and is limited to 25 per type), Fuses (1/per type) and 4 Pinballs. **Note:** Quanties, sizes and contents subject to change without notice.

Pinball Location Maintenance Deluxe Kit (for STAR TREK LE Pinball)..... 502-6003-E6

*Deluxe Kit includes :* Pinball Location Maintenance Standard Kit as described above plus a quantity of Flipper Rebuild Kits. **Note:** Quantity varies which equals the same quantity of flippers used in this game.

▲ THIS GAME KIT INCLUDES ( 2 ) FLIPPER REBUILD KITS ▲

Plastic\*Kit (for STAR TREK PRO Pinball).....803-5000-E4

*Plastic Kit includes:* Plastic Sets ( 830-6193-XX,830-6194-XX,830-6931-XX,830-6935-XX)

Plastics\*Kit (for STAR TREK LE Pinball) ..... 803-5000-E6

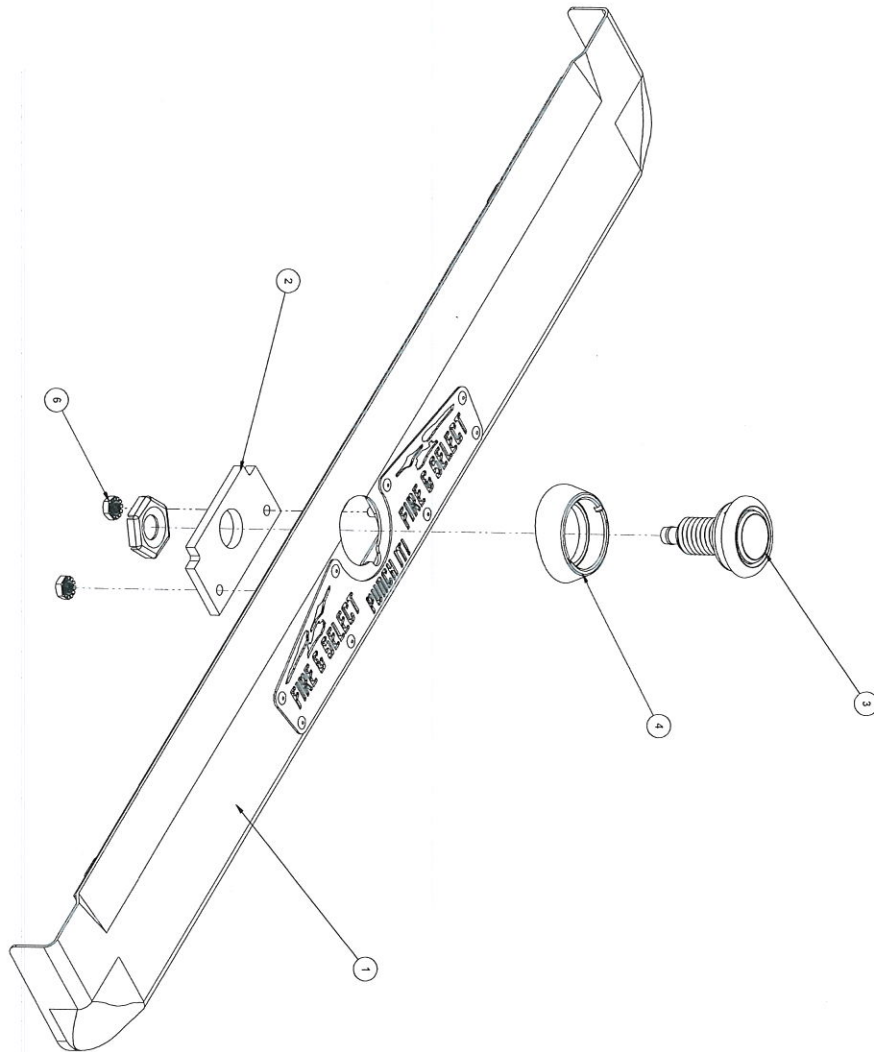
*Plastics Kit includes:* Plastic Set (830-6194-XX,830-6929-XX,830-6931-XX,830-6935-XX,)

Decals\*Kit (for STAR TREK LE,PRE,Pro Pinball) ..... 802-5000-E4

*Decals Kit includes:* Decal Set  
(820-7016-XX,820-8026-00,820-8027-XX,820-8025-XX,820-8028-XX,820-8031-XX)

**\*Attention:** No individual Plastic or Decal can be ordered separately, unless noted otherwise. Plastics & Decals are subject to change without notice during and / or after production. Key Fobs subject to availability and may or may not be included in the plastic set. All designs, shapes & pieces used subject to change without notice. Kit contents subject to change. Service Bulletin(s) will announce any critical changes, if warranted. The last 2-digits shown on plastics or decals are for reference only.



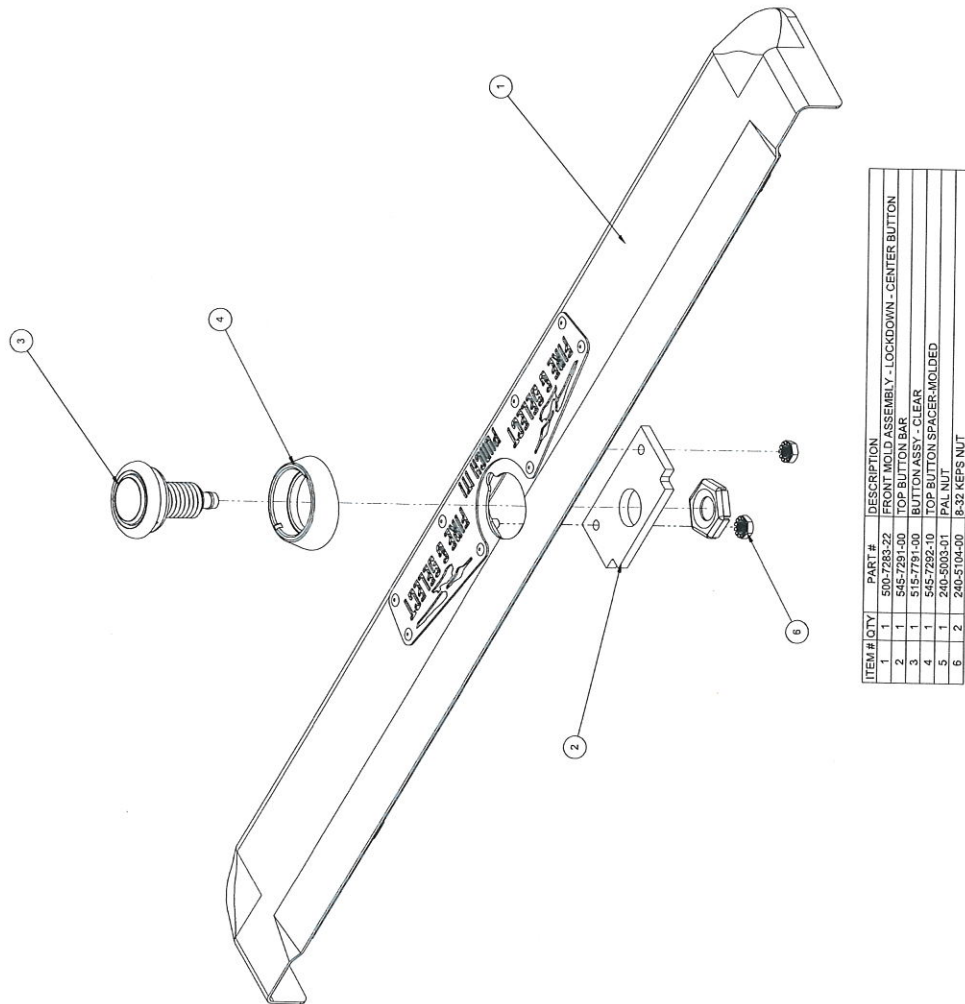


| ITEM # | QTY | PART #      | DESCRIPTION                                    |
|--------|-----|-------------|--|
| 1      | 1   | 500-7283-58 | FRONT MOLD ASSEMBLY - LOCKDOWN - CENTER BUTTON |
| 2      | 1   | 545-7291-00 | TOP BUTTON BAR                                 |
| 3      | 1   | 515-7791-00 | BUTTON ASSY - CLEAR                            |
| 4      | 1   | 545-7292-10 | TOP BUTTON SPACER-MOLDED                       |
| 5      | 1   | 500-5003-01 | PAL NUT  |
| 6      | 2   | 540-5104-00 | 1/8-32 XPS NUT                                 |

FRT MOLD FINAL ASSY - LOCKDOWN - CENTER BUTTON

500-9838-58





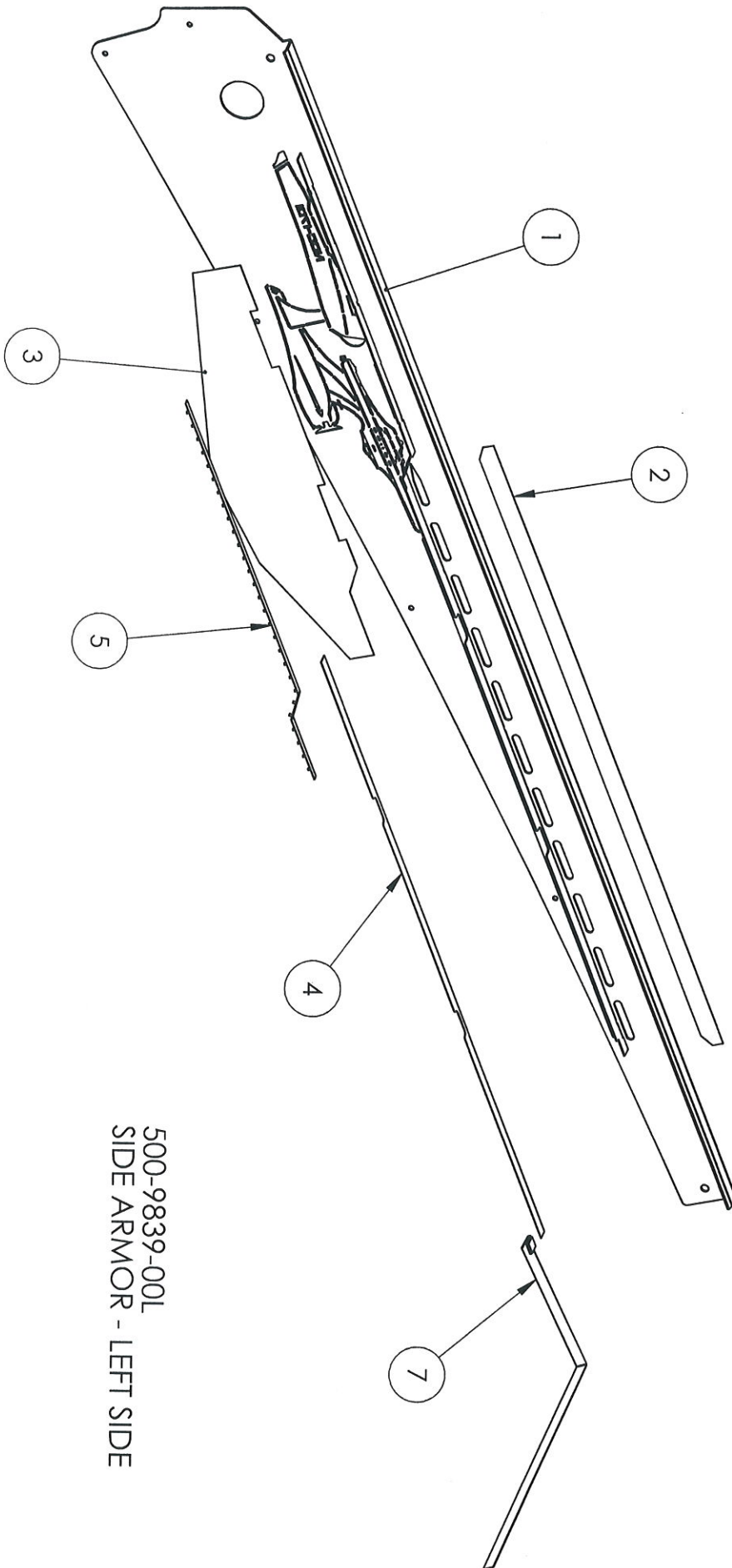
| ITEM # | QTY | PART #      | DESCRIPTION                                    |
|--------|-----|-------------|--|
| 1      | 1   | 500-7283-22 | FRONT MOLD ASSEMBLY - LOCKDOWN - CENTER BUTTON |
| 2      | 1   | 545-7291-00 | TOP BUTTON BAR                                 |
| 3      | 1   | 515-7791-00 | BUTTON ASSY - CLEAR                            |
| 4      | 1   | 545-7282-10 | TOP BUTTON SPACER-MOLDED                       |
| 5      | 1   | 240-5003-01 | PLA NUT  |
| 6      | 2   | 240-5104-00 | 1/8" KEYS NUT                                  |

FRT MOLD FINAL ASSY - LOCKDOWN - CENTER BUTTON

500-9838-22



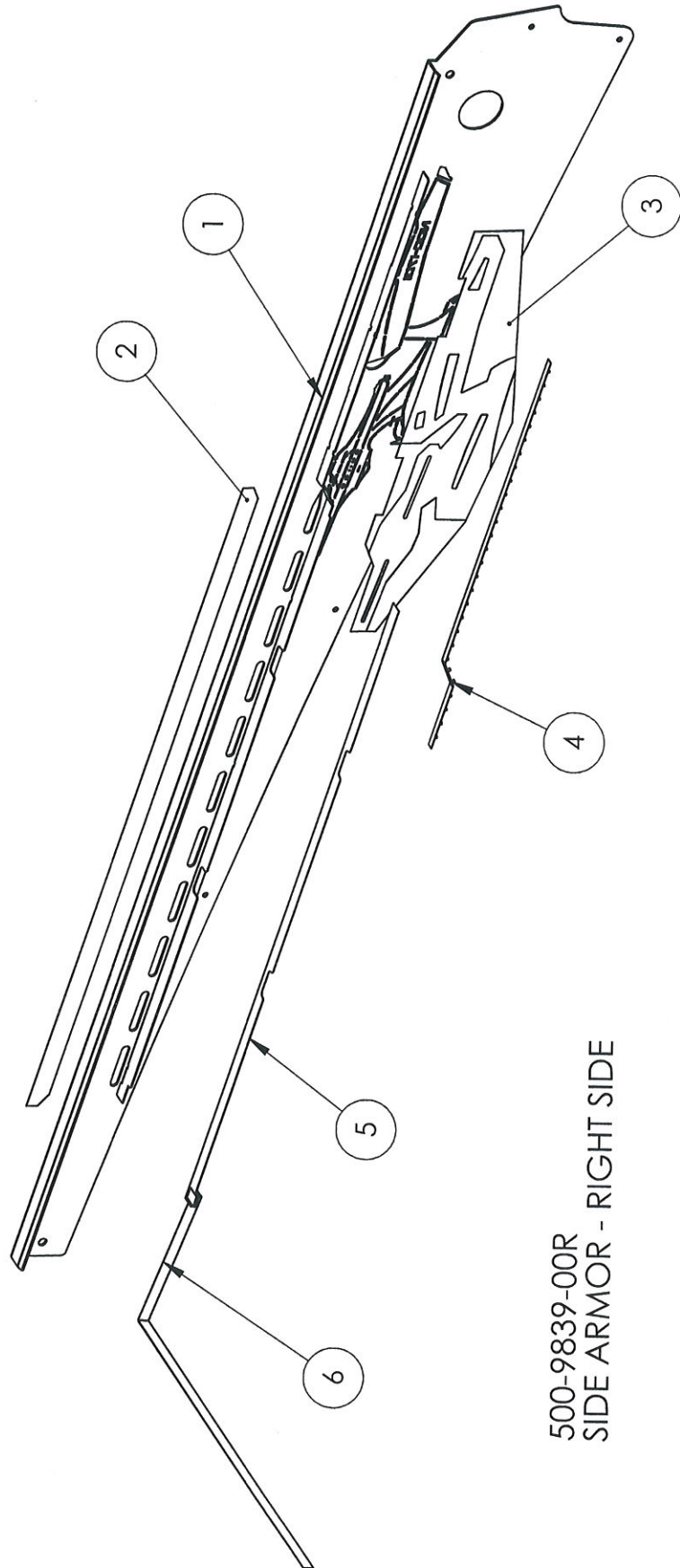
| ITEM | QTY. | PART NUMBER     | DESCRIPTION                |
|------|------|-----------------|----------------------------|
| 1    | 1    | 535-0678-00L    | SIDE ARMOR, BILL           |
| 2    | 1    | 830-6932-00     | PHASER LENS, BILL ARMOR    |
| 3    | 1    | 830-6934-00L    | SHIP LENS, BILL ARMOR      |
| 4    | 1    | 520-6809-02     | PHASER LEDS, BILL          |
| 5    | 1    | 520-6809-03     | BLUE LEDS SIDE ARMOR, BILL |
| 6    | 6    | 040-5001-00B    | 4.0" CABLE TIE, BLACK      |
| 7    | 1    | 604-5002-08-18L | FLAT RIBBON CABLE          |



500-9839-00L  
SIDE ARMOR - LEFT SIDE



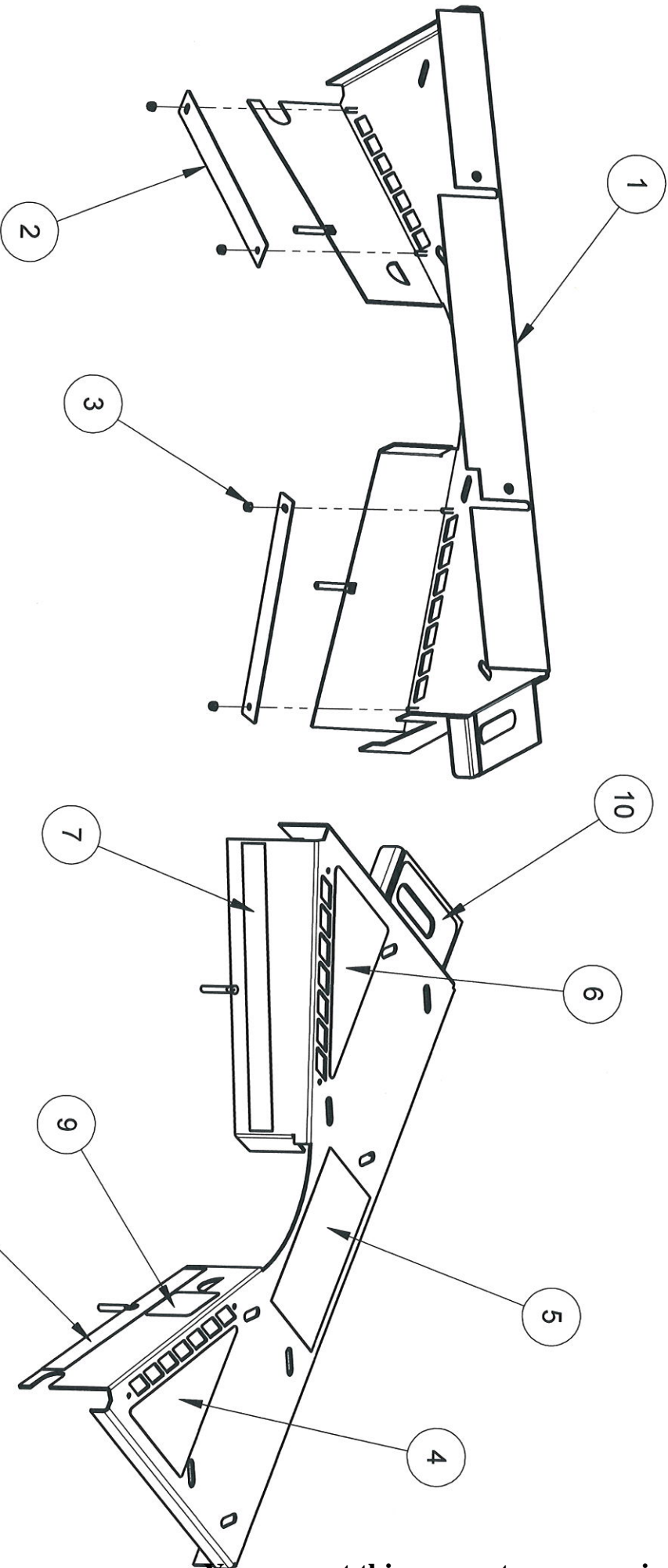
| ITEM | QTY. | PART NUMBER    | DESCRIPTION                |
|------|------|----------------|----------------------------|
| 1    | 1    | 535-0678-00R   | SIDE ARMOR, BILL           |
| 2    | 1    | 830-6932-00    | PHASER LENS, BILL ARMOR    |
| 3    | 1    | 830-6934-00R   | SHIP LENS, BILL ARMOR      |
| 4    | 1    | 520-6809-03    | BLUE LEDs SIDE ARMOR, BILL |
| 5    | 1    | 520-6809-01    | PHASER LEDs, BILL          |
| 6    | 1    | 604-5002-08-18 | FLAT RIBBON CABLE          |
| 7    | 6    | 040-5001-00B   | 4.0" CABLE TIE, BLACK      |



500-9839-00R  
SIDE ARMOR - RIGHT SIDE

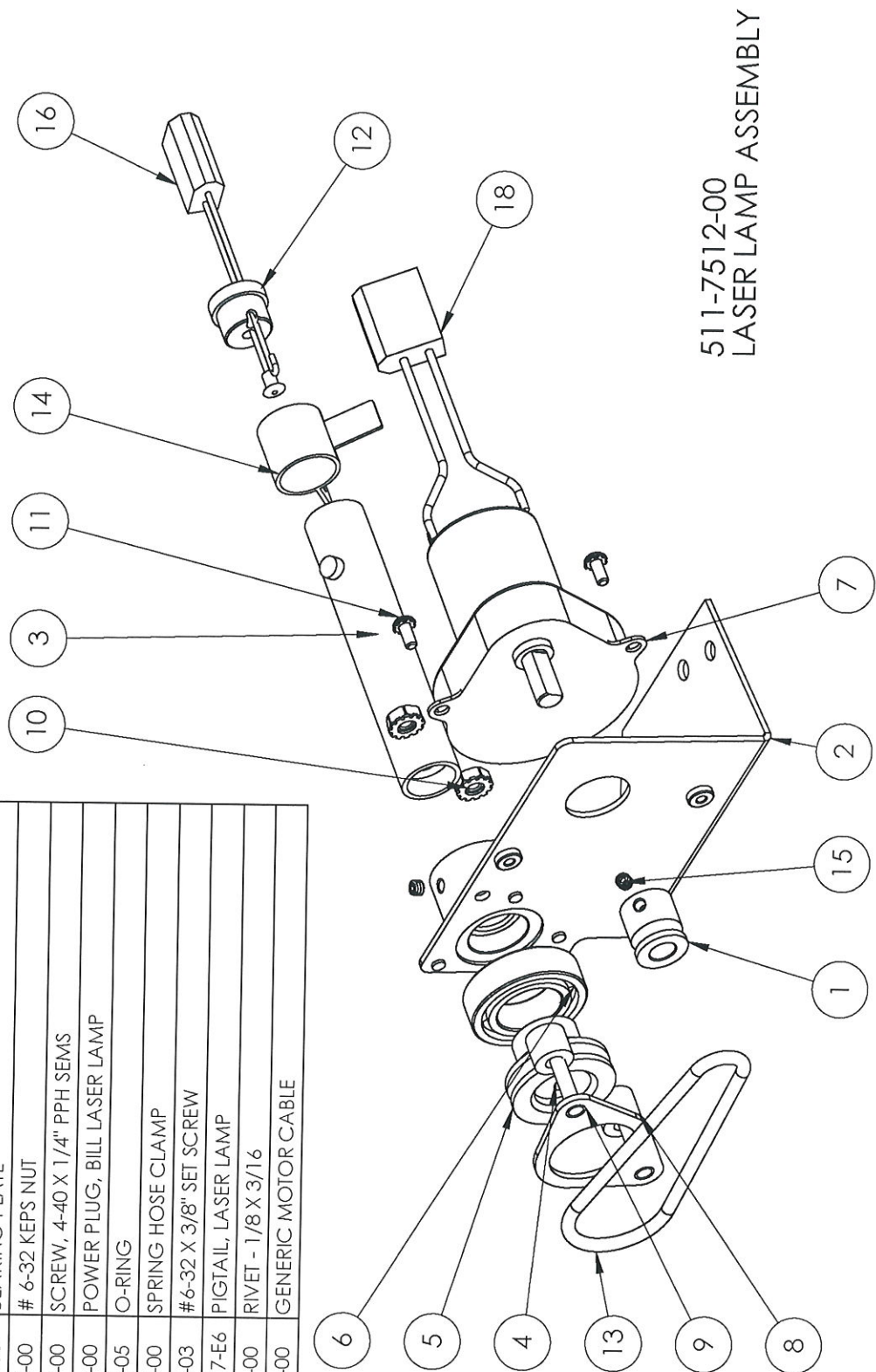
| ITEM NO. | PART NUMBER  | DESCRIPTION                                     | QTY. |
|----------|--------------|---|------|
| 1        | 510-7477-01  | BOTTOM ARCH, STEEL W/ SPADE BOLTS - GLOSS BLACK | 1    |
| 2        | 545-7304-01  | PLASTIC SCREEN, ARCH, BILL LE                   | 2    |
| 3        | 240-5303-00  | 4-40 NYLON LOCK NUT                             | 4    |
| 4        | 820-7016-07  | DECAL #7, ARCH LEFT, BILL LE                    | 1    |
| 5        | 820-7016-08C | DECAL #8, ARCH CENTER, BILL LE                  | 1    |
| 6        | 820-8036-00  | DECAL, PHOTOSENSITIVE SEIZURE WARNING, BILL LE  | 1    |
| 7        | 545-5212-04  | MYLAR PROTECT STRIP 7-5/8"                      | 1    |
| 8        | 545-7879-00  | MYLAR PROTECT STRIP, BILL LE                    | 1    |
| 9        | 820-8034-01  | DECAL, LASER WARNING (SMALL), BILL LE           | 1    |
| 10       | 820-7016-06  | DECAL #6, SHOOTER GUIDE, BILL LE                | 1    |

**ASSEMBLY, ARCH W/ SCREENS  
STAR TREK LE / PREMIUM  
500-6005-E6/-E5**



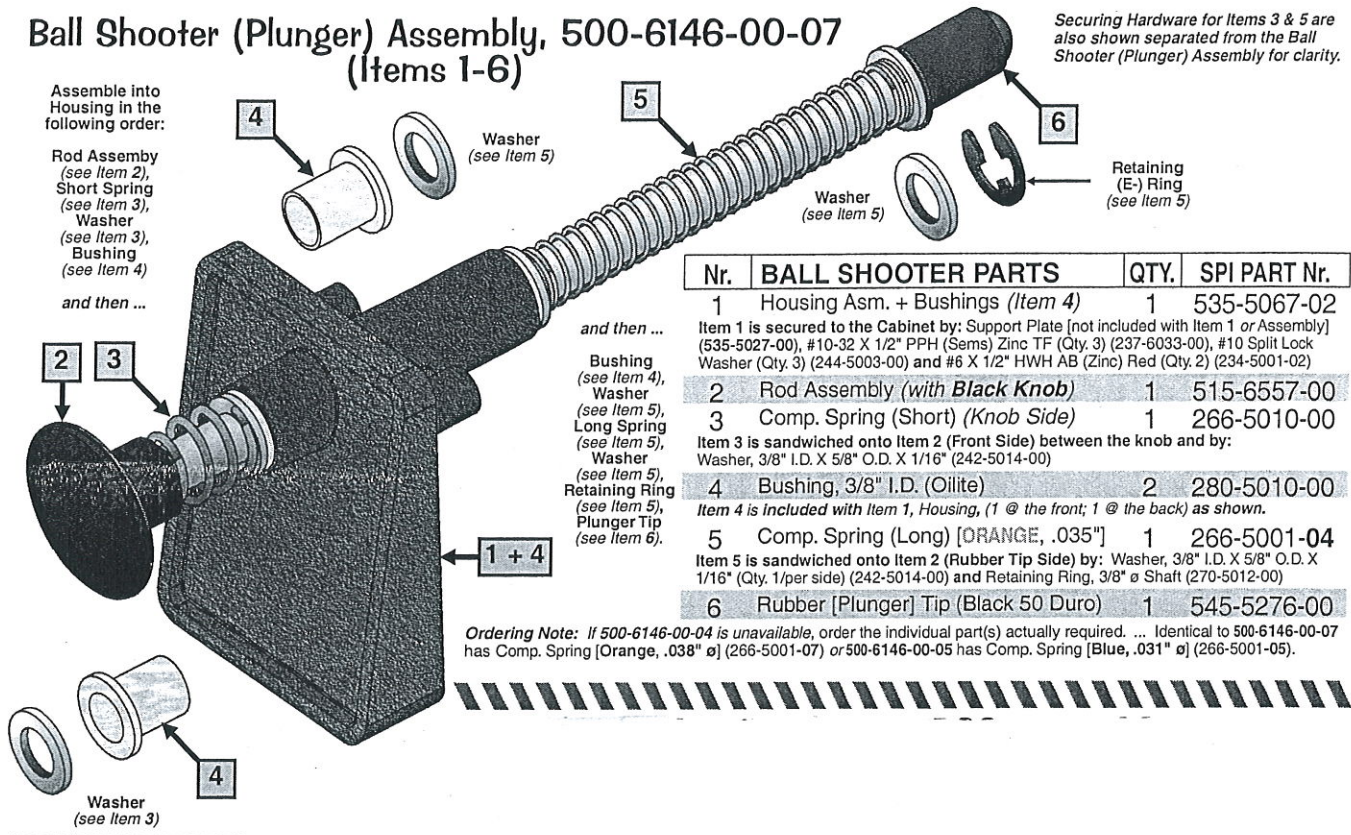


| ITEM | QTY. | PART NUMBER    | DESCRIPTION                                     |
|------|------|----------------|---|
| 1    | 1    | 530-7857-00    | DRIVE PULLEY                                    |
| 2    | 1    | 515-0189-00    | MTG BRKT, BILL LASER LAMP                       |
| 3    | 1    | 560-0001-01    | LASER TUBE, BILL LE                             |
| 4    | 1    | 560-0001-02    | LENS 1-BILL LE                                  |
| 5    | 1    | 530-7858-00    | LENS PULLEY                                     |
| 6    | 1    | 283-5013-00    | ROLLER BEARING                                  |
| 7    | 1    | 041-5111-00    | MOTOR, 24 VDC, 12 RPM - CLUTCHED                |
| 8    | 2    | 254-5000-20    | NYLON SPACER - BLACK - 3/8 OD X .175 ID X 5/16" |
| 9    | 1    | 515-0188-00    | BEARING PLATE                                   |
| 10   | 2    | 240-5008-00    | # 6-32 KEPS NUT                                 |
| 11   | 2    | 237-5909-00    | SCREW, 4-40 X 1/4" PPH SEMS                     |
| 12   | 1    | 530-7859-00    | POWER PLUG, BILL LASER LAMP                     |
| 13   | 1    | 545-7862-05    | O-RING  |
| 14   | 1    | 270-5408-00    | SPRING HOSE CLAMP                               |
| 15   | 2    | 237-5838-03    | #6-32 X 3/8" SET SCREW                          |
| 16   | 1    | 036-5605-17-E6 | PIGTAIL, LASER LAMP                             |
| 17   | 1    | 249-5001-00    | RIVET - 1/8 X 3/16                              |
| 18   | 1    | 036-5552-00    | GENERIC MOTOR CABLE                             |

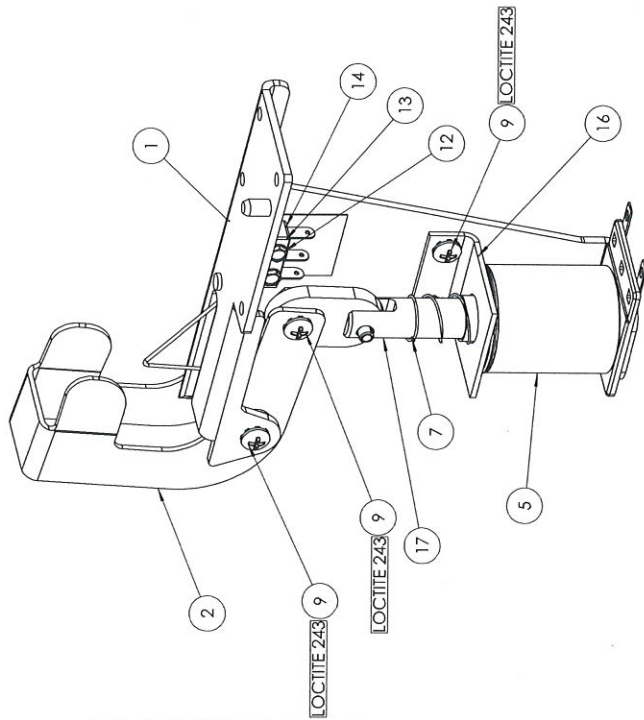


511-7512-00  
LASER LAMP ASSEMBLY

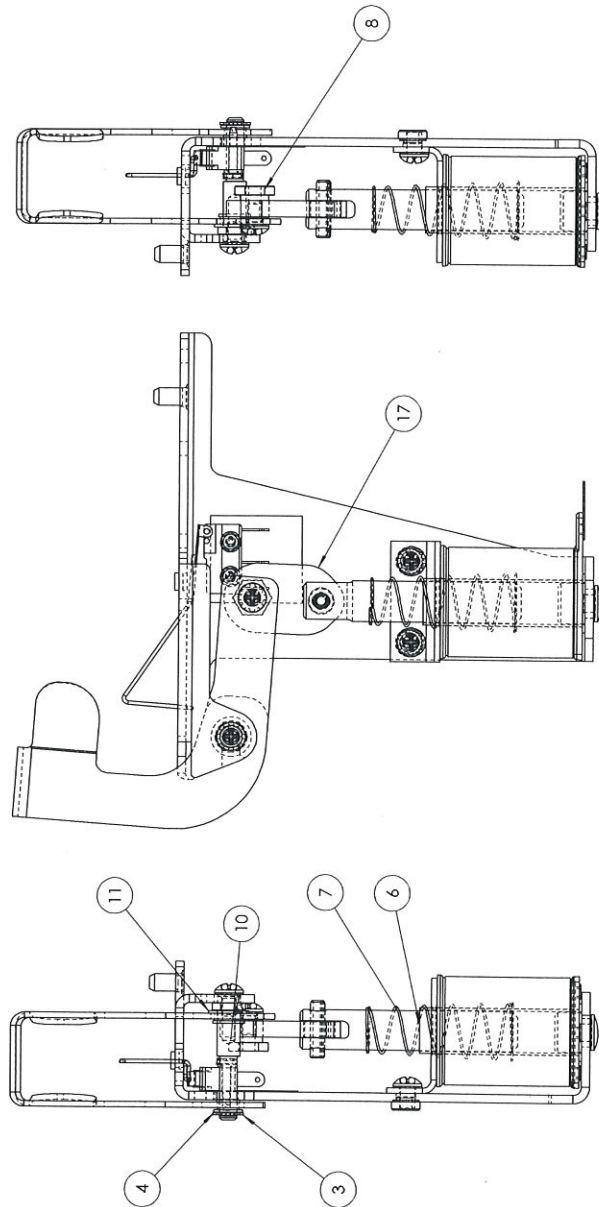
## Ball Shooter (Plunger) Assembly, 500-6146-00-07 (Items 1-6)







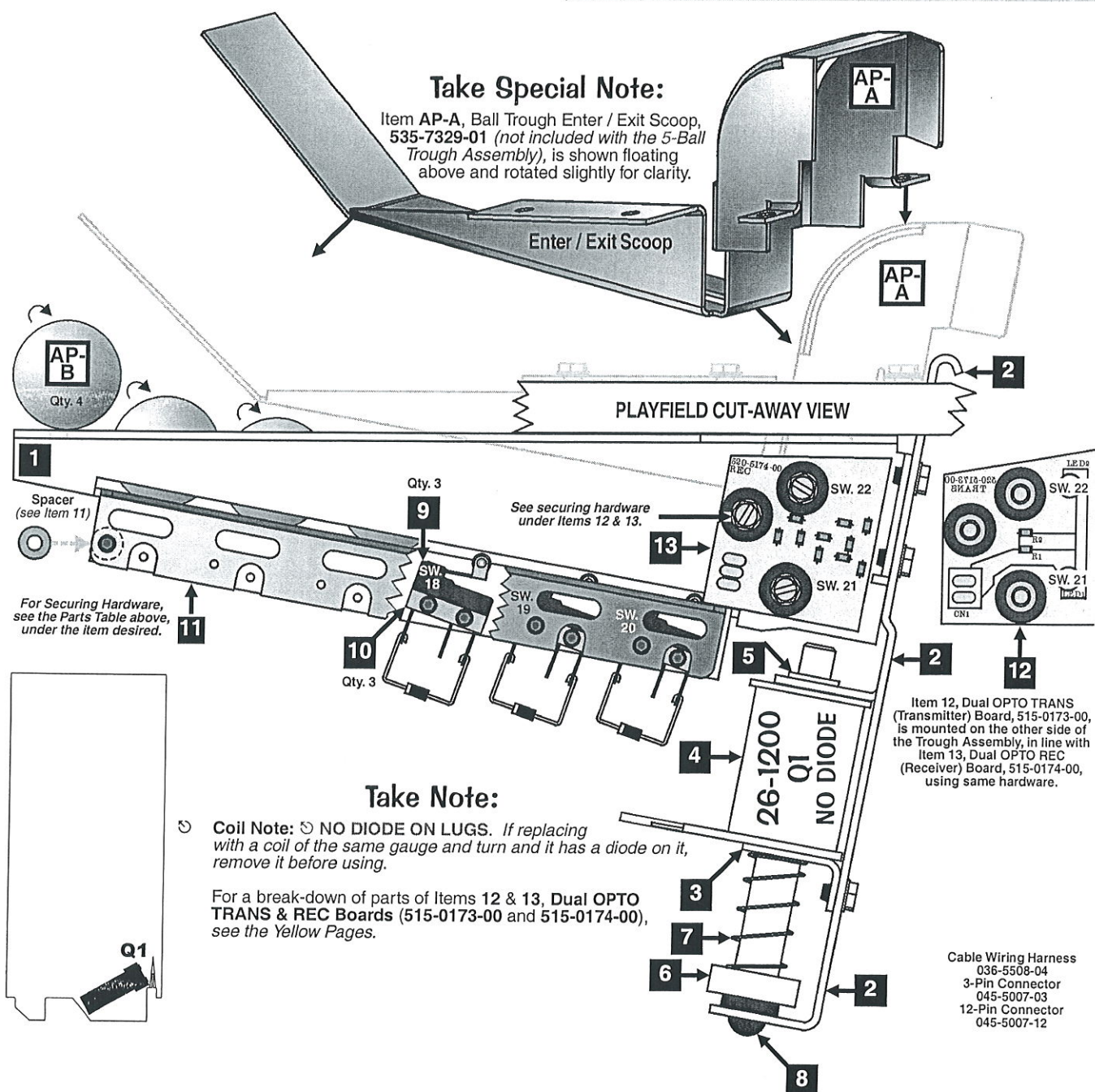
| ITEM NO. | QTY. | PART NUMBER | DESCRIPTION                    |
|----------|------|-------------|--------------------------------|
| 1        | 1    | 515-9689-00 | MAIN BRKT. AUTO-PLUNGER        |
| 2        | 1    | 535-0728-00 | KICKER ARM. AUTO-PLUNGER       |
| 3        | 1    | 270-5001-00 | RETAINING RING. 3/16" SHAFT OD |
| 4        | 1    | 545-5352-00 | NYLINER. 3/16" SHAFT           |
| 5        | 1    | 090-5001-ND | COIL - 23-800, NO DIODE        |
| 6        | 1    | 545-5411-00 | COIL SLEEVE                    |
| 7        | 1    | 266-5020-00 | COMPRESSION SPRING-CONICAL     |
| 8        | 1    | 530-7834-00 | PIN: KICKER ARM, AUTO-PLUNGER  |
| 9        | 4    | 232-5300-00 | SCREW, 8-32 X 1/4" PPH SEMS    |
| 10       | 1    | 530-7835-00 | PIVOT, AUTO-PLUNGER            |
| 11       | 1    | 545-5423-00 | NYLINER, 1/4" SHAFT, 4L1-FF    |
| 12       | 2    | 237-5937-02 | SCREW, 2-56 X 1/2" HWH MS      |
| 13       | 1    | 535-6539-00 | SWITCH BODY PROTECT PLATE      |
| 14       | 1    | 180-5157-01 | P/F ROLLOVER SWITCH - UTE      |
| 15       | 1    | 545-6268-00 | FISCHE PAPER                   |
| 16       | 1    | 535-9959-00 | STOP BRKT                      |
| 17       | 1    | 515-6304-03 | PLUNGER / LINK ASSEMBLY        |



**You can get this game at [www.magic-play.eu](http://www.magic-play.eu)**  
**4-Ball Trough Assembly, 500-6318-24-ND (Items 1-13)**  
**and Associated Parts: See Parts Table Below.**

**Ordering Note:** Identical to 500-6318-14 with exceptions, see note below Item 13 (Parts Table).

| Nr.  | 4-BALL TROUGH PARTS                        | QTY. | SPI PART Nr. | Nr.   | 4-BALL TROUGH PARTS            | QTY. | SPI PART Nr. |
|--|--|------|--------------|---|--------------------------------|------|--------------|
| 1  | Ball Trough Outhole Mounting Bracket       | 1    | 515-6580-01  | 11  | Trough Ball Guide Plate        | 1    | 535-7801-00  |
| Item 1 is secured below the playfield by: #8 X 1/2" SHWH AB (Zc.) (Qty. 4) (234-5101-00) |  |      |              | Item 11 is secured to Item 1 by: 1/4" X 5/16" X .144" I.D. Spacer Tap. (Qty. 1) (254-5014-03) and #2-56 X 1/2" HWH (Ser) UNS #4HD TR3 BO (Qty. 4) (237-5937-02)   |                                |      |              |
| 2  | Coil Mounting Bracket                      | 1    | 535-7330-01  | 12  | Dual OPTO TRANS Board Assembly | 1    | 515-0173-00  |
| Item 2 is secured to Item 1 by: #8-32 X 3/8" HWH Swage (Sr.) Zinc (Qty. 4) (237-5975-00) |  |      |              | Items 12 & 13 are secured by: #6-32 X 5/8" HWH Swg (Ser) Zc (Qty. 3/per) (237-5976-04)  |                                |      |              |
| 3  | Coil Retaining Bracket                     | 1    | 535-5203-03  | 13  | Dual OPTO REC Board Assembly   | 1    | 515-0174-00  |
| Item 3 is secured to Item 2 by: #8-32 X 1/4" SHWH (Serr) Zinc (Qty. 2) (237-5975-04)     |  |      |              | For Individual Items use : Dual OPTO Transmitter Board (Qty. 1) (520-5173-00), Dual OPTO Receiver Board (Qty. 1) (520-5174-00), OPTO PCB Tube Spacer (Brass) (Qty. 3/per) (530-5308-02) and OPTO PCB Rubber Grommet (Qty. 3/per) (545-5518-00)  |                                |      |              |
| 4  | Coil, 26-1200 [ NO DIODE ]                 | 1    | 090-5044-ND  | Ordering Note: If 500-6318-24-ND is unavailable, order the individual part(s) actually required. This assembly is identical to 500-6318-14-ND, -15 or -25 except for the quantity of Items 9 & 10 (Qty. 4/per on 5-Ball Trough) and Item 11, required when a Magnet Mech. is used in the game. -ND means no diode on Item 4, Coil, 26-1200. |                                |      |              |
| COIL DOES NOT REQUIRE A DIODE. SEE ♡ COIL NOTE BELOW FOR DETAILS.                        |  |      |              | ASSOCIATED PARTS ARE NOT INCLUDED WITH THE ABOVE ASSEMBLY.  |                                |      |              |
| 5  | Coil Sleeve (Short) (Formost #10-7077)     | 1    | 545-5076-01  | Nr.   | ASSOCIATED PART(S)             | QTY. | SPI PART Nr. |
| 6  | Steel & Nylon Plunger Asm. (3.57")         | 1    | 515-7309-01  | AP-A  | Ball Trough Enter / Exit Scoop | 1    | 535-7329-01  |
| 7  | Compression (Return) Spring                | 1    | 266-5020-00  | Item AP-A secured to the playfield by: #8 X 1/2" SHWH AB (Zinc) (Qty. 4) (234-5101-00).   |                                |      |              |
| 8  | Rubber Bumper (Grommet)                    | 1    | 545-5105-00  | AP-B  | Steel Balls (1-1/16" ø)        | 4    | 260-5000-00  |
| 9  | Micro Switch (Roller Actuator, Lite-Force) | 3    | 180-5119-02  |   |                                |      |              |
| Item 9 requires: Heat Shrink Tubing 1/8" ø PUI-24 (Qty. 1*/per) (605-5006-00)            |  |      |              |   |                                |      |              |
| Switch has a Diode (1N4004) (112-5003-00). Can be replaced with (1N4001) (112-5001-00).  |  |      |              |   |                                |      |              |
| 10   | Switch Body Protect Plate                  | 3    | 535-6539-00  |   |                                |      |              |



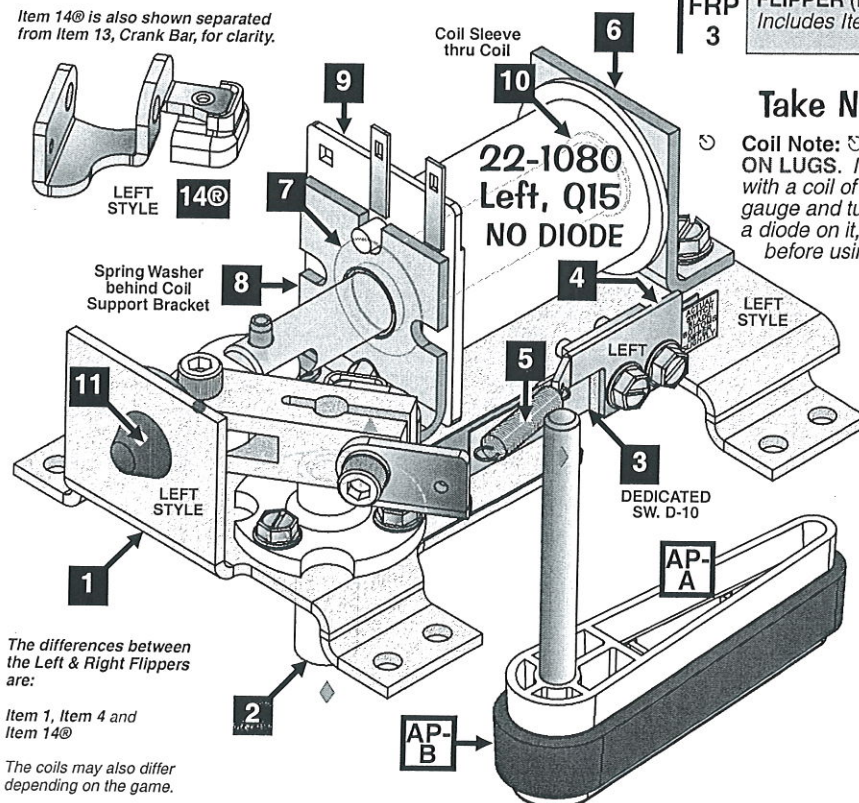


# Flipper (Left) Assembly, 500-6543-12-ND (Items 1-15)

and Associated Parts: White Flipper Bat & Shaft Asm., 515-5133-08-06 (Items AP-A / AP-B)

| Nr.  | FLIPPER (LEFT) PARTS                            | QTY. | SPI PART Nr. |
|--|---|------|--------------|
| 1  | Flipper Base Plate (LEFT)                       | 1    | See FRP1     |
| Item 1 is secured below by: #8 X 1/2" SHWH AB (Zinc) (Qty. 8) (234-5101-00)<br>Ordering Note: Individual Part (535-7275-01) is not prethreaded, see Item FRP1.   |   |      |              |
| 2  | Flipper Bat Bushing (White Plastic) .25" Ø I.D. | 1    | 545-5070-00  |
| Item 2 is secured to Item 1 by: #6-32 X 3/8" HWH Swage (Ser.) Zc. (Qty. 3) (237-5976-02)   |   |      |              |
| 3  | Power (EOS / End-of-Stroke) Switch              | 1    | 180-5149-00  |
| Item 3 is secured to Item 1 by: #6-32 X 5/8" HWH Swage (Ser.) Zc. (Qty. 2) (237-5976-04)   |   |      |              |
| 4  | Sw. Plate/Spring Return Brkt. (LEFT)            | 1    | 535-7354-01  |
| 5  | Flipper Return Spring                           | 1    | 265-5035-00  |
| 6  | Coil Stop Bracket Sub-Assembly                  | 1    | 515-6308-01  |
| Item 6 is secured to Item 1 by: #10-32 X 3/8" SHWH Swage (Ser.) Zinc (Qty. 2) (237-5985-00) and #10 Split Lock Washer (Qty. 2) (244-5003-00)   |   |      |              |
| 7  | Spring Washer (17/32" ID X 3/4" X 1")           | 1    | 269-5002-00  |
| 8  | Coil Support Bracket                            | 1    | 535-7356-00  |
| Item 8 is secured to Item 1 by: #8-32 X 3/8" HWH Swage (Ser.) Zc. (Qty. 2) (237-5975-00)   |   |      |              |
| 9  | Coil, 22-1080 [ NO DIODE ] YEL-GRN              | 1    | 090-5032-ND  |
| COIL DOES NOT REQUIRE A DIODE. SEE COIL NOTE BELOW FOR DETAILS.  |   |      |              |
| 10   | Coil Sleeve                                     | 1    | 545-5388-00  |
| 11   | Deflector Pad (Bumper)                          | 1    | 545-5428-00  |
| 12   | Flipper Plunger & Link Sub-Assy.                | 1    | 515-6304-03  |
| For Individual Items use: Flipper Plunger (530-5349-01) and Plunger "Flipper" Link (545-5611-01) and is secured to the Plunger by: Bushing, .16" Ø ID X .281" Ø OD X .187" (Qty. 1) (530-5532-00) and Spiral Pin Ø 5/32" X 3/4" Lg. (Qty. 1) (251-5015-02) |   |      |              |
| 13   | Crank Bar (Pawl)                                | 1    | 530-5070-02  |
| Item 13 requires: Bushing, .192" Ø ID X .312" Ø OD X .195" (Qty. 1) (530-5139-00)  |   |      |              |
| 14®  | Switch Actuator (LEFT) Sub-Assy.                | 1    | 515-7257-01  |
| For Individual Items use: Actuator & Spring Bracket (LEFT) (535-9038-01) and ® Switch Actuator (White Plastic) (545-5612-00) and is secured to the Bracket by: Rivet, 1/8" Ø X 1/4" Lg. (Qty. 1) (249-5003-00)   |   |      |              |
| 15   | Set Screw: #10-32 X 3/4" Socket Hd.             | 2    | 237-6144-00  |
| Item 15 requires: #10-32 Nylon Stop Nut (Qty. 1) Flipper Link Side Only (240-5203-00) and #10 Split Lock Washer (Qty. 1) Switch Actuator Side Only (244-5003-00)<br>Tool required for Item 15: 5/32" or 4mm Allen Wrench                                   |   |      |              |

Item 14® is also shown separated from Item 13, Crank Bar, for clarity.



The differences between the Left & Right Flippers are:

Item 1, Item 4 and Item 14®

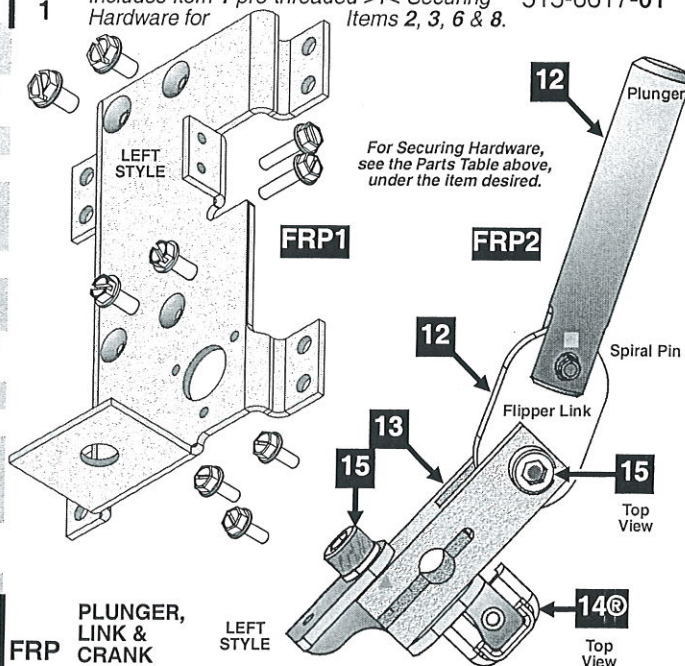
The coils may also differ depending on the game.

ASSOCIATED PARTS ARE NOT INCLUDED WITH THE ABOVE ASSEMBLY.

| Nr.  | ASSOCIATED PART(S)  | QTY. | SPI PART Nr.   |
|------|---|------|----------------|
| AP-A | WHITE Flipper Bat & Shaft Assembly (Non-Knurled End) <b>without Rubber Ring</b> | 3    | 515-5133-08-06 |
| AP-B | Large Flipper <b>RED</b> Rubber Ring  | 3    | 545-5277-22    |

## Flipper Rebuild Parts for Easier Installation, Save \$:

**FRP1 FLIPPER BASE PLATE KIT (LEFT):**  
Includes Item 1 pre-threaded >+< Securing Hardware for Items 2, 3, 6 & 8. 515-6617-01

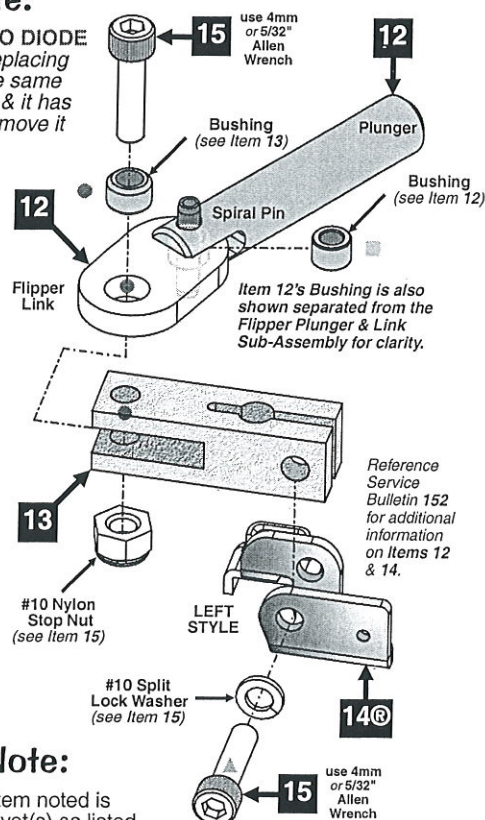


**FRP2 PLUNGER, LINK & CRANK (LEFT STYLE) ASSEMBLY:** Includes Items 12, 13, 14 & 15 (comes assembled). 515-7203-01

**FRP3 FLIPPER (LEFT) REBUILD KIT:** Includes Items 6, 10 AND above FRP2 500-6307-10

## Take Note:

Coil Note: NO DIODE ON LUGS. If replacing with a coil of the same gauge and turn & it has a diode on it, remove it before using.



## Take Note:

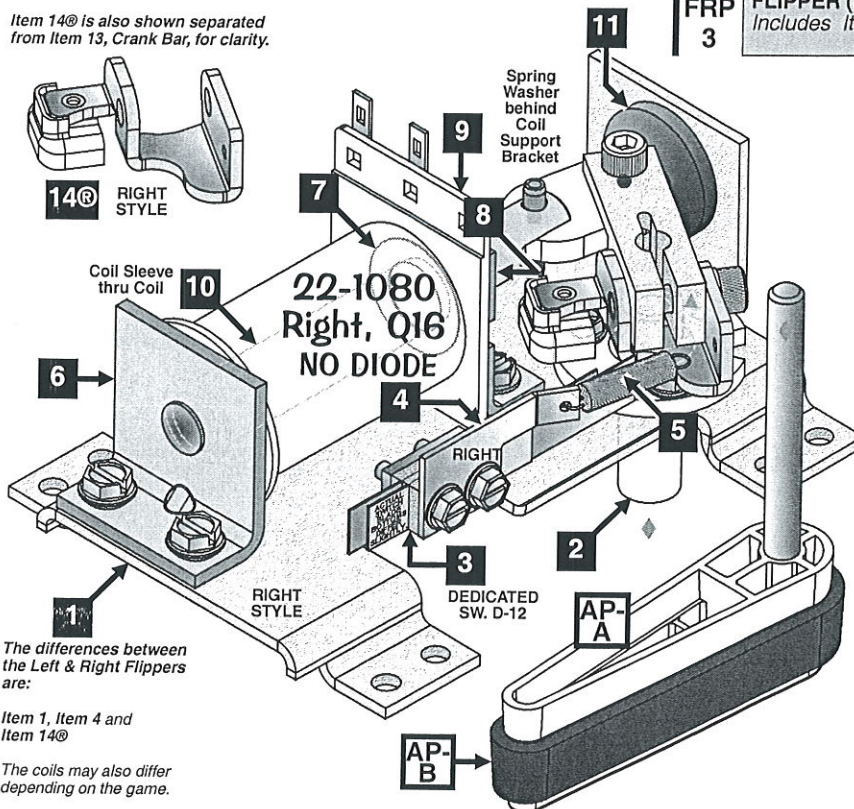
® "R" indicates Item noted is secured with rivet(s) as listed.



**You can get this game at [www.magic-play.eu](http://www.magic-play.eu)**  
**Flipper (Right) Assembly, 500-6543-02-ND (Items 1-15)**  
**and Associated Parts: White Flipper Bat & Shaft Asm., 515-5133-08-06 (Items AP-A / AP-B)**

| Nr.   | FLIPPER (RIGHT) PARTS                           | QTY. | SPI PART Nr. |
|---|---|------|--------------|
| 1   | Flipper Base Plate (RIGHT)                      | 1    | See FRP1     |
| Item 1 is secured below by: #8 X 1/2" SHWH AB (Zinc) (Qty. 8) (234-5101-00)<br>Ordering Note : Individual Part (535-7275-00) is not prethreaded, see Item FRP1.   |   |      |              |
| 2   | Flipper Bat Bushing (White Plastic) .25" Ø I.D. | 1    | 545-5070-00  |
| Item 2 is secured to Item 1 by: #6-32 X 3/8" HWH Swage (Ser.) Zc. (Qty. 3) (237-5976-02)  |   |      |              |
| 3   | Power (EOS / End-of-Stroke) Switch              | 1    | 180-5149-00  |
| Item 3 is secured to Item 1 by: #6-32 X 5/8" HWH Swage (Ser.) Zc. (Qty. 2) (237-5976-04)  |   |      |              |
| 4   | Sw. Plate/Spring Return Brkt. (RIGHT)           | 1    | 535-7354-00  |
| 5   | Flipper Return Spring                           | 1    | 265-5035-00  |
| 6   | Coil Stop Bracket Sub-Assembly                  | 1    | 515-6308-01  |
| Item 6 is secured to Item 1 by: #10-32 X 3/8" SHWH Swage (Ser.) Zinc (Qty. 2) (237-5985-00) and #10 Split Lock Washer (Qty. 2) (244-5003-00)  |   |      |              |
| 7   | Spring Washer (17/32" ID X 3/4" X 1")           | 1    | 269-5002-00  |
| 8   | Coil Support Bracket                            | 1    | 535-7356-00  |
| Item 8 is secured to Item 1 by: #8-32 X 3/8" HWH Swage (Ser.) Zc. (Qty. 2) (237-5975-00)  |   |      |              |
| 9   | Coil, 22-1080 [ NO DIODE ] YEL-GRN              | 1    | 090-5032-ND  |
| COIL DOES NOT REQUIRE A DIODE. SEE COIL NOTE PREV. PAGE FOR DETAILS.  |   |      |              |
| 10  | Coil Sleeve                                     | 1    | 545-5388-00  |
| 11  | Deflector Pad (Bumper)                          | 1    | 545-5428-00  |
| 12  | Flipper Plunger & Link Sub-Assy.                | 1    | 515-6304-03  |
| For Individual Items use : Flipper Plunger (530-5349-01) and Plunger "Flipper" Link (545-5611-01) and is secured to the Plunger by: Bushing, .16" Ø ID X .281" Ø OD X .187" (Qty. 1) (530-5532-00) and Spiral Pin Ø 5/32" X 3/4" Lg. (Qty. 1) (251-5015-02) |   |      |              |
| 13  | Crank Bar (Pawl)                                | 1    | 530-5070-02  |
| Item 13 requires: Bushing, .192" Ø ID X .312" Ø OD X .195" (Qty. 1) (530-5139-00)   |   |      |              |
| 14®   | Switch Actuator (RIGHT) Sub-Assy.               | 1    | 515-7257-00  |
| For Individual Items use : Actuator & Spring Bracket (LEFT) (535-9038-01) and ® Switch Actuator (White Plastic) (545-5612-00) and is secured to the Bracket by: Rivet, 1/8" Ø X 1/4" Lg. (Qty. 1) (249-5003-00)   |   |      |              |
| 15  | Set Screw: #10-32 X 3/4" Socket Hd.             | 2    | 237-6144-00  |
| Item 15 requires: #10-32 Nylon Stop Nut (Qty. 1) Flipper Link Side Only (244-5203-00) and #10 Split Lock Washer (Qty. 1) Switch Actuator Side Only (244-5003-00)<br>Tool required for Item 15: 5/32" or 4mm Allen Wrench                                    |   |      |              |

Item 14® is also shown separated from Item 13, Crank Bar, for clarity.



The differences between the Left & Right Flippers are:

Item 1, Item 4 and Item 14®

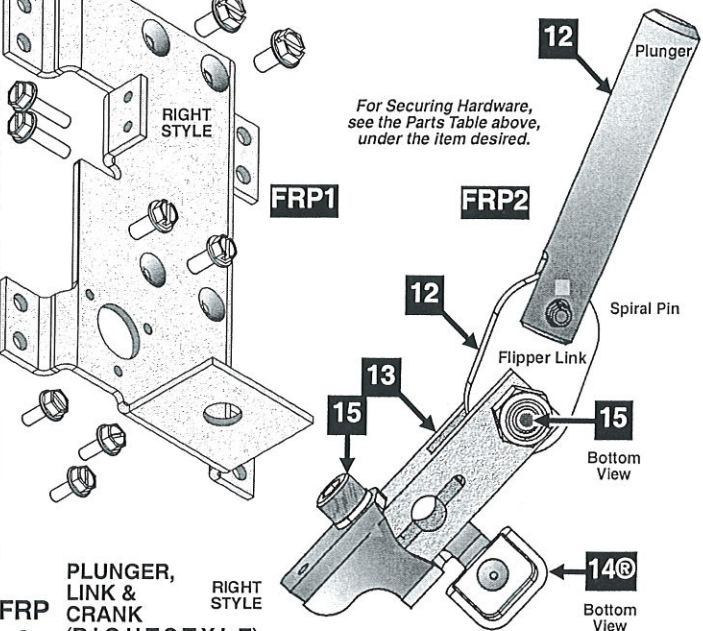
The coils may also differ depending on the game.

ASSOCIATED PARTS ARE NOT INCLUDED WITH THE ABOVE ASSEMBLY.

| Nr.  | ASSOCIATED PART(S)  | QTY. | SPI PART Nr.   |
|------|---|------|----------------|
| AP-A | WHITE Flipper Bat & Shaft Assembly (Non-Knurled End) <u>without Rubber Ring</u> | 3    | 515-5133-08-06 |
| AP-B | Large Flipper RED Rubber Ring   | 3    | 545-5277-00    |

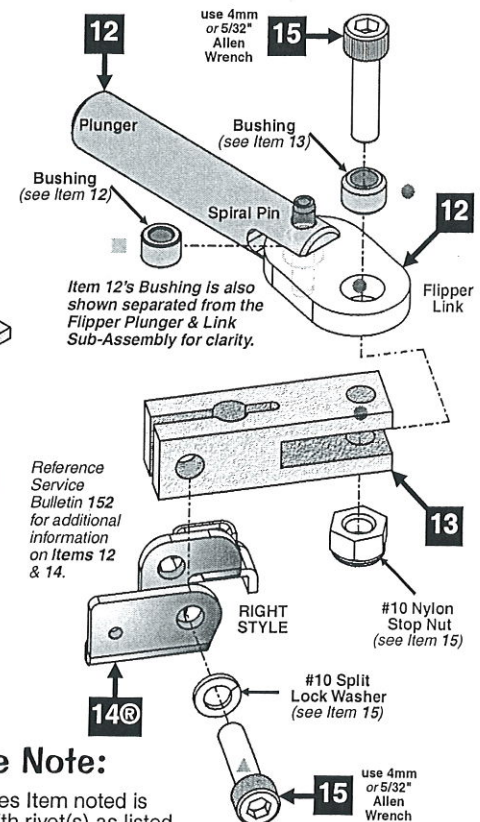
**Flipper Rebuild Parts for Easier Installation, Save \$:**

**FRP1 FLIPPER BASE PLATE KIT (RIGHT):**  
Includes Item 1 pre-threaded >+< Securing Hardware for Items 2, 3, 6 & 8. 515-6617-00



**FRP2 PLUNGER, LINK & CRANK (RIGHT STYLE) ASSEMBLY:** Includes Items 12, 13, 14 & 15 (comes assembled). 515-7203-00

**FRP3 FLIPPER (RIGHT) REBUILD KIT:** Includes Items 6, 10 AND above FRP2 500-6307-00



**Take Note:**

® "R" indicates Item noted is secured with rivet(s) as listed.





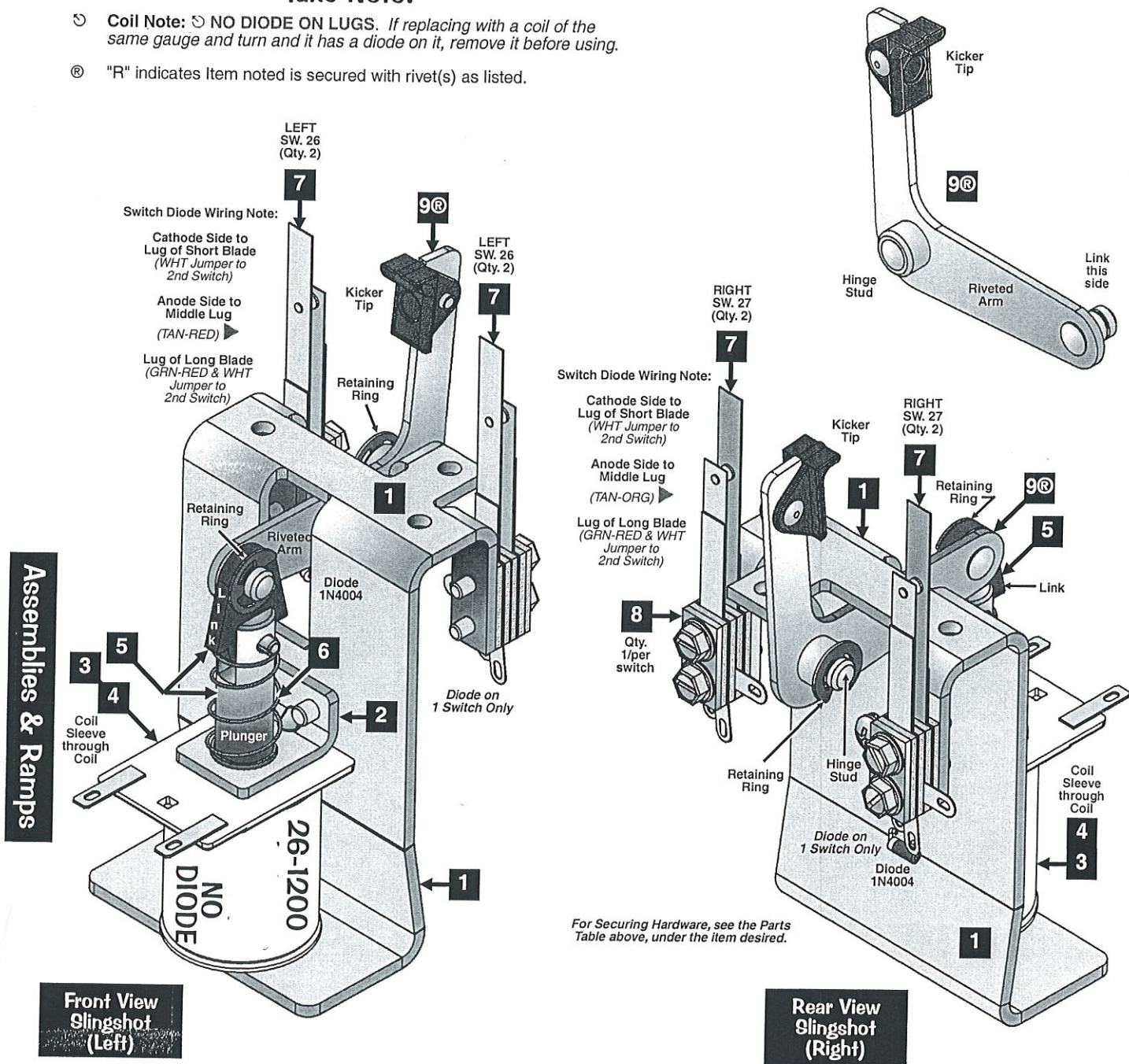


**You can get this game at [www.magic-play.eu](http://www.magic-play.eu)**  
**Slingshot (Left & Right) Assemblies, 500-5849-01-ND (Qty. 2) (Items 1-9)**

| Nr.  | SLINGSHOT PARTS            | QTY.  | SPI PART Nr. | Nr.  | SLINGSHOT PARTS                | QTY.  | SPI PART Nr. |
|--|----------------------------|-------|--------------|--|--------------------------------|-------|--------------|
| 1  | Slingshot Bracket Assembly | 1/per | 515-5339-01  | 6  | Compression (Return) Spring    | 1/per | 266-5020-00  |
| Item 1 is secured below the playfield by: #8 X 1/2" SHWH AB (Zc.) (Qty. 3) (234-5101-00)   |                            |       |              | 7  | Slingshot Stack (Blade) Switch | 2/per | 180-5054-00  |
| 2  | Coil Retaining Bracket     | 1/per | 535-5203-03  | Only 1 of the 2 Switches has a Diode (1N4004) (112-5003-00). See Note Below on Drawing. Can be replaced with (1N4001) (112-5001-00).   |                                |       |              |
| Item 2 is secured to Item 1 by: #8-32 X 3/8" PPH MS (Sems) (Qty. 2) (232-5301-00)  |                            |       |              | 8  | Switch Body Protect Plate      | 2/per | 535-5045-00  |
| 3  | Coil, 26-1200 [ NO DIODE ] | 1/per | 090-5044-ND  | Items 7 & 8 are secured to Item 1 by: #6-32 X 5/8" HWH Swage (Qty. 4) (237-5976-04)  |                                |       |              |
| COIL DOES NOT REQUIRE A DIODE. SEE COIL NOTE BELOW FOR DETAILS.  |                            |       |              | 9®   | Riveted Arm & Tip Assembly     | 1/per | 515-5340-01  |
| 4  | Coil Sleeve                | 1/per | 545-5031-00  | For Individual Parts use (requires drilling out rivet & re-securing):  |                                |       |              |
| 5  | Plunger & Link Assembly    | 1/per | 515-5338-00  | Arm (515-5341-01), Kicker Tip (545-5216-01) and Rivet, 1/8" ø x 1/4" Lg. (249-5003-00)   |                                |       |              |
| For Individual Items use: Plunger 2" Lg. (530-5025-01), Plunger Link (545-5293-00) and Roll Pin 1/8" ø x 5/8" Lg. (251-5008-00) The Plunger Link is secured to the Riveted Arm by: Retaining Ring, 1/4" ø Shaft (Qty. 1) (270-5002-00) |                            |       |              | The Riv. Arm is secured to Item 1 by: Retaining Ring, 1/4" ø Shaft (Qty. 1) (270-5002-00)  |                                |       |              |
| Ordering Note: If 515-5338-00 is unavailable, order the individual part(s) actually required.  |                            |       |              | Ordering Note: If 500-5849-00-ND is unavailable, order the individual part(s) actually required. This assembly is identical to 500-5849-02-ND with the exception of Item 3, which uses a Coil, 27-1500 [NO DIODE] (090-5004-ND) instead. |                                |       |              |

**Take Note:**

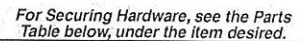
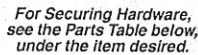
- ☺ **Coil Note:** ☺ **NO DIODE ON LUGS.** If replacing with a coil of the same gauge and turn and it has a diode on it, remove it before using.
- ® "R" indicates Item noted is secured with rivet(s) as listed.





### Take Note:

LAMPS  
60 (TOP)  
61 (RIGHT)  
62 (LEFT)



| Nr.  | ASSOCIATED PART(S)                      | QTY. | SPI PART Nr. |
|--|---|------|--------------|
| AP-A   | Kit: Plastics (includes -10, -11 & -12) | 1    | 803-5000-E6  |
| Note: Individual Plastics (830-6071-XX) are not available individually, ordering of kit is required. |   |      |              |
| Item AP-A is secured Item 3 by: #5 X 7/8" PRH AB (Zinc) (Qty. 2/per) (237-5826-00)                   |   |      |              |

ASSOCIATED PARTS ARE NOT INCLUDED WITH THE ABOVE ASSEMBLIES.

Item AP-A is secured Item 3 by: #5 X 7/8" PRH AB (Zinc) (Qty. 2/per) (237-5826-00)

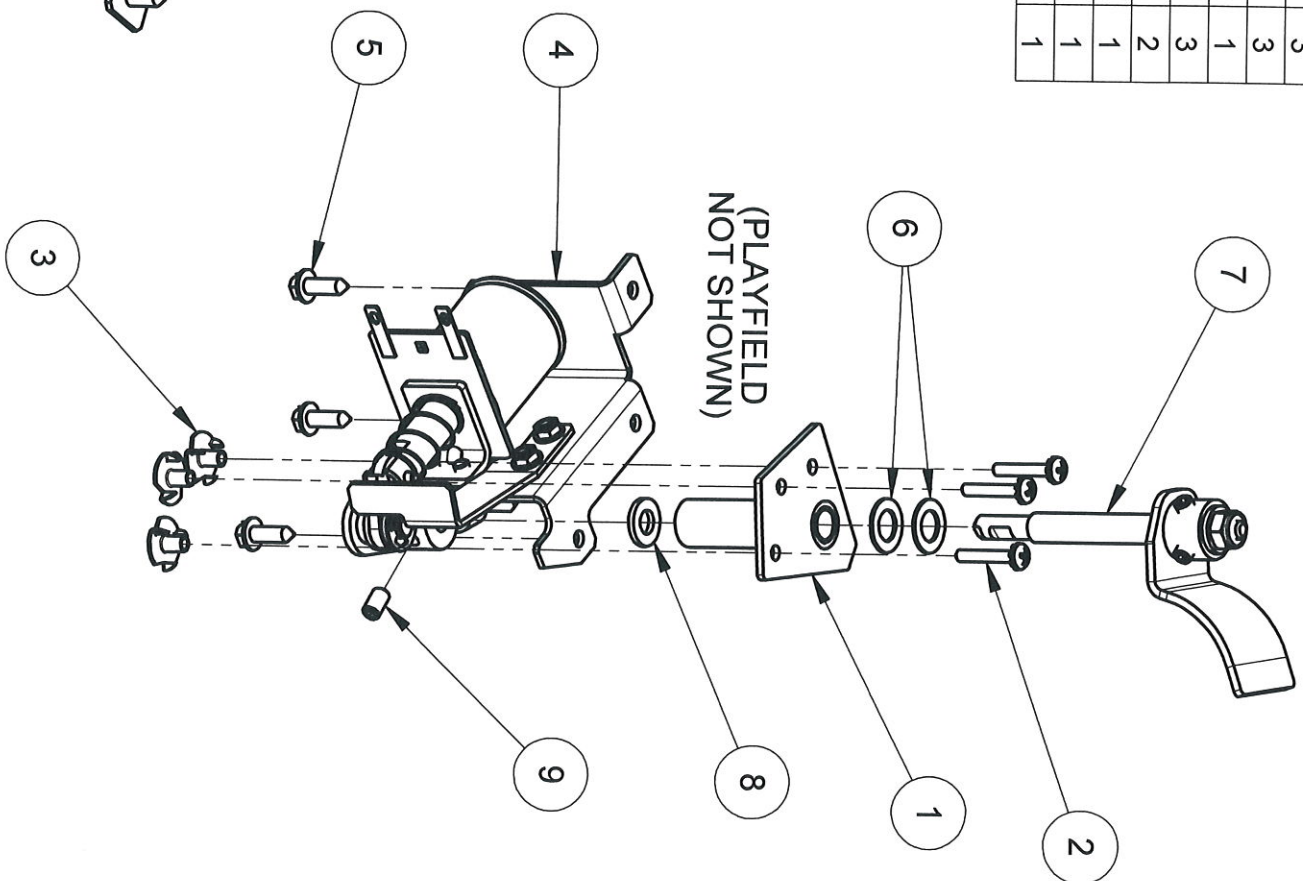
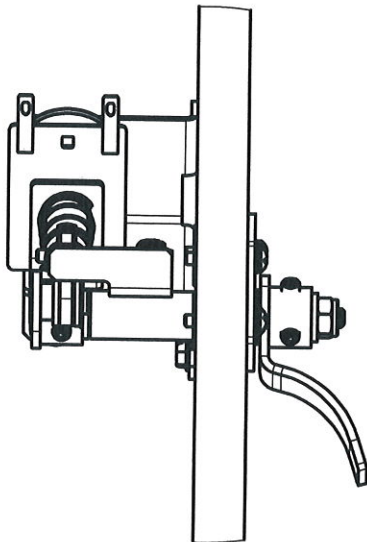
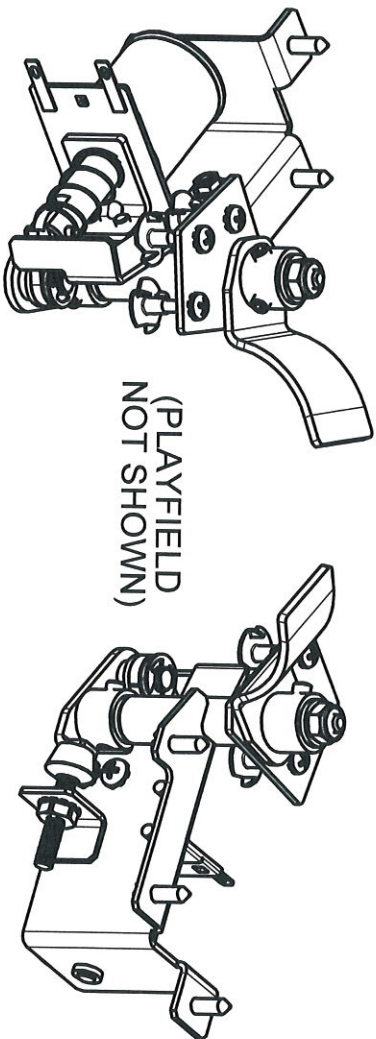
The Top & Bottom Assemblies are secured together by hardware noted in Item 4.

B15



| ITEM NO. | PART NUMBER | DESCRIPTION                             | QTY. |
|----------|-------------|---|------|
| 1        | 515-9722-00 | SUPPORT TUBE, DEFLECTOR, BILL LE        | 1    |
| 2        | 232-5204-00 | SCREW, 6-32 X 3/4" PPH SEMS             | 3    |
| 3        | 240-5002-00 | 6-32 T-NUT                              | 3    |
| 4        | 500-9831-00 | ASSEMBLY, DEFLECTOR COIL, BILL LE       | 1    |
| 5        | 234-5101-00 | SCREW, #8 X 1/2" SLT HWH AB ZINC        | 3    |
| 6        | 242-5100-00 | WASHER, .328 ID X .562 OD X .031 ACETAL | 2    |
| 7        | 500-9833-00 | ASSY, DEFLECTOR & SHAFT, BILL LE        | 1    |
| 8        | 242-5008-00 | WASHER, 1/4" ID X 1/2" OD X 1/16" THICK | 1    |
| 9        | 237-6092-00 | SET SCREW, 10-32 X 5/16, SOCKET CUP PT  | 1    |

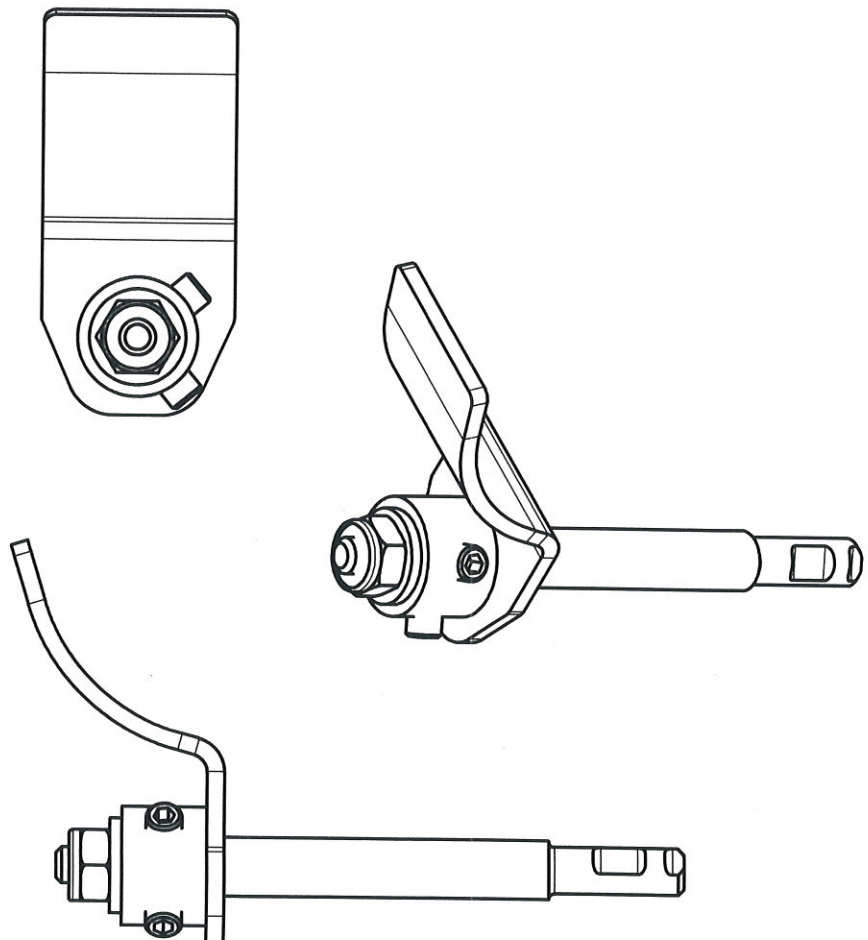
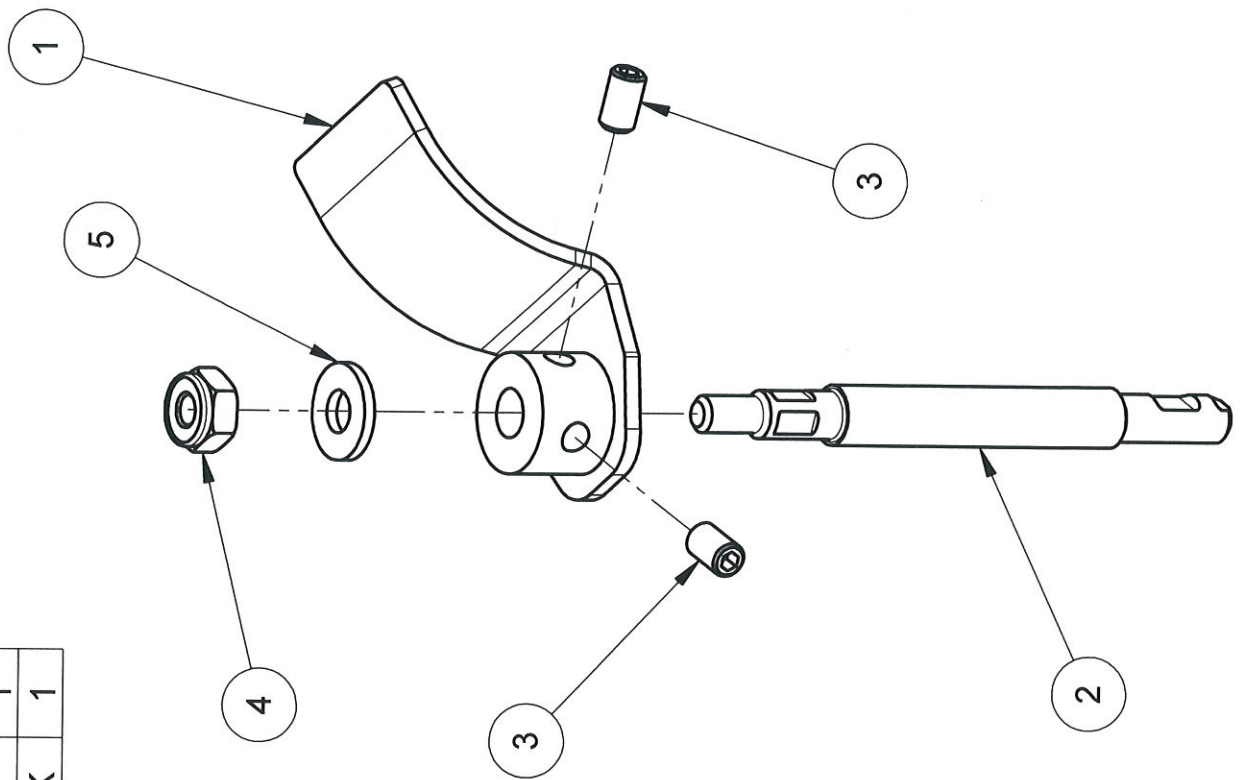
## DEFLECTOR ASSEMBLY, STAR TREK LE / PREMIUM





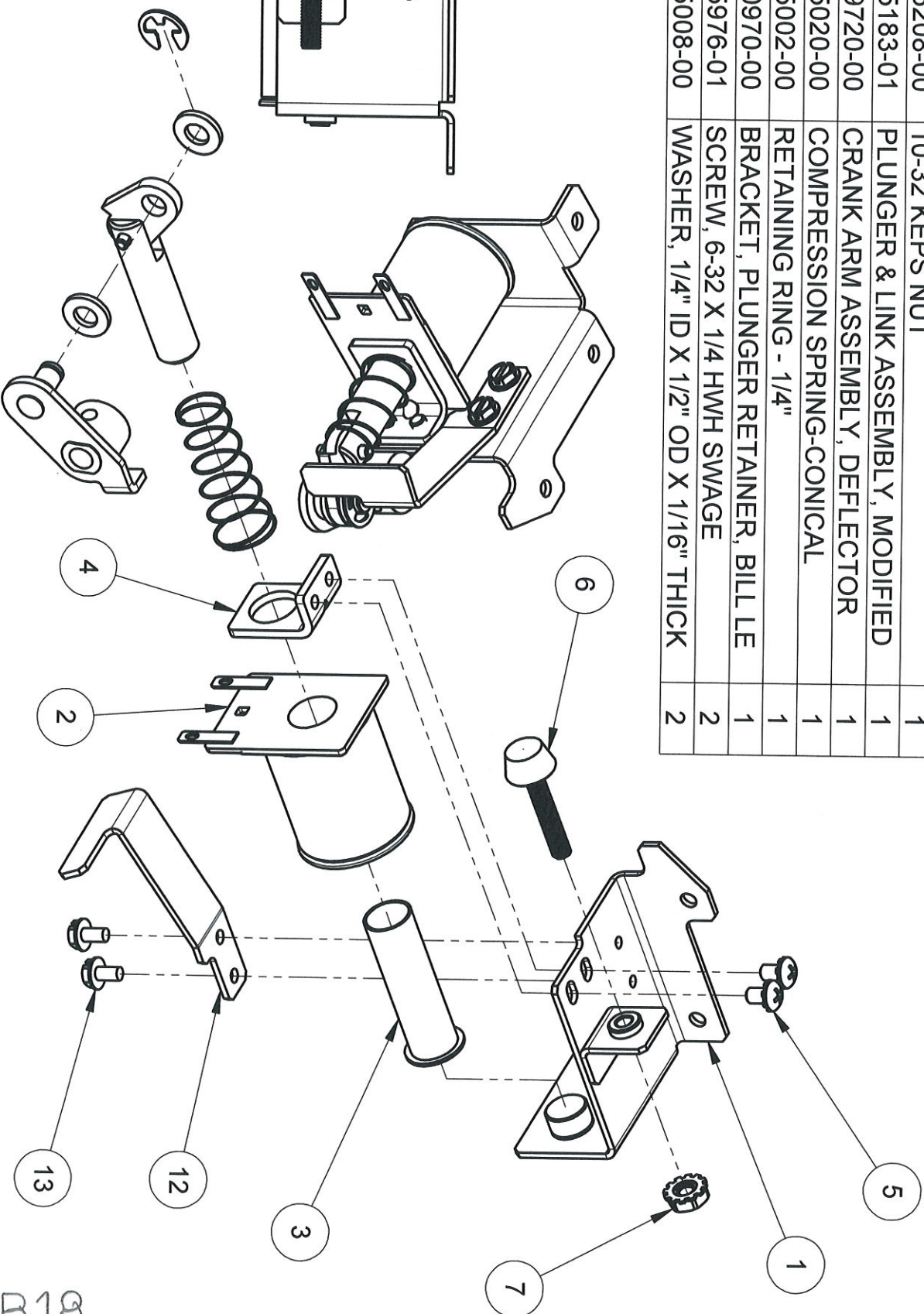
| ITEM NO. | PART NUMBER | DESCRIPTION                              | QTY. |
|----------|-------------|--|------|
| 1        | 515-9721-00 | WELDMENT, DEFLECTOR, BILL LE             | 1    |
| 2        | 530-7849-00 | PIVOT SHAFT, DEFLECTOR, BILL LE          | 1    |
| 3        | 237-6092-00 | SET SCREW, 10-32 X 5/16, SOCKET CUP PT   | 2    |
| 4        | 240-5206-00 | #10-24 NYLON LOCK NUT                    | 1    |
| 5        | 242-5003-00 | #10 FLAT WASHER - 1/2" O.D. X .062 THICK | 1    |

**ASSEMBLY, DEFLECTOR & SHAFT  
STAR TREK LE / PREMIUM  
500-9833-00**



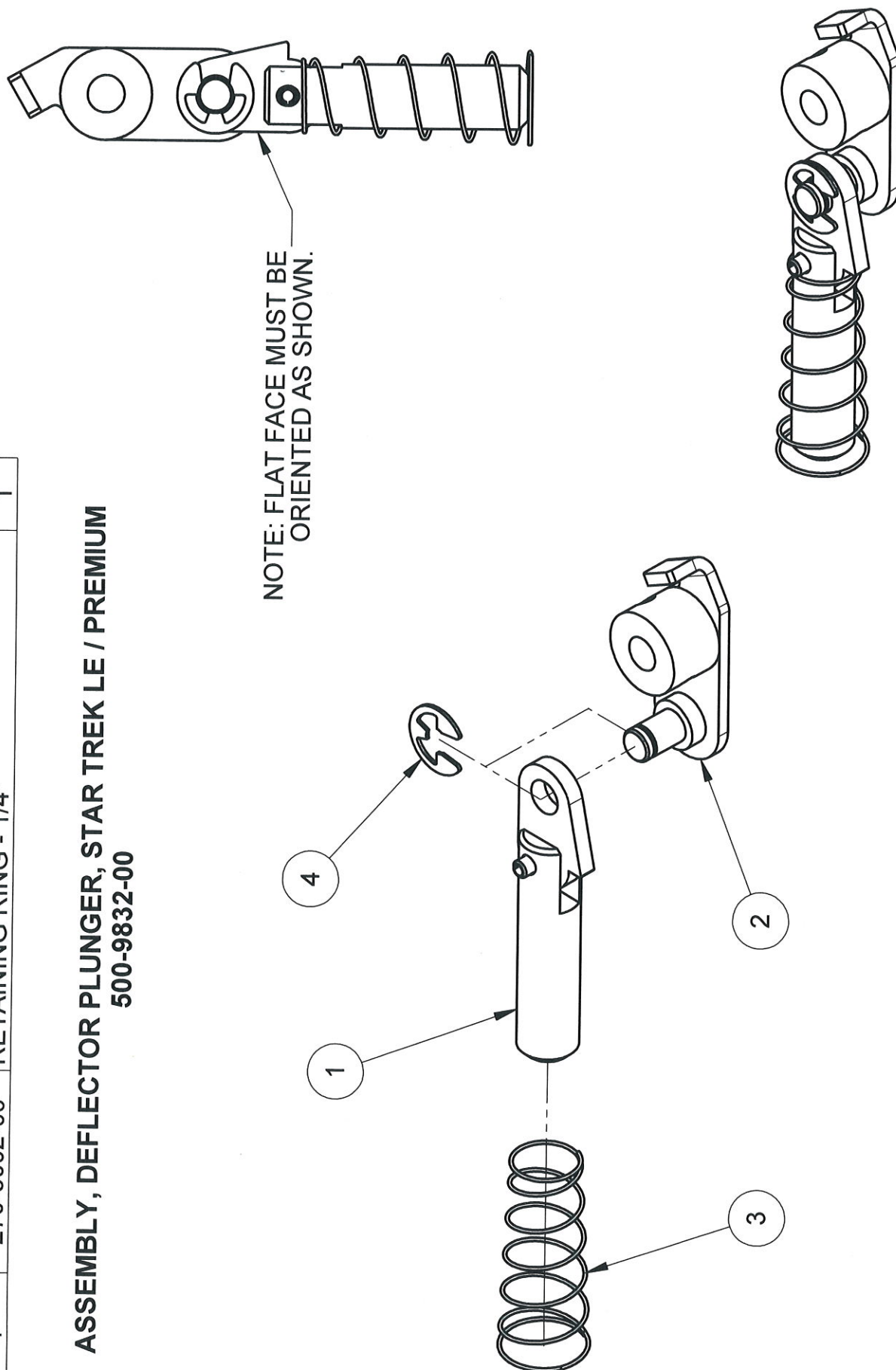
| ITEM NO. | PART NUMBER | DESCRIPTION                             | QTY. |
|----------|-------------|---|------|
| 1        | 515-9719-00 | BRACKET ASSEMBLY, DEFLECTOR COIL        | 1    |
| 2        | 090-5036-ND | COIL - 24-940, NO DIODE                 | 1    |
| 3        | 545-5031-00 | COIL SLEEVE                             | 1    |
| 4        | 535-5203-03 | COIL RETAINING BRACKET                  | 1    |
| 5        | 232-5300-00 | SCREW, 8-32 X 1/4" PPH SEMS             | 2    |
| 6        | 280-5014-00 | ADJUSTABLE BUMPER/STOP                  | 1    |
| 7        | 240-5208-00 | 10-32 KEPS NUT                          | 1    |
| 8        | 511-5183-01 | PLUNGER & LINK ASSEMBLY, MODIFIED       | 1    |
| 9        | 515-9720-00 | CRANK ARM ASSEMBLY, DEFLECTOR           | 1    |
| 10       | 266-5020-00 | COMPRESSION SPRING-CONICAL              | 1    |
| 11       | 270-5002-00 | RETAINING RING - 1/4"                   | 1    |
| 12       | 535-0970-00 | BRACKET, PLUNGER RETAINER, BILL LE      | 1    |
| 13       | 237-5976-01 | SCREW, 6-32 X 1/4 HWH SWAGE             | 2    |
| 14       | 242-5008-00 | WASHER, 1/4" ID X 1/2" OD X 1/16" THICK | 2    |

ASSEMBLY, DEFLECTOR COIL  
STAR TREK LE / PREMIUM  
500-9831-00



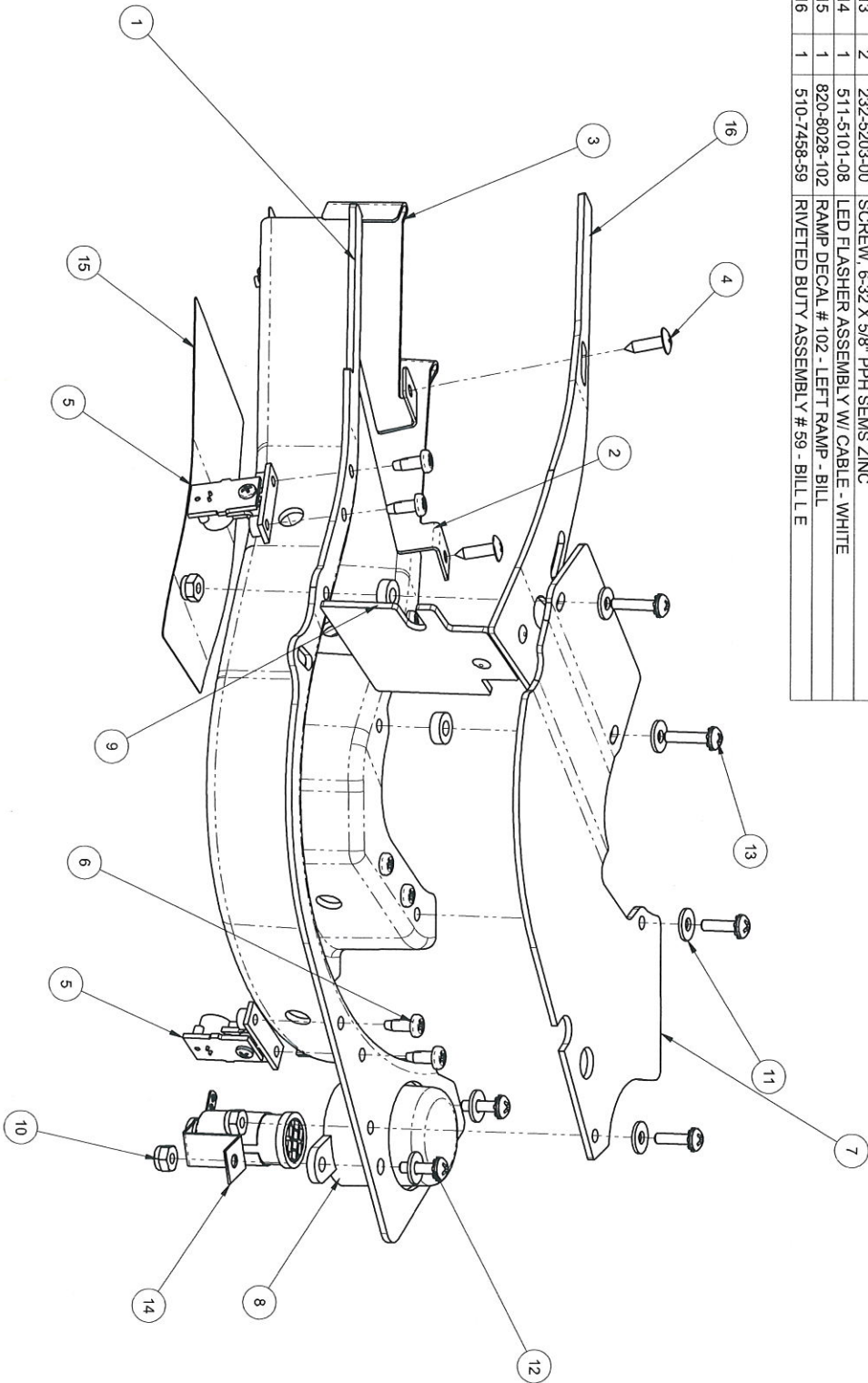
| ITEM NO. | PART NUMBER | DESCRIPTION                       | QTY. |
|----------|-------------|-----------------------------------|------|
| 1        | 511-5183-01 | PLUNGER & LINK ASSEMBLY, MODIFIED | 1    |
| 2        | 515-9720-00 | CRANK ARM ASSEMBLY, DEFLECTOR     | 1    |
| 3        | 266-5020-00 | COMPRESSION SPRING-CONICAL        | 1    |
| 4        | 270-5002-00 | RETAINING RING - 1/4"             | 1    |

**ASSEMBLY, DEFLECTOR PLUNGER, STAR TREK LE / PREMIUM**  
**500-9832-00**



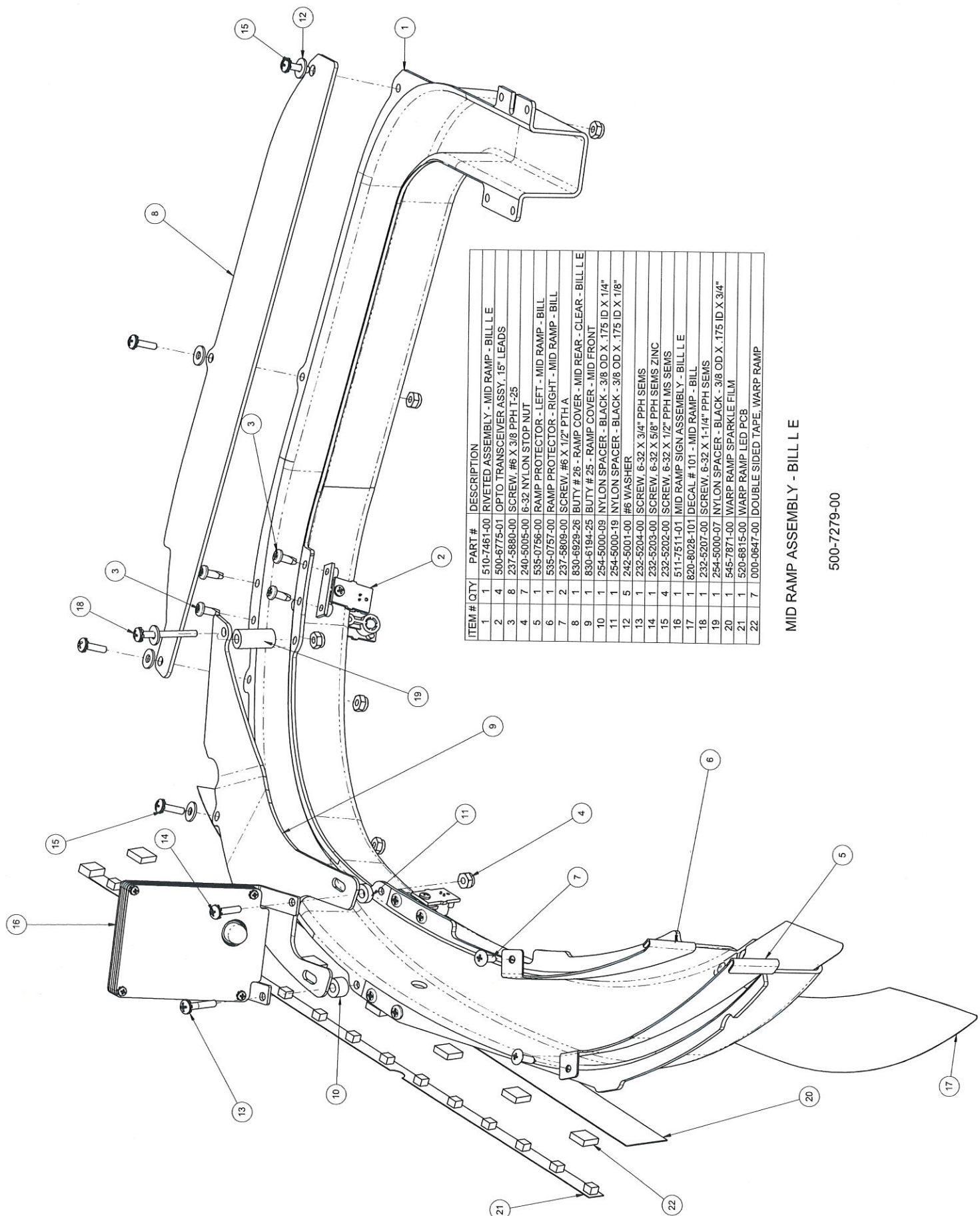


| ITEM # | QTY | PART #       | DESCRIPTION                                       |
|--------|-----|--------------|---|
| 1      | 1   | 510-7459-00  | RIVETED ASSEMBLY - LEFT RAMP - BILL L E           |
| 2      | 1   | 535-0754-01  | RAMP PROTECTOR - LEFT - LEFT RAMP - BILL          |
| 3      | 1   | 535-0755-00  | RAMP PROTECTOR - RIGHT - LEFT & RIGHT RAMP - BILL |
| 4      | 2   | 237-5809-00  | SCREW, #6 X 1/2" PTH A                            |
| 5      | 4   | 500-6775-01  | OPTO TRANSCIVER ASSY, 15" LEADS                   |
| 6      | 8   | 237-5880-00  | SCREW, #6 X 3/8 PPH T-25                          |
| 7      | 1   | 830-6194-23  | BUTY # 23 - RAMP COVER - LEFT - CLEAR             |
| 8      | 1   | 550-5031-02  | MINI MARS W/ EARS - RED SB                        |
| 9      | 2   | 254-5000-19  | NYLON SPACER - BLACK - 3/8 OD X .175 ID X 1/8"    |
| 10     | 6   | 240-5005-00  | 6-32 NYLON STOP NUT                               |
| 11     | 6   | 242-5001-00  | #6 WASHER   |
| 12     | 4   | 232-5202-00  | SCREW, 6-32 X 1/2" PPH MS SEMS                    |
| 13     | 2   | 232-5203-00  | SCREW, 6-32 X 5/8" PPH SEMS ZINC                  |
| 14     | 1   | 511-5101-08  | LED FLASHER ASSEMBLY W/ CABLE - WHITE             |
| 15     | 1   | 820-8028-102 | RAMP DECAL # 102 - LEFT RAMP - BILL               |
| 16     | 1   | 510-7458-59  | RIVETED BUTY ASSEMBLY # 59 - BILL L E             |



LEFT RAMP ASSEMBLY - BILL L E

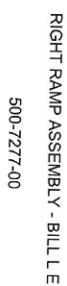
500-7276-00



| ITEM # | QTY | PART #       | DESCRIPTION  |
|--------|-----|--------------|--|
| 1      | 1   | 510-7461-00  | RIVETED ASSEMBLY - MID RAMP - BILL L E               |
| 2      | 4   | 500-6775-01  | OPTO TRANSCIVER ASSY, 15" LEADS                      |
| 3      | 8   | 237-5880-00  | SCREW, #6 X 3/8 PPH T-25                             |
| 4      | 7   | 240-5005-00  | 6-32 NYLON STOP NUT                                  |
| 5      | 1   | 535-0756-00  | RAMP PROTECTOR - LEFT - MID RAMP - BILL              |
| 6      | 1   | 535-0757-00  | RAMP PROTECTOR - RIGHT - MID RAMP - BILL             |
| 7      | 2   | 237-5809-00  | SCREW, #6 X 1/2" PTH A                               |
| 8      | 1   | 830-6929-26  | BUTY # 26 - RAMP COVER - MID REAR - CLEAR - BILL L E |
| 9      | 1   | 830-6194-25  | BUTY # 25 - RAMP COVER - MID FRONT                   |
| 10     | 1   | 254-5000-09  | NYLON SPACER - BLACK - 3/8 OD X .175 ID X 1/4"       |
| 11     | 1   | 254-5000-19  | NYLON SPACER - BLACK - 3/8 OD X .175 ID X 1/8"       |
| 12     | 5   | 242-5001-00  | #6 WASHER  |
| 13     | 1   | 232-5204-00  | SCREW, 6-32 X 3/4" PPH SEMS                          |
| 14     | 1   | 232-5203-00  | SCREW, 6-32 X 5/8" PPH SEMS ZINC                     |
| 15     | 4   | 232-5202-00  | SCREW, 6-32 X 1/2" PPH MS SEMS                       |
| 16     | 1   | 511-7511-01  | MID RAMP SIGN ASSEMBLY - BILL L E                    |
| 17     | 1   | 820-8028-101 | DECAL # 101 - MID RAMP - BILL                        |
| 18     | 1   | 232-5207-00  | SCREW, 6-32 X 1-1/4" PPH SEMS                        |
| 19     | 1   | 254-5000-07  | NYLON SPACER - BLACK - 3/8 OD X .175 ID X 3/4"       |
| 20     | 1   | 545-7871-00  | WARP RAMP SPARKLE FILM                               |
| 21     | 1   | 520-6815-00  | WARP RAMP LED PCB                                    |
| 22     | 7   | 000-0647-00  | DOUBLE SIDED TAPE, WARP RAMP                         |

MID RAMP ASSEMBLY - BILL L E

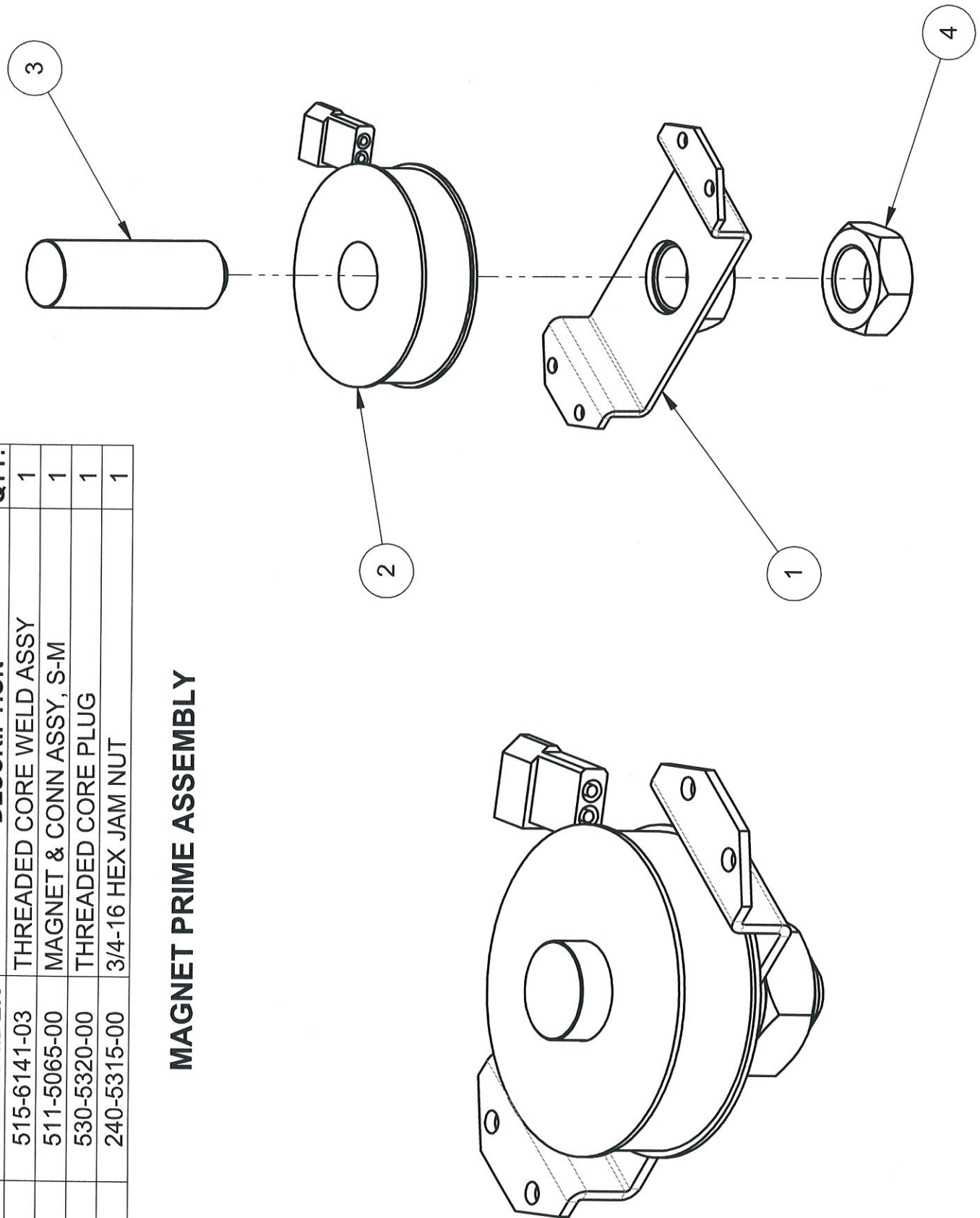
500-7279-00

500-7277-00

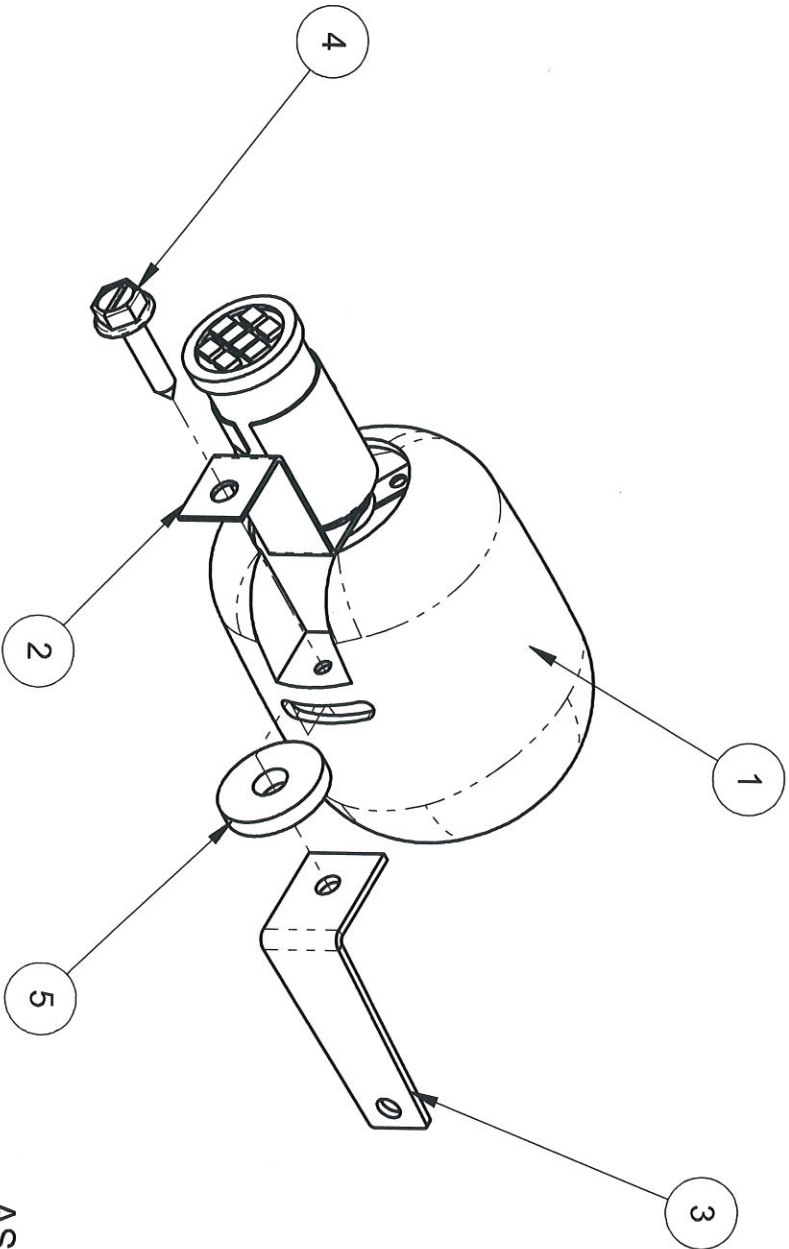


| ITEM NO. | PART NUMBER | DESCRIPTION             | QTY. |
|----------|-------------|-------------------------|------|
| 1        | 515-6141-03 | THREADED CORE WELD ASSY | 1    |
| 2        | 511-5065-00 | MAGNET & CONN ASSY, S-M | 1    |
| 3        | 530-5320-00 | THREADED CORE PLUG      | 1    |
| 4        | 240-5315-00 | 3/4-16 HEX JAM NUT      | 1    |

### MAGNET PRIME ASSEMBLY



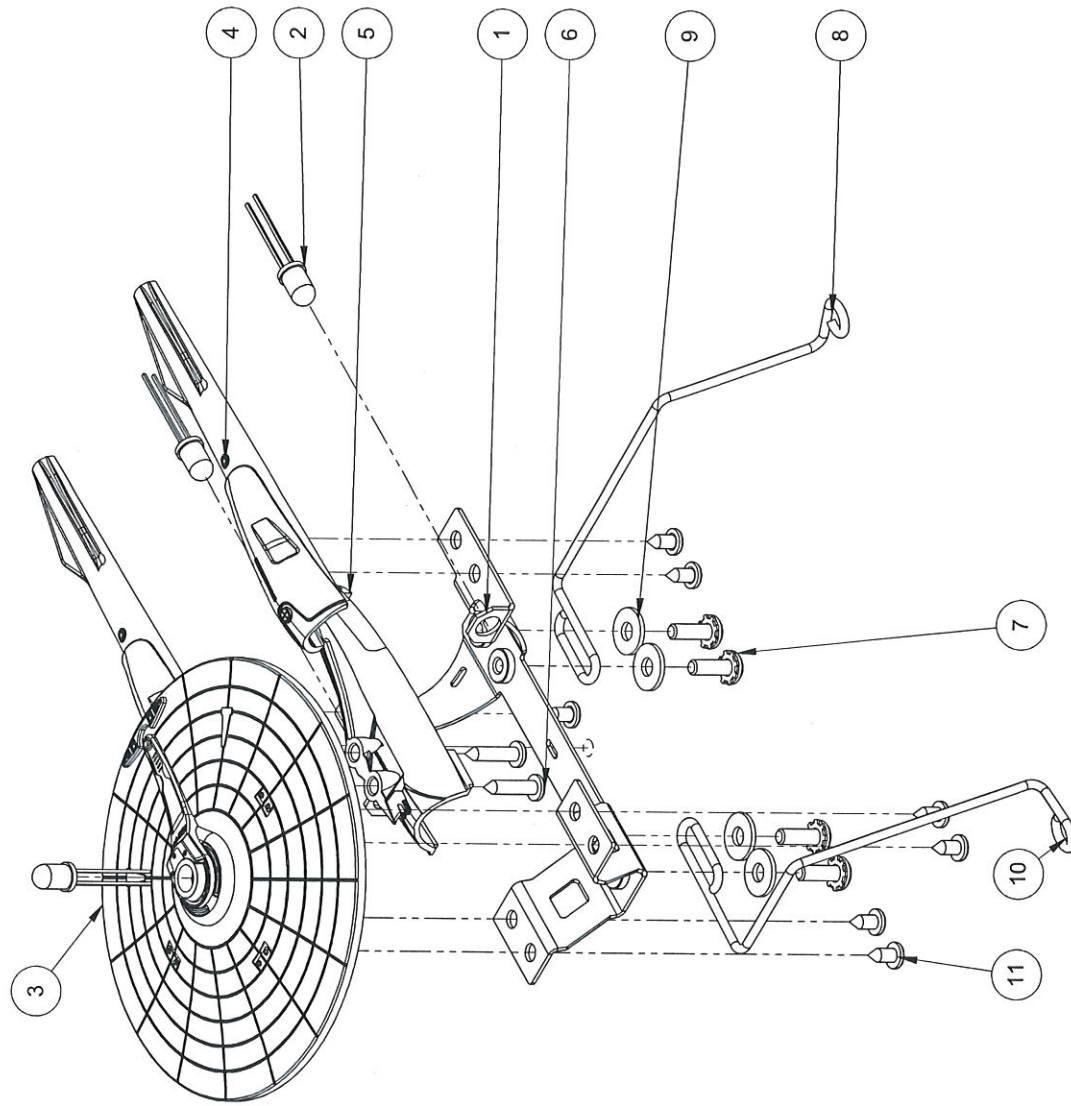
| ITEM # | QTY | PART #      | DESCRIPTION                           |
|--------|-----|-------------|---------------------------------------|
| 1      | 1   | 545-7850-00 | ASTEROID - BILL L E                   |
| 2      | 1   | 511-5101-08 | LED FLASHER ASSEMBLY W/ CABLE - WHITE |
| 3      | 1   | 535-0856-00 | BRACKET - ASTEROID                    |
| 4      | 1   | 234-5002-00 | SCREW, #6 X 5/8" HWH                  |
| 5      | 1   | 242-5039-00 | WASHER - 13/64 ID X5/8 OD X .105      |



ASTEROID ASSEMBLY

511-7519-00





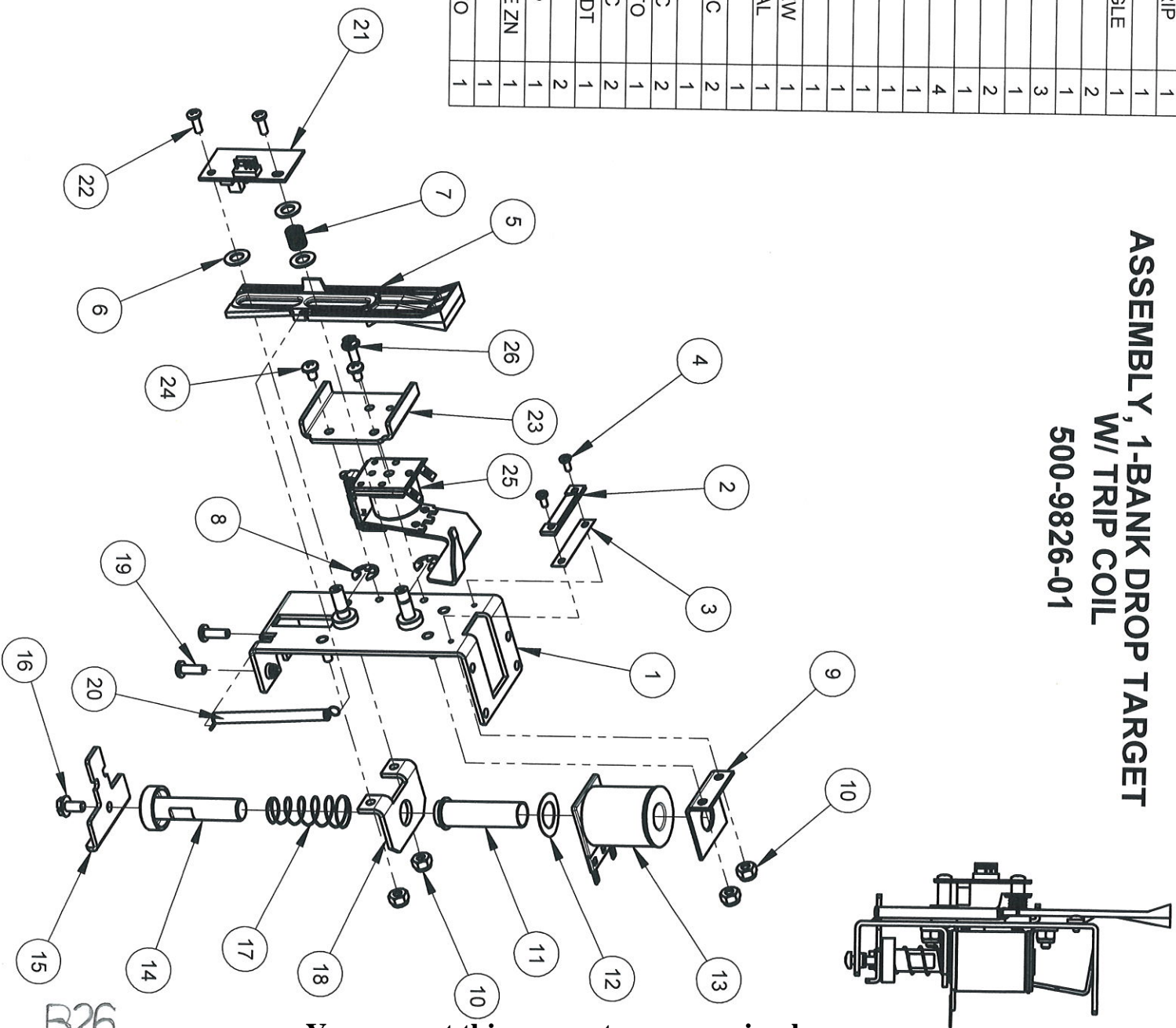
| ITEM NO. | PART NUMBER     | DESCRIPTION                                | Default/<br>QTY. |
|----------|-----------------|--|------------------|
| 1        | 515-9713-00     | ENTERPRISE TOY BRACKET                     | 1                |
| 2        | 112-5048-05     | T 1 3/4 / 5mm ROUND LED<br>w/RESISTOR-BLUE | 3                |
| 3        | 550-7358-00     | ENTERPRISE-MAIN BODY                       | 1                |
| 4        | 550-7359-00     | NACELLE-ENTERPRISE                         | 2                |
| 5        | 550-7360-00     | ENTERPRISE-CENTER BODY                     | 1                |
| 6        | 237-6304-00     | SCREW, #4 X 1/2" PPH AB                    | 2                |
| 7        | 232-5201-00     | SCREW, 6-32 X 3/8" PPH MS SEMS             | 4                |
| 8        | 535-0821-00     | ENTERPRISE WIRE SUPPORT-BACK               | 1                |
| 9        | 242-5001-00     | #6 WASHER                                  | 4                |
| 10       | 535-0822-00     | ENTERPRISE WIRE SUPPORT-FRONT              | 1                |
| 11       | 237-5886-00     | SCREW, #4 X 1/4" PPH AB                    | 8                |
| 12       | *036-5605-12-E4 | ENTERPRISE CABLE ASSY.                     | SEE<br>BOM       |

NOTE:  
\*NOT SHOWN

| ITEM NO. | PART NUMBER    | DESCRIPTION                      | QTY |
|----------|----------------|----------------------------------|-----|
| 1        | 515-0183-00    | FRAME ASSY, 1-BANK DT W/ TRIP    | 1   |
| 2        | 545-6163-01    | LEDGE, 1-BANK DROP TARGET        | 1   |
| 3        | 545-6198-00    | SHIM - FICHE PAPER - D.T. SINGLE | 1   |
| 4        | 237-6169-00    | SCREW, 4-40 X 1/4 PPH MS         | 2   |
| 5        | 545-6305-00    | TARGET - ROLLOVER - BLACK        | 1   |
| 6        | 242-5091-00    | WASHER, 1/2 X 17/64 X .03 - DT   | 3   |
| 7        | 266-5089-00    | SPRING COMPRESSION - DT          | 1   |
| 8        | 270-5002-00    | RETAINING RING - 1/4"            | 2   |
| 9        | 535-9959-00    | STOP BRKT                        | 1   |
| 10       | 240-5102-00    | 8-32 NYLON LOCK NUT              | 4   |
| 11       | 545-5076-01    | COIL SLEEVE                      | 1   |
| 12       | 269-5002-00    | SPRING WASHER                    | 1   |
| 13       | 090-5034-ND    | COIL 25-1240 - NO DIODE          | 1   |
| 14       | 530-5757-00    | PLUNGER - D.T. ASSY.             | 1   |
| 15       | 535-9760-01A   | LIFT BRKT - 1 BANK               | 1   |
| 16       | 237-5985-00    | 10-32 X 3/8 SHWH SWAGE SCREW     | 1   |
| 17       | 266-5020-00    | COMPRESSION SPRING-CONICAL       | 1   |
| 18       | 535-9777-01    | COIL BRACKET-DT-OD               | 1   |
| 19       | 237-5602-00    | SCREW, 8-32 X 1/2" PPH MS, ZINC  | 2   |
| 20       | 265-5003-03    | TARGET RESET SPRING              | 1   |
| 22       | 237-5501-00    | SCREW, 6-32 X 3/8" PPH MS ZINC   | 2   |
| 21       | 520-5252-01    | 1 BANK DROP TARGET PCB-OPTO      | 1   |
| 22       | 237-5501-00    | SCREW, 6-32 X 3/8" PPH MS ZINC   | 2   |
| 23       | 535-0789-00    | BRACKET, TRIP COIL MOUNT, 1-DT   | 1   |
| 24       | 232-5300-00    | SCREW, 8-32 X 1/4" PPH SEMS      | 2   |
| 25       | 515-9702-00-ND | COIL ASSEMBLY, TARGET DROP       | 1   |
| 26       | 237-5975-00    | SCREW, 8-32 X 3/8" HWH SWAGE ZN  | 1   |
| 99*      | 036-5605-07-E4 | CABLE, DT W/ TRIP                | 1   |
| 21       | 520-5252-01    | 1 BANK DROP TARGET PCB-OPTO      | 1   |

\* ITEM NOT SHOWN

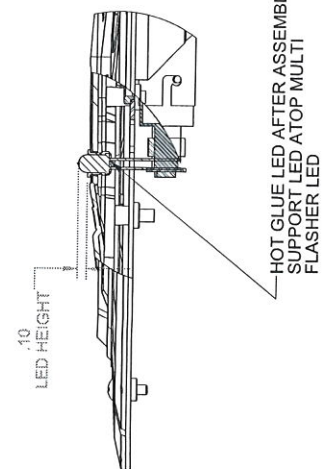
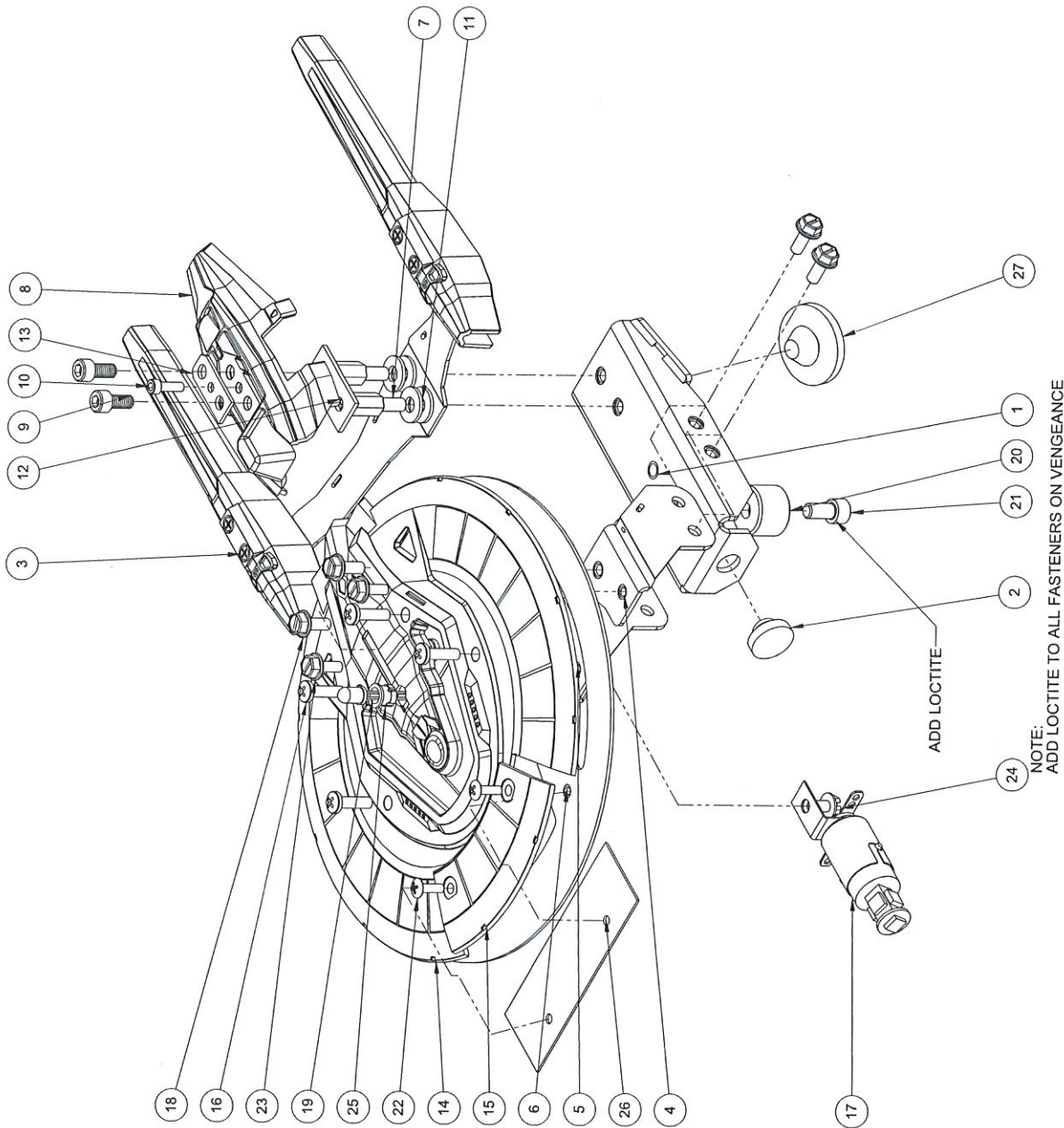
**ASSEMBLY, 1-BANK DROP TARGET  
W/ TRIP COIL  
500-9826-01**





| ITEM NO. | PART NUMBER     | DESCRIPTION                                     | QTY.    |
|----------|-----------------|---|---------|
| 1        | 515-9723-00     | VENGEANCE MOUNTING BRACKET-LE                   | 1       |
| 2        | 545-5105-00     | RUBBER BUMPER                                   | 1       |
| 3        | 511-7522-00     | VENGEANCE NACELLE ASSEMBLY                      | 1       |
| 4        | 515-9707-00     | VENGEANCE SAUCER MTG. BRACKET                   | 1       |
| 5        | 515-9707-01     | VENGEANCE SAUCER MTG. BRACKET                   | 1       |
| 6        | 515-9706-00     | VENGEANCE SAUCER BRACKET                        | 1       |
| 7        | 254-5063-08     | 1/4 HEX POST, M-F, 8-32 THREAD                  | 2       |
| 8        | 550-7356-00     | CENTER BODY-VENGEANCE                           | 1       |
| 9        | 237-5897-01     | SCREW, 8-32 X 3/8" SHCS BLACK                   | 2       |
| 10       | 237-6303-00     | 4-40 X 3/8 LG. SOCKET HD CAP SCREW, BLACK OXIDE | 1       |
| 11       | 242-5005-00     | #8 WASHER                                       | 4       |
| 12       | 515-9708-00     | NUT PLATE-VENGEANCE                             | 1       |
| 13       | 535-0809-00     | WASHER PLATE-VENGEANCE                          | 1       |
| 14       | 550-7352-00     | MAIN BODY-VENGEANCE                             | 1       |
| 15       | 550-7353-00     | FLIP PANEL INTACT-VENGEANCE                     | 1       |
| 16       | 237-5502-03     | SCREW, 6-32 X 1/2 PPH MS BLACK                  | 4       |
| 17       | 519-5100-WW-LED | MULTI FLASHER LED ASSEMBLY-WARM WHITE           | 1       |
| 18       | 237-5903-00     | SCREW, 8-32 X 3/8" HWH                          | 6       |
| 19       | 112-5048-05     | T 1 3/4 1.5mm ROUND LED w/RESISTOR-BLUE         | 1       |
| 20       | 530-7181-00     | HUB-SPRING RETAINER                             | 1       |
| 21       | 237-5845-00     | SCREW, 10-32 X 3/8" SHCS ZINC                   | 1       |
| 22       | 237-6154-01     | SCREW, 4-40 X 3/8" PTH MS - BLACK               | 2       |
| 23       | 237-5976-02     | SCREW, 6-32 X 3/8 HWH SWAGE                     | 2       |
| 24       | 237-5976-01     | SCREW, 6-32 X 1/4 HWH SWAGE                     | 1       |
| 25       | 254-5073-XX     | LED CLIP, RICHCO LEDCR-174                      | 1       |
| 26       | 545-7870-00     | MATTE RIGID VINYL                               | 1       |
| 27       | 545-5428-00     | RUBBER BUMPER                                   | 1       |
| 28       | *036-5605-05-E6 | VENGEANCE LE CABLE ASSY                         | SEE BOM |

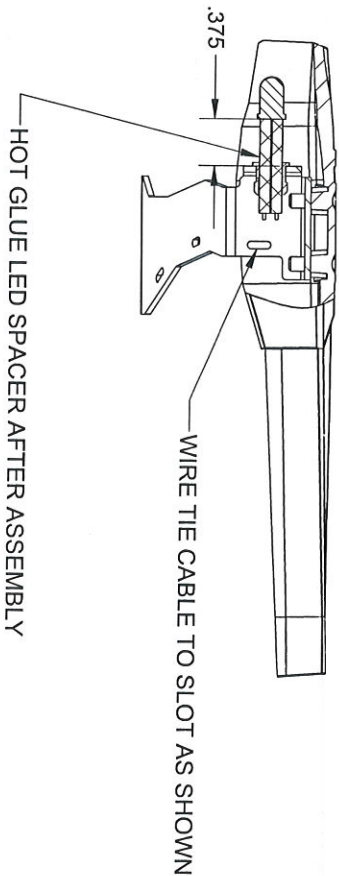
NOTE:  
\*NOT SHOWN



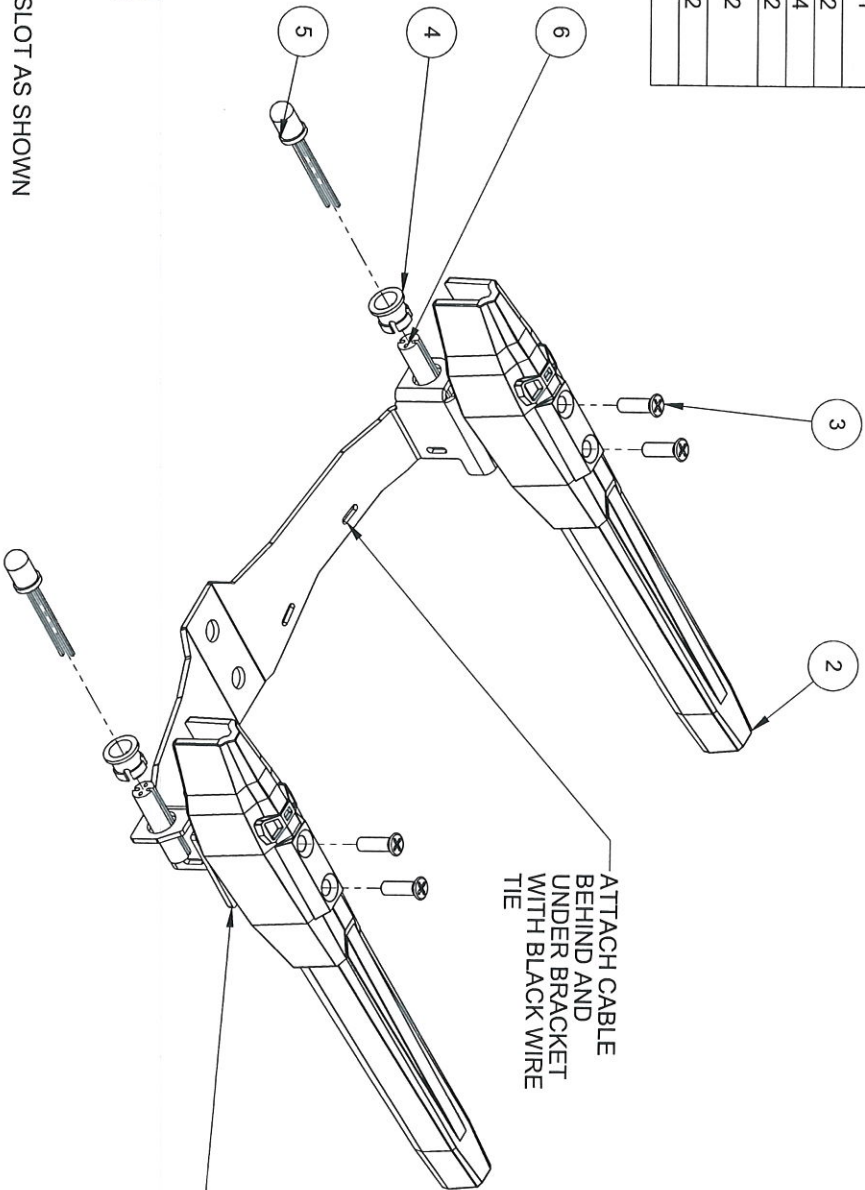
VENGEANCE SHIP ASSEMBLY-LE

511-7523-01

| ITEM NO. | PART NUMBER    | DESCRIPTION                       | Default/Qty. |
|----------|----------------|-----------------------------------|--------------|
| 1        | 535-0806-00    | NACELLE MOUNTING BRACKET          | 1            |
| 2        | 550-7355-00    | NACELLE-VENGEANCE                 | 2            |
| 3        | 237-5983-01    | SCREW, 4-40 X 3/8 PFH MS, SS      | 4            |
| 4        | 254-5073-XX    | LED CLIP, RICHCO LEDCR-174        | 2            |
| 5        | 112-5040-05    | T 1 3/4 / 5mm LED w/RESISTOR-BLUE | 2            |
| 6        | 254-5082-02    | LED SPACER, T 1 3/4(5mm)          |              |
| 7        | 036-5605-05-E4 | SHIP LED CABLE                    | 2            |

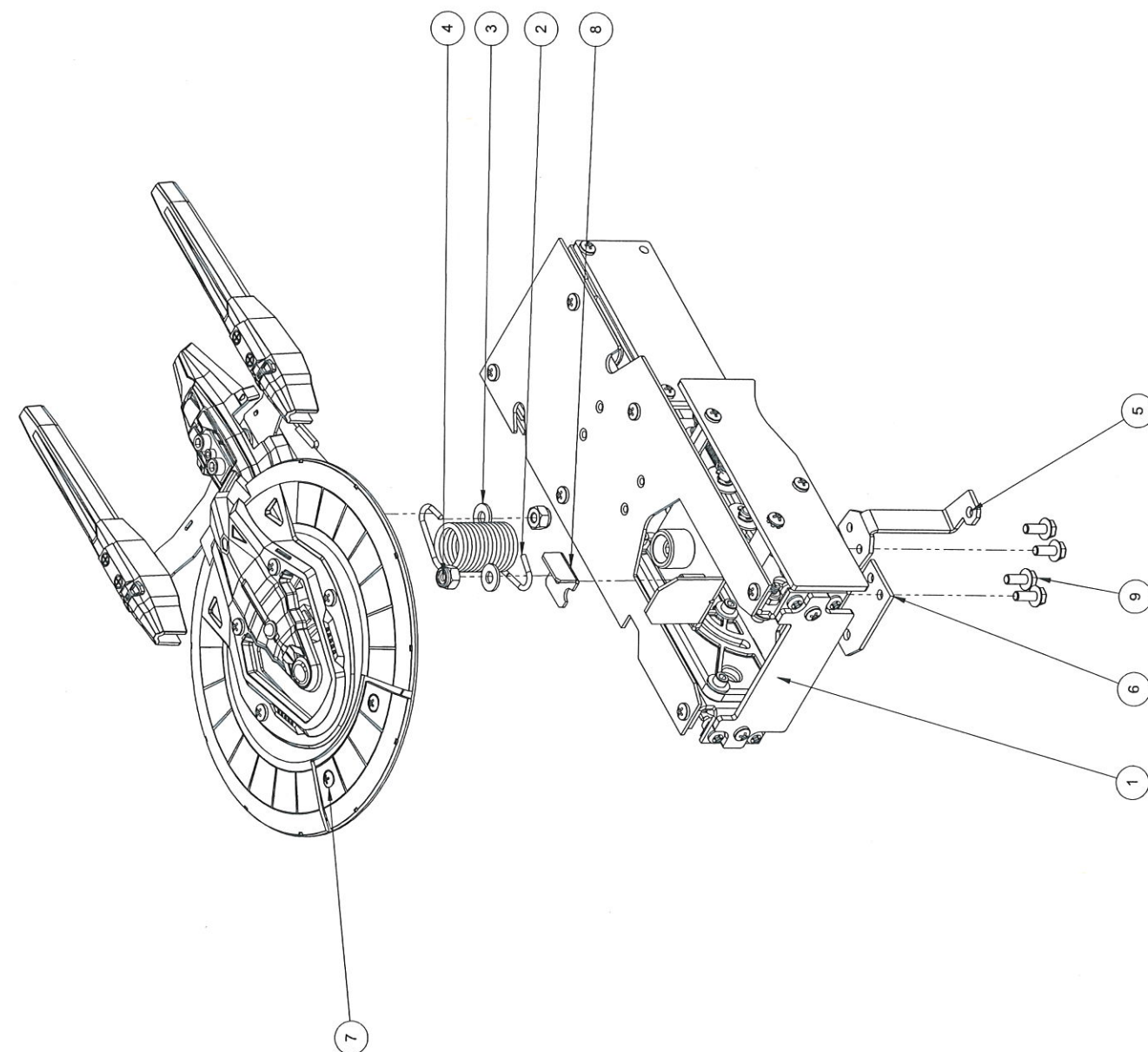


NOTE:  
ADD LOCTITE TO ALL FASTENERS



VENGEANCE NACELLE ASSEMBLY  
511-7522-01



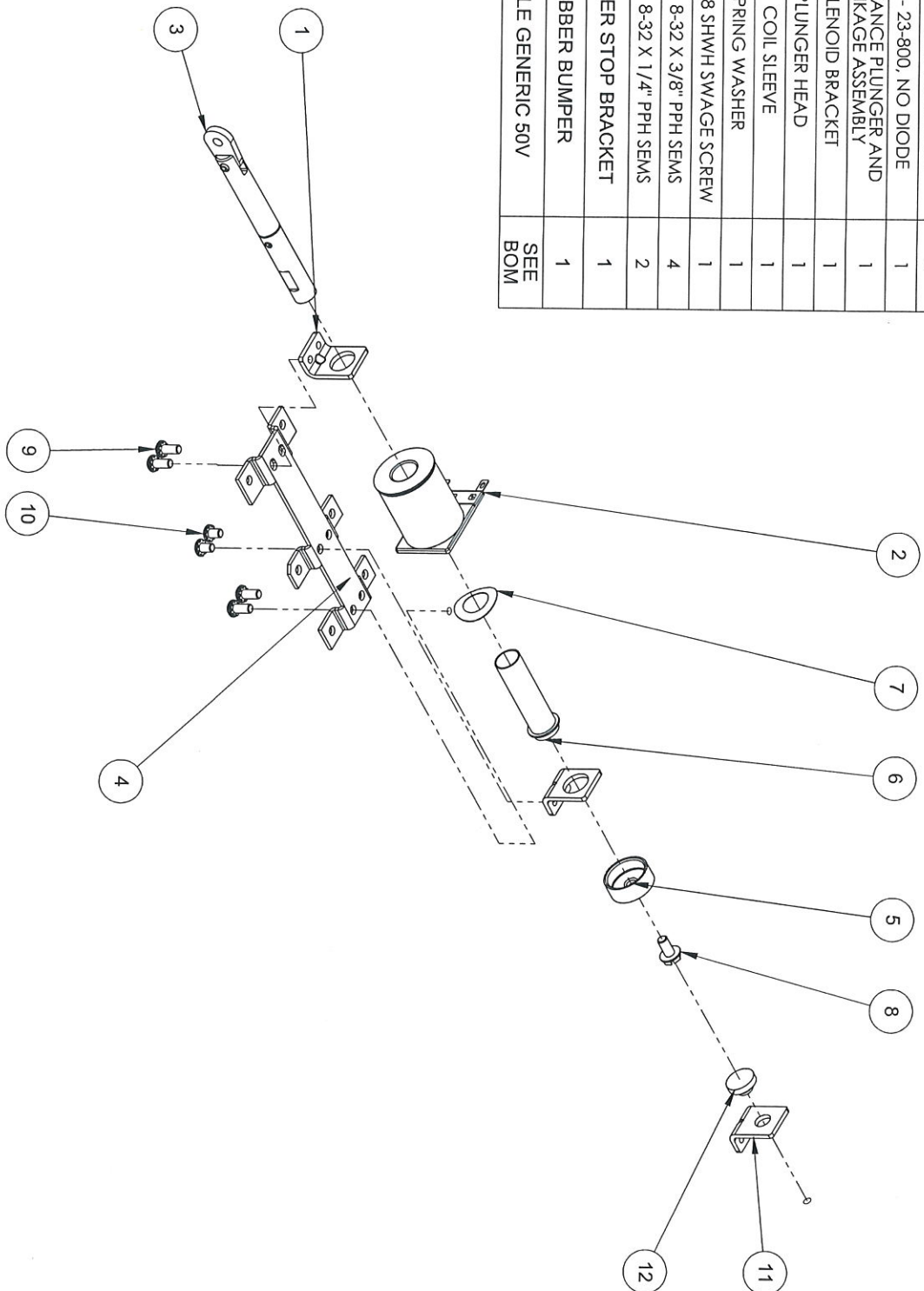


| ITEM NO. | PART NUMBER | DESCRIPTION                         | Default/<br>QTY. |
|----------|-------------|-------------------------------------|------------------|
| 1        | 511-7524-00 | VENGEANCE SHIP MAIN ASSEMBLY-LE     | 1                |
| 2        | 266-5101-00 | BUCKLING SPRING                     | 1                |
| 3        | 242-5005-00 | #8 WASHER                           | 2                |
| 4        | 240-5102-00 | 8-32 NYLON LOCK NUT                 | 2                |
| 5        | 535-0811-00 | VENGEANCE SUPPORT BRACKET           | 1                |
| 6        | 535-0864-00 | VENGEANCE LE MITG. PLATE            | 1                |
| 7        | 511-7523-01 | VENGEANCE SHIP ASSEMBLY-LE          | 1                |
| 8        | 535-0865-00 | VENGEANCE LE OPTO FLAG/WASHER PLATE | 1                |
| 9        | 237-5903-00 | SCREW, 8-32 X 3/8" HWH              | 4                |

NOTE:  
ADD LOCTITE TO ALL FASTENERS ON VENGEANCE

| ITEM NO. | PART NUMBER   | DESCRIPTION                               | Default/<br>QTY. |
|----------|---------------|---|------------------|
| 1        | 535-5203-03   | COIL RETAINING BRACKET                    | 2                |
| 2        | 090-5001-ND   | COIL - 23-800, NO DIODE                   | 1                |
| 3        | 515-9725-00   | VENGEANCE PLUNGER AND<br>LINKAGE ASSEMBLY | 1                |
| 4        | 535-0801-00   | SOLENOID BRACKET                          | 1                |
| 5        | 530-5511-00   | PLUNGER HEAD                              | 1                |
| 6        | 545-5076-01   | COIL SLEEVE                               | 1                |
| 7        | 269-5002-00   | SPRING WASHER                             | 1                |
| 8        | 237-5985-00   | 10-32 X 3/8 SHWH SWAGE SCREW              | 1                |
| 9        | 232-5301-00   | SCREW, 8-32 X 3/8" PPH SEMS               | 4                |
| 10       | 232-5300-00   | SCREW, 8-32 X 1/4" PPH SEMS               | 2                |
| 11       | 535-0692-01   | PLUNGER STOP BRACKET                      | 1                |
| 12       | 545-5105-00   | RUBBER BUMPER                             | 1                |
| 13       | *036-5542-02L | CABLE GENERIC 50V                         | SEE<br>BOM       |

NOTE:  
\*NOT SHOWN

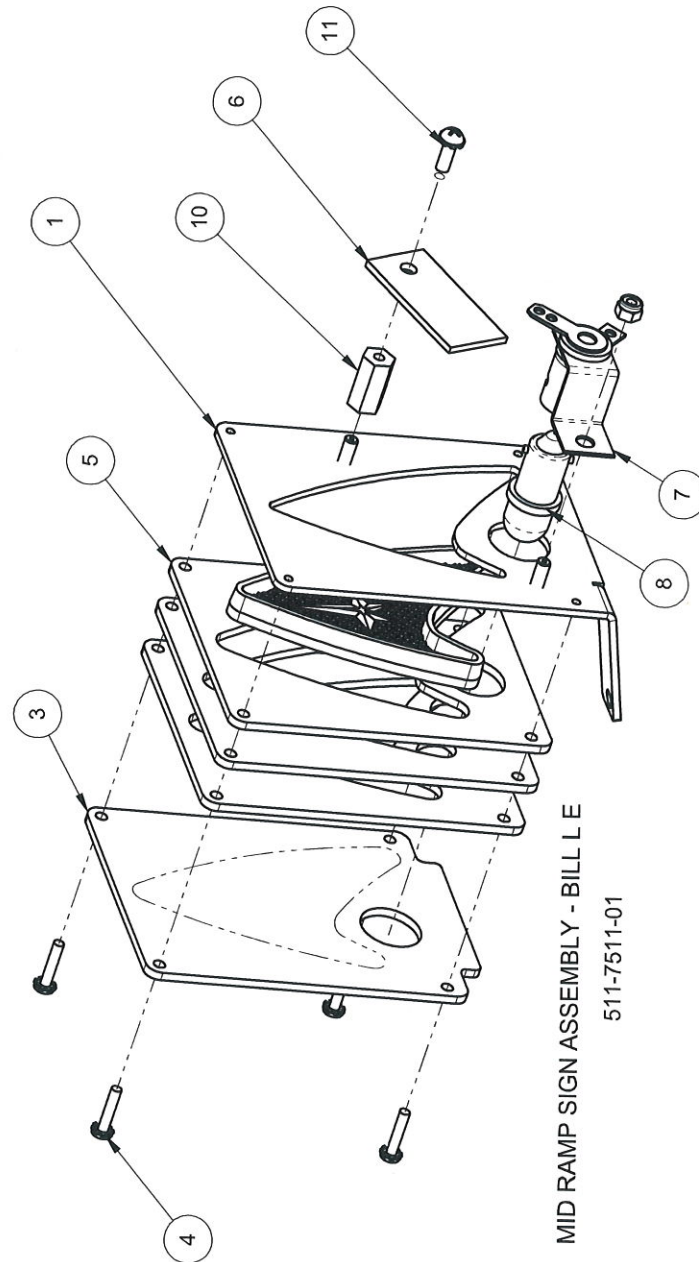


NOTE:  
ADD LOCTITE TO ALL FASTENERS ON VENGEANCE

VENGEANCE SOLENOID ASSEMBLY-LE  
511-7520-01



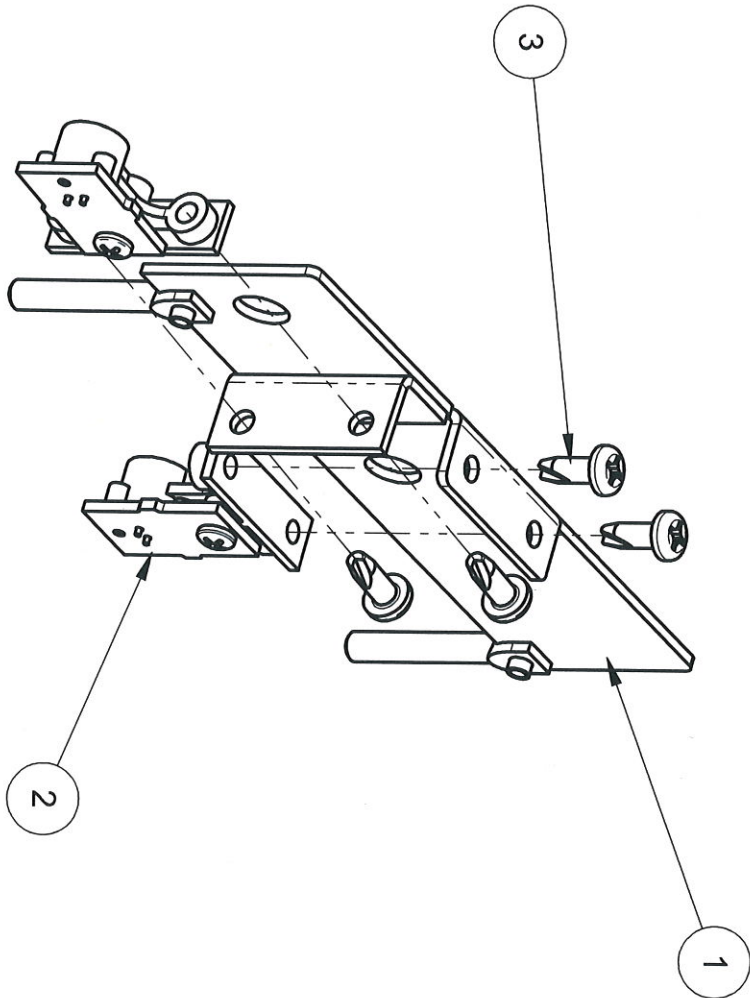
| ITEM #  | QTY | PART #         | DESCRIPTION                                      |
|---------|-----|----------------|--|
| 1       | 1   | 535-0799-00    | BRACKET - MID RAMP SIGN                          |
| 2       | 1   | 550-5101-00    | INSERT-STAR TREK BADGE                           |
| 3       | 1   | 830-6929-42    | ARTED BUTY # 42 - MID RAMP SIGN COVER - BILL L E |
| 4       | 4   | 237-5872-01    | SCREW, 2-56 X 7/16" PPH SEMS                     |
| 5       | 3   | 830-6929-43    | CLEAR BUTY # 43 - MIDRAMP SIGN COVER BILL L E    |
| 6       | 1   | 520-5333-00    | PCB - TRI-COLOR LED                              |
| 7       | 1   | 077-5002-00    | SOCKET - SHORT STAND-UP 2-LUG                    |
| 8       | 1   | 112-5034-02    | DOUBLE LED, BAYONET BASE - RED                   |
| 10      | 1   | 254-5083-01    | HEX SPACER - FEMALE/FEMALE - 4-40                |
| 9       | 1   | 240-5303-00    | 4-40 NYLON LOCK NUT                              |
| NOT SHN | 1   | 036-5548-02    | GENERIC LAMP CABLE                               |
| NOT SHN | 1   | 036-5605-08-E4 | TRICOLOR LED CABLE                               |
| 11      | 1   | 237-5882-00    | SCREW, #4-40 X 5/16 PRH SEMS                     |



MID RAMP SIGN ASSEMBLY - BILL L E

511-7511-01

| ITEM # | QTY | PART #      | DESCRIPTION                     |
|--------|-----|-------------|---------------------------------|
| 1      | 1   | 535-0681-06 | BALL GUIDE # 6 - BILL           |
| 2      | 2   | 500-6775-01 | OPTO TRANSCIVER ASSY, 15" LEADS |
| 3      | 4   | 237-5880-00 | SCREW, #6 X 3/8 PPH T-25        |

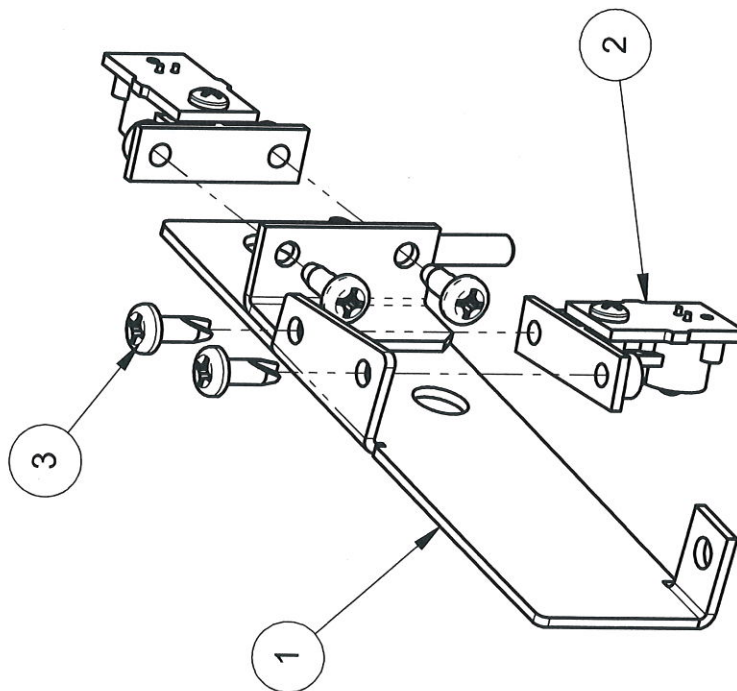


BALL GUIDE ASSEMBLY # 6 - BILL

511-7492-06



| ITEM # | QTY | PART #      | DESCRIPTION                     |
|--------|-----|-------------|---------------------------------|
| 1      | 1   | 535-0681-07 | BALL GUIDE # 7 - BILL           |
| 2      | 2   | 500-6775-01 | OPTO TRANSCIVER ASSY, 15" LEADS |
| 3      | 4   | 237-5880-00 | SCREW, #6 X 3/8 PPH T-25        |

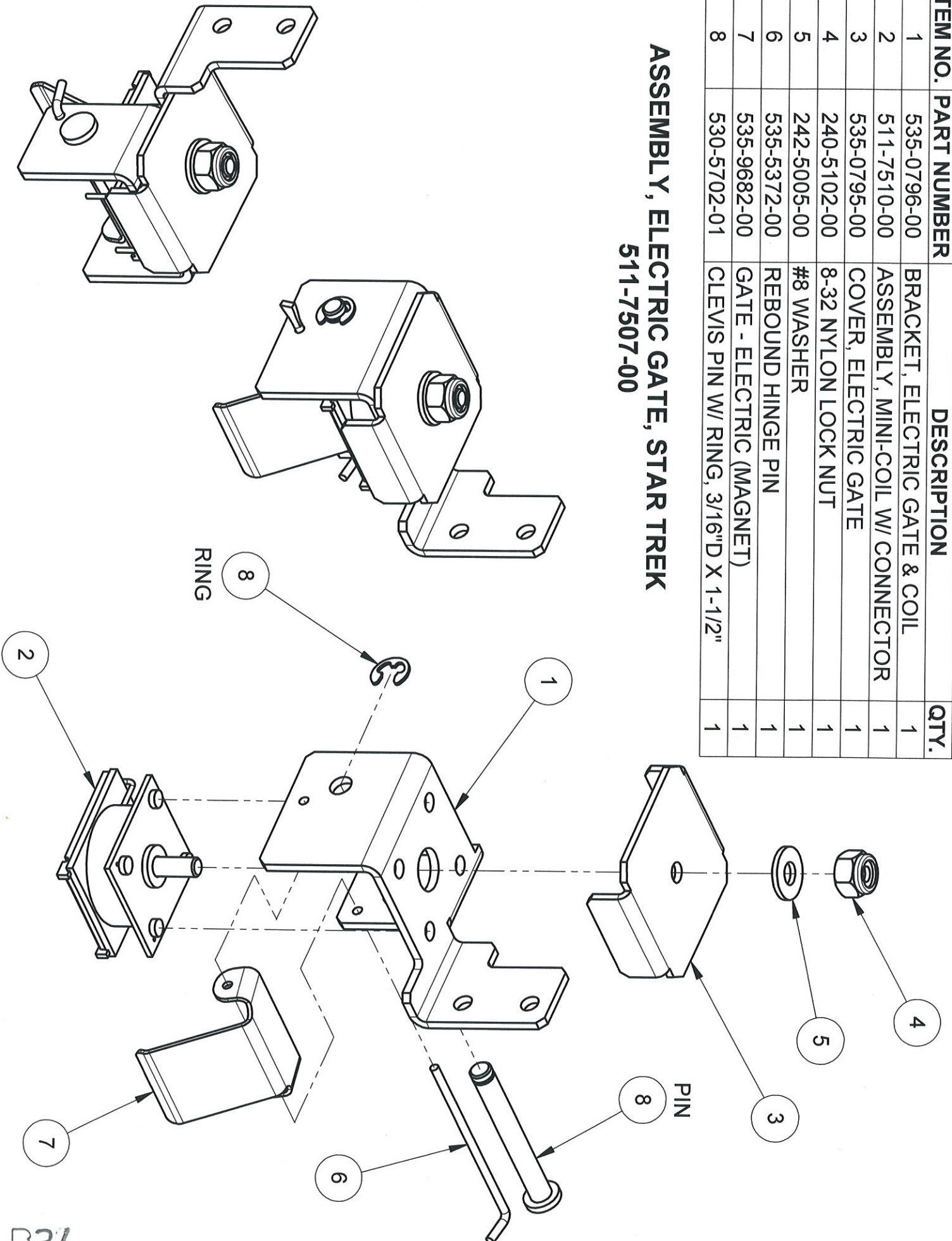


BALL GUIDE ASSEMBLY # 7 - BILL

511-7492-07

| ITEM NO. | PART NUMBER | DESCRIPTION                         | QTY. |
|----------|-------------|-------------------------------------|------|
| 1        | 535-0796-00 | BRACKET, ELECTRIC GATE & COIL       | 1    |
| 2        | 511-7510-00 | ASSEMBLY, MINI-COIL W/ CONNECTOR    | 1    |
| 3        | 535-0795-00 | COVER, ELECTRIC GATE                | 1    |
| 4        | 240-5102-00 | 8-32 NYLON LOCK NUT                 | 1    |
| 5        | 242-5005-00 | #8 WASHER                           | 1    |
| 6        | 535-5372-00 | REBOUND HINGE PIN                   | 1    |
| 7        | 535-9682-00 | GATE - ELECTRIC (MAGNET)            | 1    |
| 8        | 530-5702-01 | CLEVIS PIN W/ RING, 3/16"D X 1-1/2" | 1    |

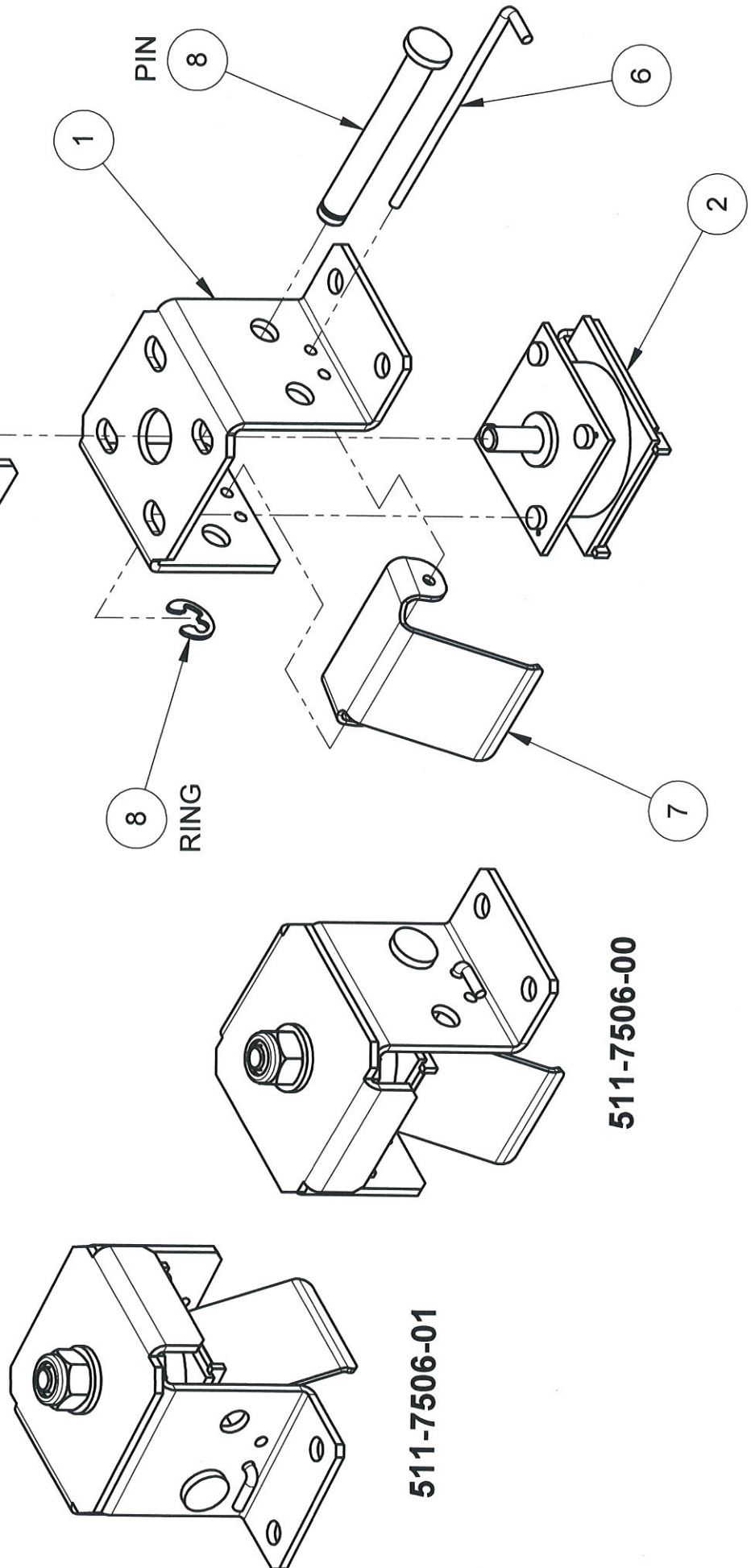
## ASSEMBLY, ELECTRIC GATE, STAR TREK 511-7507-00

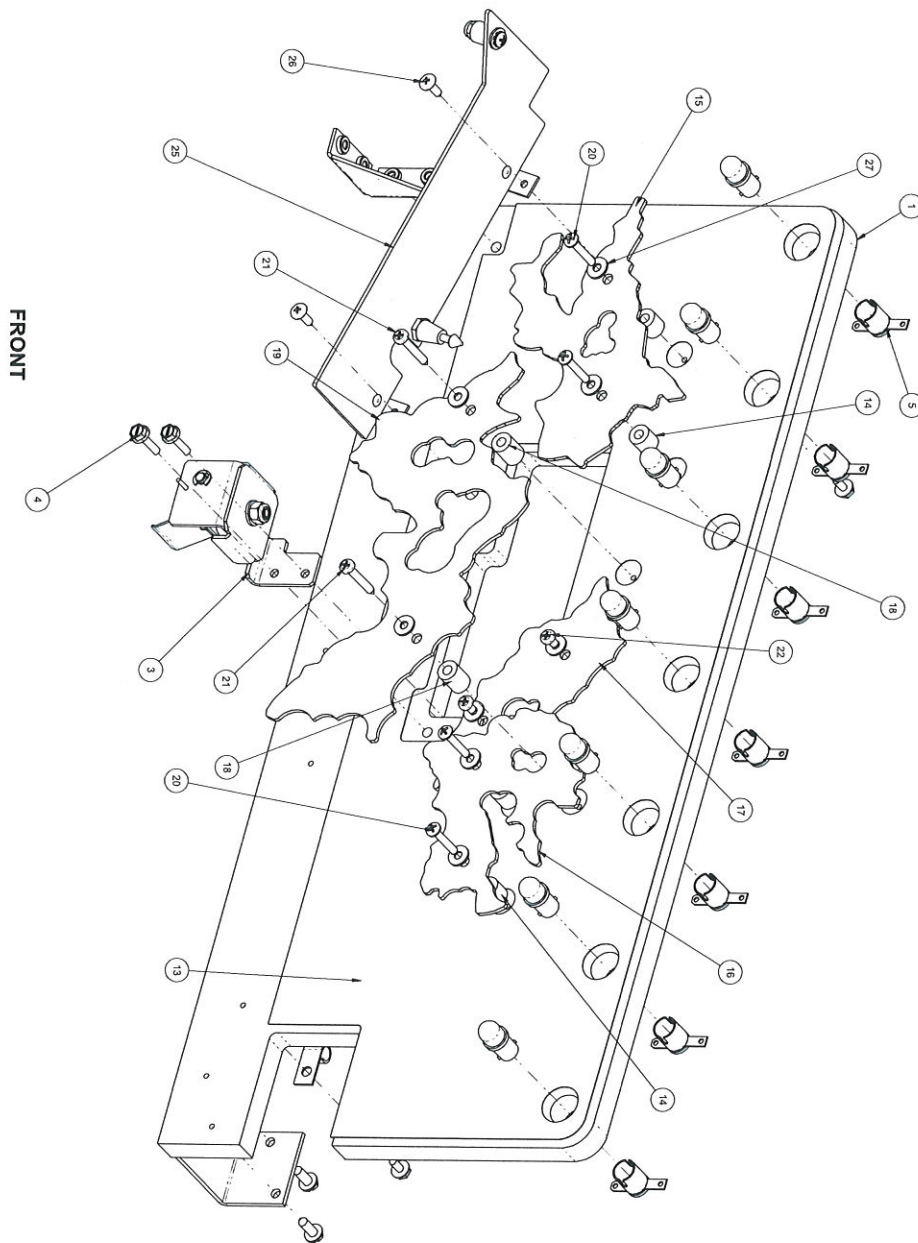




| ITEM NO. | PART NUMBER | DESCRIPTION                         | QTY. |
|----------|-------------|-------------------------------------|------|
| 1        | 535-9847-00 | BRACKET, ELEC GATE, RAIL MOUNT      | 1    |
| 2        | 511-7510-00 | ASSEMBLY, MINI-COIL W/ CONNECTOR    | 1    |
| 3        | 535-0795-00 | COVER, ELECTRIC GATE                | 1    |
| 4        | 242-5005-00 | #8 WASHER                           | 1    |
| 5        | 240-5102-00 | 8-32 NYLON LOCK NUT                 | 1    |
| 6        | 535-5372-00 | REBOUND HINGE PIN                   | 1    |
| 7        | 535-9682-00 | GATE - ELECTRIC (MAGNET)            | 1    |
| 8        | 530-5702-01 | CLEVIS PIN W/ RING, 3/16"D X 1-1/2" | 1    |

# **ASSEMBLY, ELECTRIC GATE, SMALL COVER** **511-7506-00/-01**



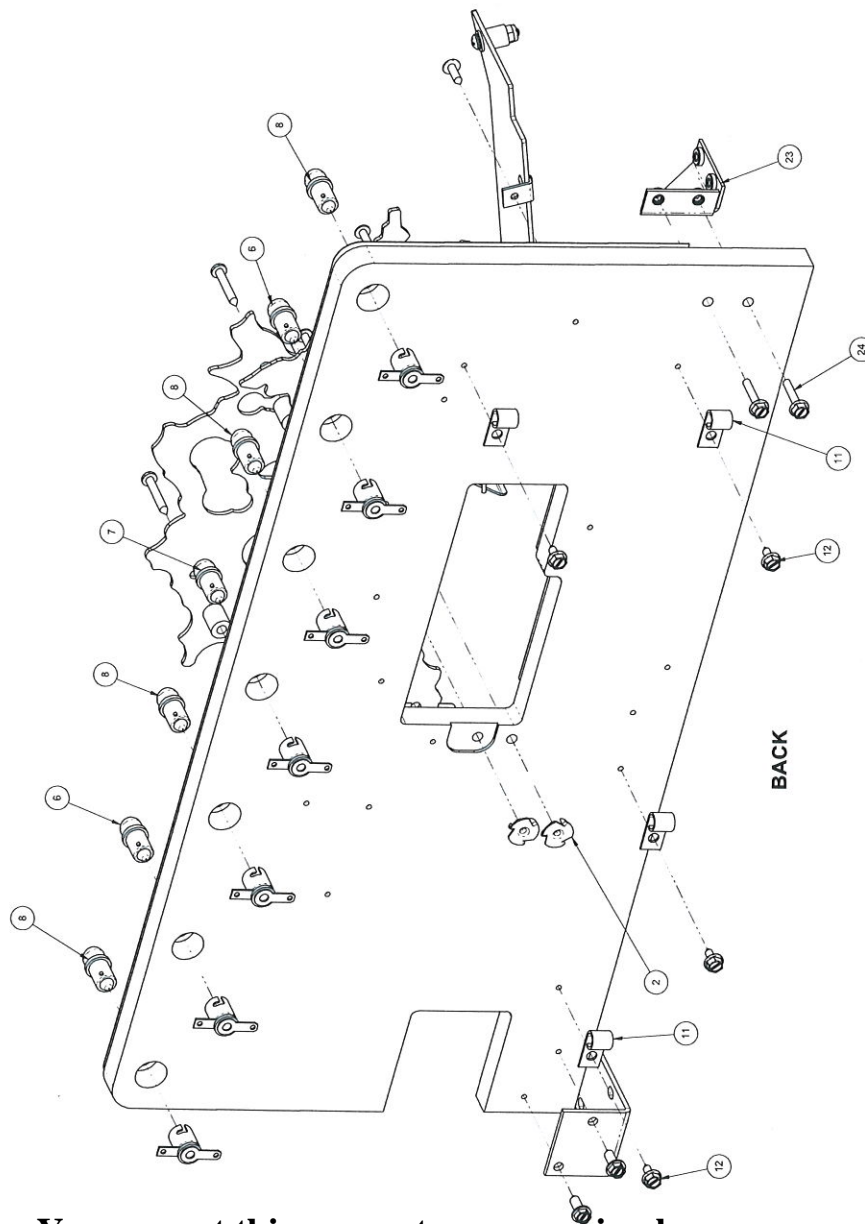


| ITEM #  | QTY | PART #         | DESCRIPTION                                  |
|---------|-----|----------------|--|
| 1       | 1   | 525-5830-01    | BACK PANEL - BILL PRO                        |
| 2       | 1   | 250-5002-00    | 6-32 T-NUT                                   |
| 3       | 1   | 511-581-00     | ASSEMBLY, ELECTRIC GATE, BILL                |
| 4       | 2   | 511-581-00     | ASSEMBLY, ELECTRIC GATE, BILL                |
| 5       | 2   | 072-5000-00    | SCREW, 6-32 X .58" HHV SWAGE                 |
| 6       | 2   | 112-5004-05    | DOUBLE LED, BAYONET BASE, RED                |
| 7       | 1   | 112-5004-02    | DOUBLE LED, BAYONET BASE, RED                |
| 8       | 4   | 112-5004-08    | DOUBLE LED, BAYONET BASE, CLEAR              |
| 9       | 1   | 535-8984-00    | BACKET - BACK PANEL SUPPORT                  |
| 10      | 2   | 234-5101-00    | SCREW, #6 X 1/2" SLT HHV AB ZINC             |
| 11      | 4   | 045-5000-03    | 1/4" CABLE CLAMP                             |
| 12      | 4   | 234-5000-00    | SCREW, #6 X 3/8" HHV                         |
| 13      | 1   | 625-0705-108   | DECAL - BACK PANEL - BILL                    |
| 14      | 1   | 625-0705-108   | DECAL - BACK PANEL - BILL                    |
| 15      | 1   | 830-9891-42    | INTON SPACER, BLACK, .38 OD X .175 ID X 3/8" |
| 16      | 1   | 830-9891-42    | INTON SPACER, BLACK, .38 OD X .175 ID X 3/8" |
| 17      | 1   | 830-9891-46    | BUTY # 64 - NEBULA - CENTER LOW              |
| 18      | 2   | 254-5000-01    | INTON SPACER, BLACK, .38 OD X .175 ID X 1/2" |
| 19      | 1   | 830-9891-44    | BUTY # 64 - NEBULA - CENTER UP               |
| 20      | 4   | 231-5003-00    | SCREW, #6 X 7/8" PH                          |
| 21      | 2   | 232-5004-00    | SCREW, #6 X 1 PPH AB ZINC                    |
| 22      | 2   | 232-5004-00    | SCREW, #6 X 1 PPH AB ZINC                    |
| 23      | 1   | 535-8981-00    | BACK PANEL BRACE                             |
| 24      | 1   | 535-8981-02    | 6-32 X .38 HHV SWAGE                         |
| 25      | 1   | 511-581-00     | ASSEMBLY, ELECTRIC GATE, BILL                |
| 26      | 2   | 231-5805-00    | SCREW, #6 X 1/2" PH A                        |
| 27      | 8   | 242-5001-00    | WASHER                                       |
| 28      | 1   | 631-5000-00    | STAPLE, 5/16                                 |
| NOT SHN | 3   | 605-5003-00    | BRIDGED WIRE, 20 GA                          |
| NOT SHN | 1   | 036-5605-04 E4 | CABLE - BACK PANEL - BILL PRO                |

BACK PANEL ASSEMBLY - BILL E

500-7275-00





BACK PANEL ASSEMBLY - BILL L E

500-7275-00

| ITEM #  | QTY | PART #         | DESCRIPTION                                    |
|---------|-----|----------------|--|
| 1       | 1   | 595-5830-01    | BACK PANEL - BILL PRO                          |
| 2       | 2   | 240-5002-00    | 6-32 T-NUT                                     |
| 3       | 1   | 511-7597-00    | ASSEMBLY, ELECTRIC GATE, BILL                  |
| 4       | 2   | 237-5976-04    | SCREW, 6-32 X 5/8" HWH SWAGE                   |
| 5       | 2   | 917-5000-00    | SOCKET - STAPLED - 2 LUGS                      |
| 6       | 2   | 112-5004-02    | DOUBLE LED BAYONET BASE - RED                  |
| 7       | 1   | 112-5004-02    | DOUBLE LED BAYONET BASE - RED                  |
| 8       | 4   | 112-5004-02    | DOUBLE LED BAYONET BASE - CLEAR                |
| 9       | 1   | 535-8964-00    | BRACKET - BACK PANEL SUPPORT                   |
| 10      | 2   | 234-5101-00    | SCREW, #6 X 1/2" SLT HWH AB ZINC               |
| 11      | 4   | 040-5000-03    | 1/4" CABLE CLAMP                               |
| 12      | 4   | 234-5000-00    | SCREW, #6 X 3/8" HWH                           |
| 13      | 1   | 820-7016-106   | DECAL - BACK PANEL - BILL                      |
| 14      | 4   | 254-5000-12    | NYLON SPACER - BLACK - 3/8 OD X .175 ID X 3/8" |
| 15      | 1   | 830-6931-67    | BUTY #67 - NEBULA - LEFT                       |
| 16      | 1   | 830-6931-65    | BUTY #65 - NEBULA - CENTER LOW                 |
| 17      | 1   | 830-6931-66    | BUTY #66 - NEBULA - CENTER UP                  |
| 18      | 2   | 234-5000-01    | NYLON SPACER - BLACK - 3/8 OD X .175 ID X 1/2" |
| 19      | 1   | 830-6931-64    | BUTY #64 - NEBULA - CENTER UP                  |
| 20      | 4   | 237-5003-00    | SCREW, #6 X 7/8" PPH                           |
| 21      | 2   | 232-5004-00    | SCREW, #6 X 1 PPH AB ZINC                      |
| 22      | 2   | 232-5000-00    | SCREW, #6 X 3/8 PPH AB ZINC                    |
| 23      | 1   | 535-0587-00    | BACK PANEL BRACE                               |
| 24      | 2   | 237-5975-02    | 8-32 X 3/4 HWH SWAGE                           |
| 25      | 1   | 511-7483-48    | BUTY ASSEMBLY #48 - BILL L E                   |
| 26      | 2   | 232-5009-00    | SCREW, #6 X 1/2" PTHA                          |
| 27      | 8   | 232-5009-00    | SCREW, #6 X 1/2" PTHA                          |
| 28      | 1   | 535-0587-00    | BACK PANEL BRACE                               |
| 29      | 1   | 600-5003-00    | STAPLE #16                                     |
| NOT SHN | 14  | 631-5003-00    | BRAIDED WIRE - 20 GA                           |
| NOT SHN | 3   | 600-5003-00    | STAPLE #16                                     |
| NOT SHN | 1   | 036-5605-04-E4 | CABLE - BACK PANEL - BILL PRO                  |

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## Optional Kits available through your Distributor:

Pinball Location Maintenance Standard Kit (for STAR TREK LE Pinball).....502-6002-E6

**Standard Kit includes :** 8 oz. Novus Wax #2 Fine (Red) (675-0003-01), Cloth, Rubber Rings (used above playfield), Bulbs (Bulb quantities vary and is limited to 25 per type), Fuses (1/per type) and 4 Pinballs. **Note:** Quanties, sizes and contents subject to change without notice.

Pinball Location Maintenance Deluxe Kit (for STAR TREK LE Pinball)..... 502-6003-E6

**Deluxe Kit includes :** Pinball Location Maintenance Standard Kit as described above plus a quantity of Flipper Rebuild Kits. **Note:** Quantity varies which equals the same quantity of flippers used in this game.

▲ THIS GAME KIT INCLUDES ( 2 ) FLIPPER REBUILD KITS ▲

Plastics\*Kit (for STAR TREK Pro. Pinball) ..... 803-5000-E4

**Plastics Kit includes:** Plastic Sets (830-6193-XX,830-6194-XX,830-6931-XX,830-6935-XX )

Plastics\*Kit (for STAR TREK LE/PRE.Pinball).....803-5000-E6

**Plastics Kit includes:** Plastic Sets (830-6194-XX,830-6929-XX,830-6931-XX,830-6935-XX)

Decals\*Kit (for STAR TREK LE,Pre.Pro Pinball) ..... 802-5000-E4

**Decals Kit includes:** Decal Set  
(820-7016,820-8025-XX,820-8026-XX,820-8027-XX,820-8028-XX,820-8031-XX,) for Pro/Premium/LE

**\*Attention:** No individual Plastic or Decal can be ordered separately, unless noted otherwise. Plastics & Decals are subject to change without notice during and / or after production. Key Fobs subject to availability and may or may not be included in the plastic set. All designs, shapes & pieces used subject to change without notice. Kit contents subject to change. Service Bulletin(s) will announce any critical changes, if warranted. The last 2-digits shown on plastics or decals are for reference only.

**STAR TREK LE Parts available through your Distributor:**

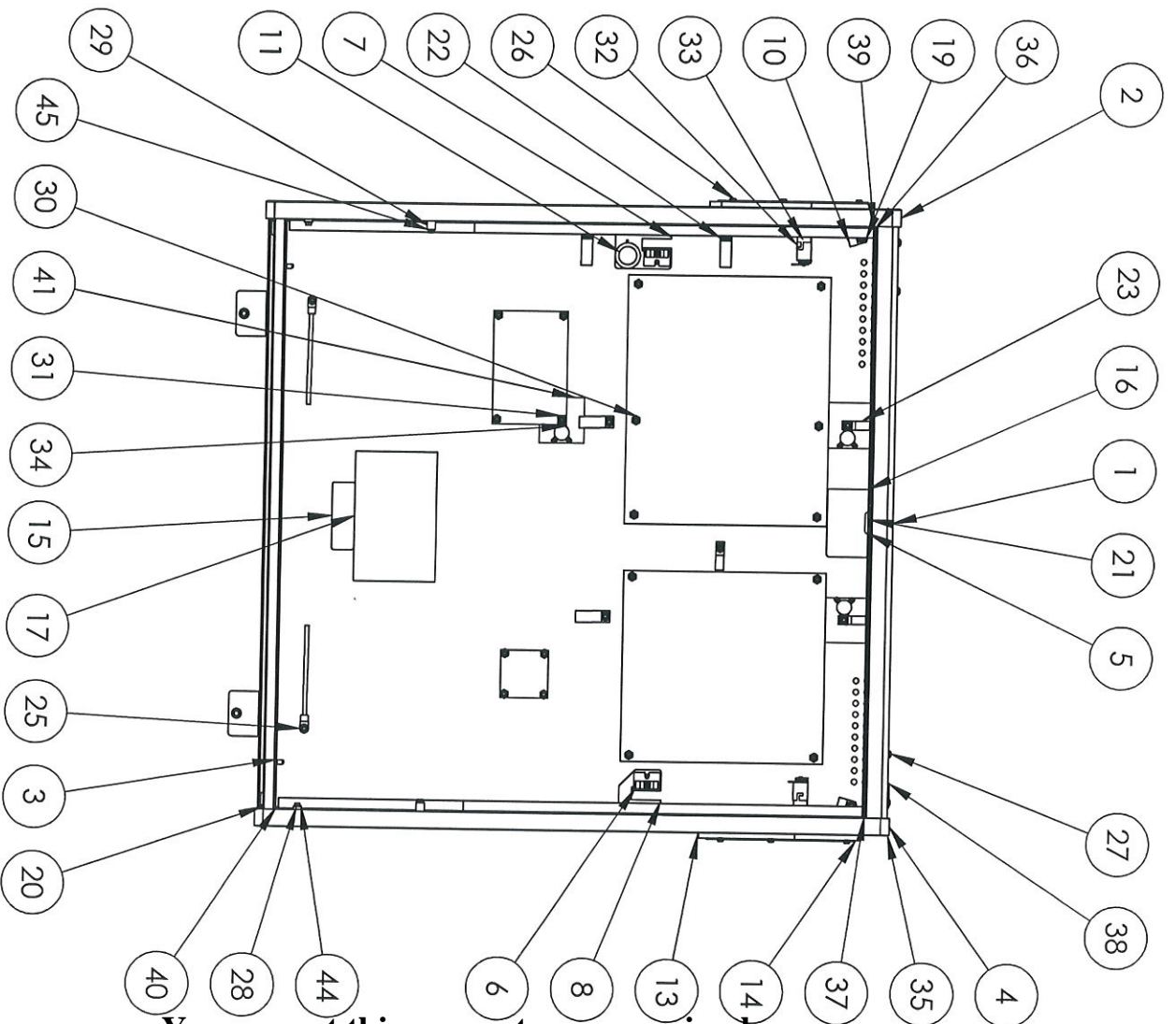
|   |                |
|---|----------------|
| Flipper Button Assy White .....   | 500-5026-38    |
| Leg Assy Assy Tiger Drylac Blue.....  | 500-5921-58    |
| Front MoldingTiger Drylac Blue.....   | 515-8646-58    |
| Left Side Armor Tiger Drylac Blue.....  | 535-0678-01-05 |
| Right Side Armor Tiger Drylac Blue.....   | 535-0678-02-05 |
| Pivot Hinge Right Tiger Drylac Blue.....  | 535-7999-58R   |
| Pivot Hinge Left Tiger Drylac Blue.....   | 535-7999-58L   |
| Bottom Arch Steel Gloss Black.....  | 535-0861-01    |
| STAR TREK LE Mirror Backglass.....  | 830-52E6-00    |
| Cabinet & Back-box Decals sold as a complete set.....   | 802-5001-E6    |
| part#820-66E6-01 left back-box,820-66E6-02 right side back-box,820-66E6-03 left side cabinet,820-66E6-04 right side cabinet,820-66E6-05 front cabinet |                |



STAR TREK Premium Parts available through your Distributor:

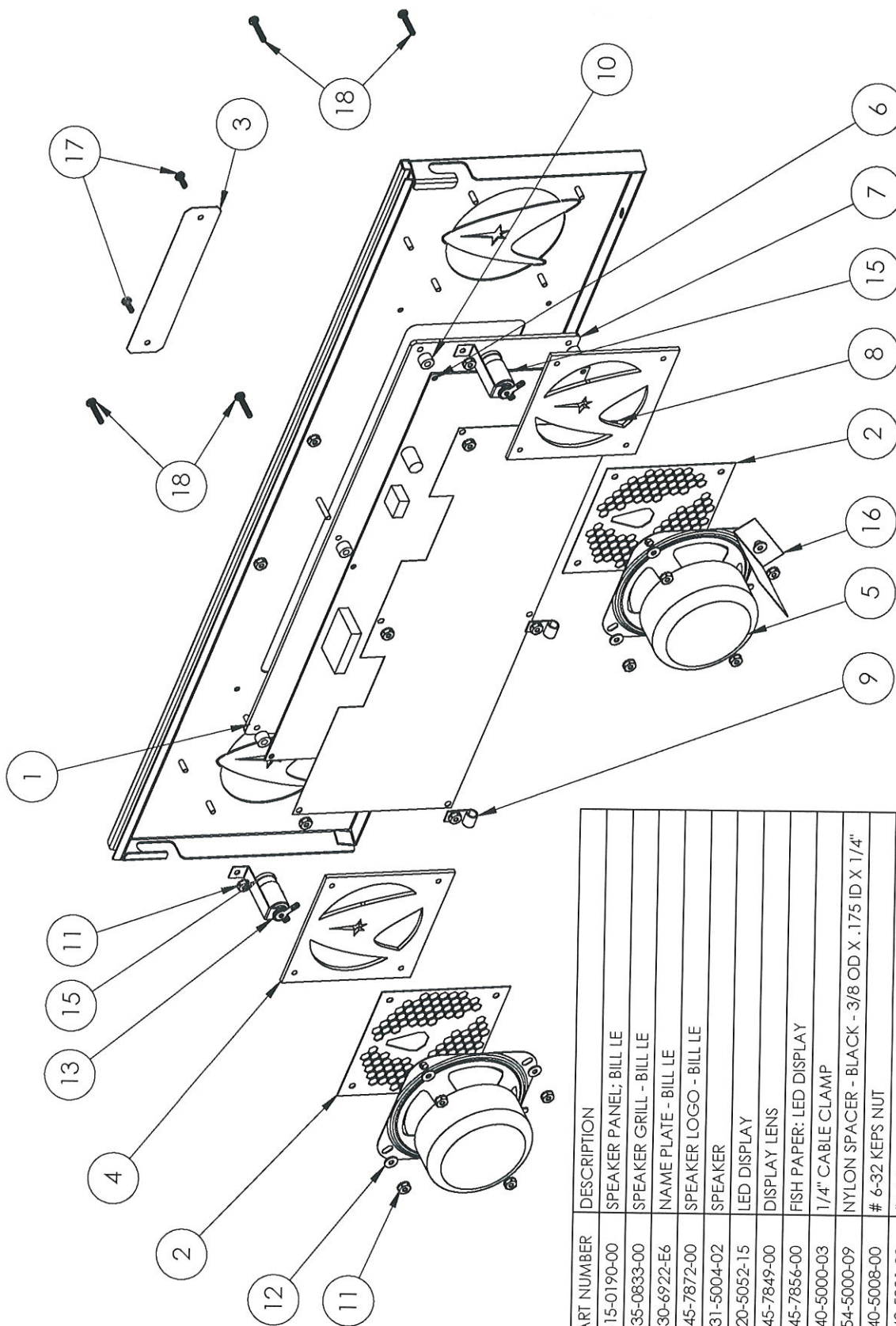
|   |             |
|---|-------------|
| Flipper Button Assy White.....  | 500-5026-38 |
| Leg Assy Assy CandyRed.....   | 500-5921-22 |
| Front Molding Candy Red.....  | 515-8646-22 |
| Left Side Armor Candy Red.....  | 535-0862-22 |
| Right Side ARmor Candy Red.....   | 535-0862-23 |
| Pivot Hinge Right Candy Red.....  | 535-7999-23 |
| Pivot Hinge Left Candy Red.....   | 535-7999-22 |
| Bottom Arch Candy Red.....  | 545-5995-02 |
| Star Trek PremiumBackglass.....   | 830-52E5-01 |
| Cabinet & Back-box Decals sold as a complete set.....   | 802-5001-E5 |
| Consist of the following parts: 820-66E5-01 left back-box,820-66E5-02 right side back-box,820-66E5-03 left side cabinet,820-66E5-04 right side cabinet,820-66E5-05 front cabinet. |             |

| ITEM | QTY. | PART NUMBER    | DESCRIPTION                                    |
|------|------|----------------|--|
| 1    | 1    | 515-9695-00    | BACK, BACK BOX                                 |
| 2    | 1    | 525-5831-03-17 | SIDE PANEL, LEFT, LE BACK BOX                  |
| 3    | 1    | 515-9694-00    | BOTTOM BRKT, BACK BOX                          |
| 4    | 1    | 525-5831-04-17 | SIDE PANEL, RIGHT, BILL LE                     |
| 5    | 1    | 355-6158-00    | LOCK BB BLACK, SHOT                            |
| 6    | 2    | 077-5214-01    | FLUORESCENT BULB SOCKET - ROPS COMPLIANT       |
| 7    | 1    | 535-7739-00    | FLUOR, LIGHT MTG BRKT, LEFT                    |
| 8    | 1    | 535-7739-01    | FLUOR, LIGHT MTG BRKT, RIGHT                   |
| 9    | 2    | 254-5080-00    | SPACER, #8-1/4"                                |
| 10   | 2    | 040-5000-23    | WIRE CLAMP, 1/4" CLOSED TAB                    |
| 11   | 1    | 165-5011-01    | STARTER, FLUORESCENT                           |
| 12   | 2    | 535-0828-00    | FLUOR ADAPTOR BRKT                             |
| 13   | 2    | 545-7867-00    | LOGO PLATE - BB                                |
| 14   | 2    | 535-0829-00    | SHIELD PLATE, BILL BB                          |
| 15   | 1    | 820-6082-00    | CAUTION HIGH VOLTAGE LABEL                     |
| 16   | 1    | 820-6266-02    | CAUTION, BALLAST LABEL                         |
| 17   | 1    | 820-6384-00    | BACKBOX FUSE LABEL                             |
| 18   | 1    | 010-5015-00    | BALLAST CU462 W                                |
| 19   | 20   | 240-5104-00    | 8-32 KEPS NUT                                  |
| 20   | 17   | 232-5301-00    | SCREW, 8-32 X 3/8" PPH SEMS                    |
| 21   | 1    | 237-5805-00    | SCREW, #6 X 1/2" PPH AB 8/O                    |
| 22   | 4    | 040-5000-09    | WIRE CLIP, 1" OPEN TAB                         |
| 23   | 3    | 040-5000-06    | 1/2" CABLE CLAMP                               |
| 24   | 4    | 237-5602-00    | SCREW, 8-32 X 1/2" PPH MS, ZINC                |
| 25   | 2    | 040-5005-00    | CABLE TIE - SCREW ON                           |
| 26   | 6    | 237-4307-20    | #6-32 TORX STAINLESS STEEL SCREW               |
| 27   | 8    | 232-5301-01    | # 8-32 X 3/8" PPH MS SEMS SCREW - BLACK        |
| 28   | 12   | 254-5000-19    | NYLON SPACER - BLACK - 3/8 OD X .175 ID X 1/8" |
| 29   | 2    | 254-5000-12    | NYLON SPACER - BLACK - 3/8 OD X .175 ID X 3/8" |
| 30   | 28   | 240-5102-00    | 8-32 NYLON LOCK NUT                            |
| 31   | 3    | 077-5106-00    | 2-LUG STAND-UP REV. MOUNT SHORT SOCKET         |
| 32   | 2    | 077-5102-00    | STAND-UP SOCKET #89 - LONG                     |
| 33   | 2    | 113-5034-05    | LAMP - #89, BLUE LED                           |
| 34   | 3    | 113-5034-08    | LAMP - #89, WHITE LED                          |
| 35   | 2    | 820-6466-XX    | DECAL: BILL, LE BB SIDE                        |
| 36   | 1    | 535-0834-00    | REAR GLASS CHANNEL: BILL LE                    |
| 37   | 1    | 535-0835-00    | GLASS CHANNEL, FRONT, BILL LE                  |
| 38   | 1    | 545-7876-00    | 7/8" HOLE PLUG, PLASTIC, BLACK                 |
| 39   | 2    | 545-7878-01    | T" EXTRUSION                                   |
| 40   | 2    | 545-7878-02    | T" EXTRUSION                                   |
| 41   | 3    | 545-0745-00    | FISH PAPER: BULB MOUNT                         |
| 42   | 6    | 240-5008-00    | # 6-32 KEPS NUT                                |
| 43   | 6    | 242-5001-00    | #6 WASHER                                      |
| 44   | 14   | 234-5001-02    | SCREW, #6 X 1/2" HWH                           |
| 45   | 2    | 237-6010-00    | #8-32 X 3/4" HWH MS                            |
| 46   | 8    | 234-5101-00    | SCREW, #8 X 1/2" SLT HWH AB ZINC               |
| 47   | 1    | 500-9824-01    | SPEAKER PANEL - BILL LE                        |
| 48   | 1    | 520-5337-01    | I/O BOARD                                      |
| 49   | 1    | 520-5352-01    | CPU BOARD                                      |
| 50   | 1    | 520-5326-01    | DRIVER BOARD 12 TRANS NO SINKS                 |
| 51   | 1    | 520-5351-00    | PCB 5AM COM BRIDGE                             |



500-9823.03  
BACK BOX ASSEMBLY  
STAR TREK LE



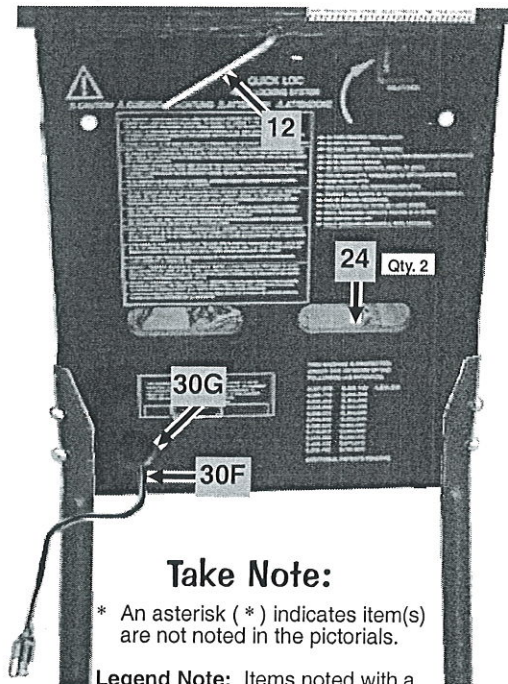
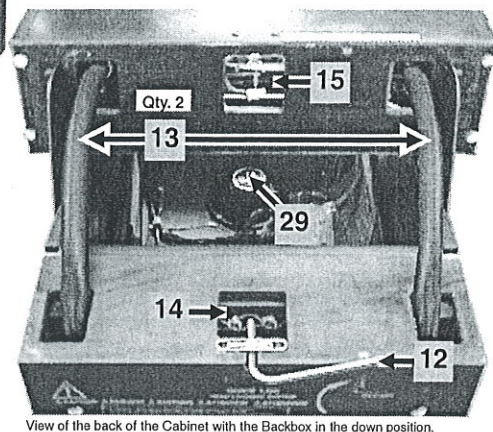
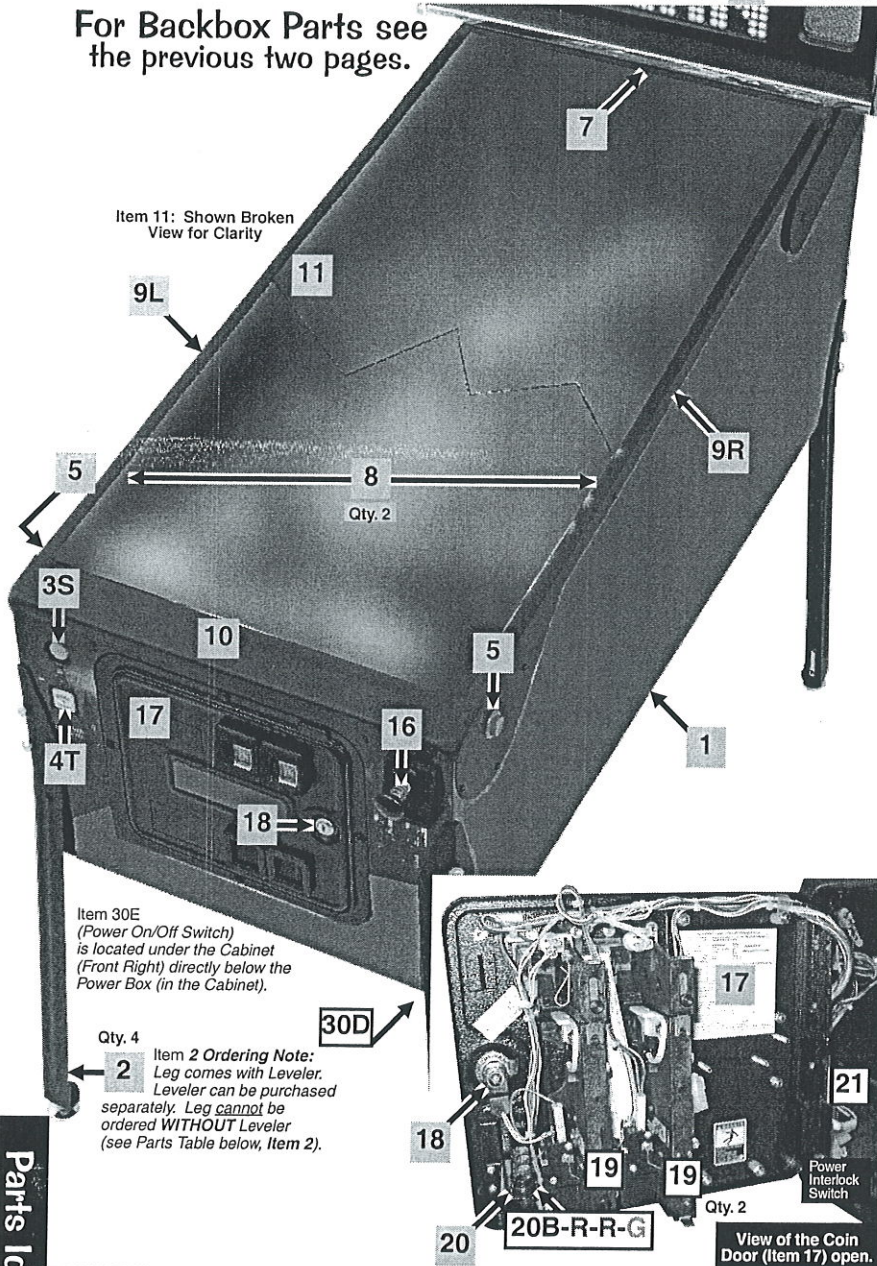


500-9824-01  
SPEAKER PANEL

| ITEM | QTY. | PART NUMBER    | DESCRIPTION                                    |
|------|------|----------------|--|
| 1    | 1    | 515-0190-00    | SPEAKER PANEL; BILL LE                         |
| 2    | 2    | 535-0833-00    | SPEAKER GRILL - BILL LE                        |
| 3    | 1    | 830-6922-E6    | NAME PLATE - BILL LE                           |
| 4    | 2    | 545-7872-00    | SPEAKER LOGO - BILL LE                         |
| 5    | 2    | 031-5004-02    | SPEAKER  |
| 6    | 1    | 520-5052-15    | LED DISPLAY                                    |
| 7    | 1    | 545-7849-00    | DISPLAY LENS                                   |
| 8    | 1    | 545-7856-00    | FISH PAPER; LED DISPLAY                        |
| 9    | 3    | 040-5000-03    | 1/4" CABLE CLAMP                               |
| 10   | 6    | 254-5000-09    | NYLON SPACER - BLACK - 3/8 OD X .175 ID X 1/4" |
| 11   | 18   | 240-5008-00    | # 6-32 KEPS NUT                                |
| 12   | 8    | 242-5001-00    | #6 WASHER                                      |
| 13   | 2    | 077-5102-00    | STAND-UP SOCKET, #89 - LONG                    |
| 14   | 1    | 600-5006-12    | GND CABLE - 12" LONG                           |
| 15   | 2    | 113-5034-05    | LAMP - #89; BLUE LED                           |
| 16   | 1    | 545-7877-00    | FISCHE PAPER                                   |
| 17   | 2    | 237-6307-06    | #6-32 TORX STAINLESS STEEL SCREW               |
| 18   | 4    | 237-6307-12    | #6-32 TORX STAINLESS STEEL SCREW               |
| 19   | 1    | 036-5260-33    | 14 PIN RIBBON                                  |
| 20   | 1    | 036-5452-02    | 2 SPKR IN SERIES                               |
| 21   | 1    | 036-5520-00    | LED DISPLAY 5V                                 |
| 22   | 1    | 036-5605-14-E6 | LE SPEAKER FLASH LAMP                          |



For Backbox Parts see the previous two pages.

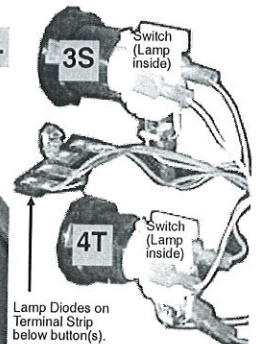
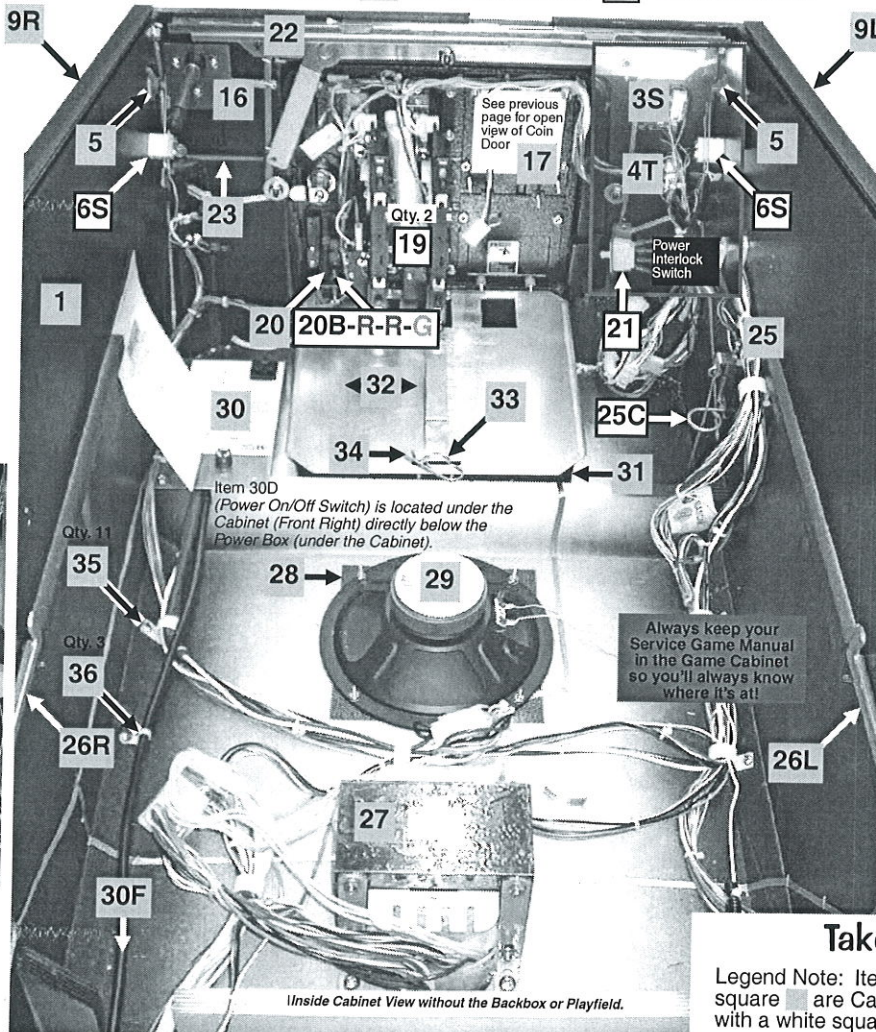
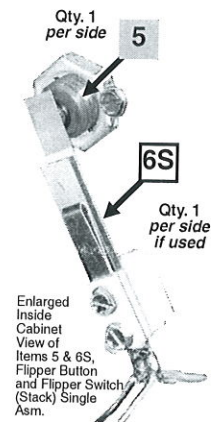


| Nr.  | CAB. PARTS & SWITCHES                      | QTY. | SPI PART Nr.    |
|--|--|------|-----------------|
| 1  | Screened Cabinet Star Trek™ (No Parts)     |      | 525-5834-00     |
| 2  | Tiger Drylac Blue Legs with leveler        | 4    | 500-5921-58     |
| Item 2 is secured by: Leg Bolt Back Plate (535-5703-00) and Leg Bolt 3/8" X 16 X 2-1/2" Hex 5/8" Hd. (2/per) (231-5001-01) Leg Leveler ONLY (3/8"-16 X 3") (500-5017-00).  |  |      |                 |
| 3S   | Start Button (Green Round) with Sw. + Lamp | 1    | 500-6388-44-LED |
| 4T   | Tournament Button (Yel. Sq.), w/Sw. + Lamp |      | 500-6587-06-TL  |
| Item 3S & 4T includes the Switch & Lamp (No Wiring; desolder old wiring where required). Switch or Bulb replacement: ⚡ TWIST & LOCK (-TL) >> not snap-in << Assembly Parts Included: Microswitch (180-5174-00); #555 Wedge Base Clear Bulb (165-5002-00); If 4T is not desired, use optional Button Plug Black (500-6566-00). Requires 3-Lug Terminal Strip (055-5204-03) and Diodes, 1N4004 (Qty. 2) (112-5003-00) inside cabinet under button(s) for Lamp Operation (Diode for Switch, located on Switch.) |  |      |                 |
| 5  | Flipper Button (white) Assy (No Sw.)       | 2    | 500-5026-38     |
| Item 5 is secured by: Pal Nut for Flipper Button (Metal) (Qty. 2/per) (240-5003-01) Pal Nut inside cabinet secured by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1/per) (234-5101-00) and Washer (Zinc), .187" ID X .875" OD X .048" Thick (Qty. 1/per) (242-5059-00)   |  |      |                 |
| 6S   | Flipper Switch Single Assembly             | 1    | 500-6889-01     |
| Assembly Parts Included: Flipper Switch Stack Single (Paliney Contact) (180-5160-01) and Capacitor - Ceramic .05 Mfd 25 volt (130-5001-00) Item 6S/6D are secured to Cab. by: #6 X 1-1/4 SHWH AB (Zinc) (Qty. 2/per) (237-5959-00)   |  |      |                 |
| 6D   | Flipper Switch Double Assembly             | 1    | 500-6890-01     |
| Assembly Parts Included: Flipper Switch Stack Double (Paliney Contact) (180-5164-01) and Capacitor - Ceramic .05 Mfd 25 volt (130-5001-00) Item 6S/6D are secured to Cab. by: #6 X 1-1/4 SHWH AB (Zinc) (Qty. 2/per) (237-5959-00)   |  |      |                 |

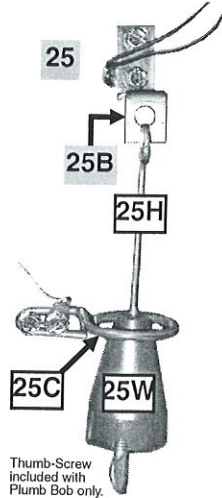
| Nr.  | CAB. PARTS & SWITCHES                               | QTY. | SPI PART Nr.   |
|--|---|------|----------------|
| 7  | Rear Glass Channel 20-3/8" Length                   | 1    | 545-5038-00    |
| 8  | Plastic Channel 42-5/8" Lg. (Left/Rt.)              | 2    | 545-5017-00    |
| 9L   | Side Armor (Left)                                   | 1    | 535-0678-01    |
| 9R   | Side Armor (Right)                                  | 1    | 535-0678-02    |
| Items 9L & 9R are secured @ front & side by: Pem Stud 1/4 X 1" Flange Head Black (Qty. 1/per) (237-6116-01), 1/4-20 Flange Nut (Qty. 1/per) (240-5300-00) and #8 X 1/2" T20 Tamper Proof Black (Qty. 5/per) (237-6173-05); @ rear (backbox) by: #10-24 X 1" Sq. Neck Carr. Bolt Black (Qty. 1/per) (231-5021-00) and #10-24 Hex Nut (Qty. 1/per) (240-5202-00) |   |      |                |
| 10   | Front Molding (Tiger Drylac Blue) < W/Button Hole > | 1    | 515-8646-58    |
| Item 10 includes: Self-Adhesive Foam Rubber 3/8" X 3/16" X 20-3/8" (3") (626-5001-00) Item 10 works with Item 22 (next page) ONLY.   |   |      |                |
| 11   | Playfield Glass (Tempered) 21" X 43" X 3/16"        | 1    | 660-5001-00    |
| 12   | Hex Key Allen Wrench 5/16"                          | 1    | 777-0001-00    |
| 13   | Corrugated Tubing Black 1"ø X 2.6' Lg.              | 1    | 605-5008-03    |
| Above Item 13 covers the Cable Wiring Harnesses going into the Backbox from the Cabinet.   |   |      |                |
| 14   | Roto Lock Male (R2-0055-02)                         | 1    | 355-5006-01    |
| Item 14 is secured by: #10-24 X 1-3/4" Carriage Bolt Square Neck (Qty. 2) (231-5022-00), #10-24 Nylon Stop Nut (Qty. 2) (240-5206-00) and #10 Washer, 7/32" ID X 1/2" OD X 1/16" Thick (Qty. 2) (242-5003-00)  |   |      |                |
| 15   | Roto Lock Female (on Backbox)                       | 1    | 355-5006-02    |
| 16   | Ball Shooter (Plunger) Assembly                     | 1    | 500-6146-00-07 |



**You can get this game at [www.magic-play.eu](http://www.magic-play.eu)**  
**Cabinet - Parts & Switches** Continued



Enlarged Inside Cabinet View of Items 3S, 4T and 25 (25B, 25C, 25H & 25W), Plumb Bob Tilt Switch.



**Take Note:**

Legend Note: Items noted with a cyan square   are Cabinet Parts. Items noted with a white square   are Switches.

| Nr.  | CAB. PARTS & SWITCHES                        | QTY. | SPI PART Nr. |
|--|--|------|--------------|
| 17   | Coin Door 2-Cht \$V Up-Stk. 4-Button Bracket | 1    | 501-5018-172 |
| Item 17 is secured by: 1/4"-20 X 1-1/4" Carriage Bolt Square Neck (Qty. 4) (231-5003-00) 1/4"-20 Flange Nut (Qty. 4) (240-5300-00) and Fend Washer 1/4" I.D. X 1" O.D. (Qty. 3) (242-5009-00) Note: For Coin Door other than USA call Technical Support for SPI Part Nr. |  |      |              |
| 18   | Lock 5/8" Barrel, 3/4, Flt. Cam              | 1    | 355-5055-00  |
| 19   | Coin Door Switch (USA) (Happ)                | 2    | 180-5024-01  |
| ALT. SW.: 19C: Coin Door Switch (USA) (Coin Control) (180-5024-00)<br>ALT. SW.: 19J: Coin Door Switch (¥ Japan) (180-5091-00)  |  |      |              |
| 20   | 4-Button Bracket (for Service Menu Buttons)  | 1    | 535-6860-04  |
| SWITCH: 20B: Push-Button Service Switch (Black) (180-5192-00)<br>SWITCH: 20R: Push-Button Service Switch (Red) (Qty. 2) (180-5192-02)<br>SWITCH: 20G: Push-Button Service Switch (Green) (180-5192-04)   |  |      |              |
| Ordering Note: Securing hardware for switches included. Decal in kit sold separately.  |  |      |              |
| 21   | Power Interlock-Memory Protect Switch Asm.   | 1    | 500-5808-05  |
| Assembly Parts Included: Mounting Bracket (535-9794-00), Power Interlock (Playfield) Switch (180-5136-00) and secured by: #8 X 1/2" SHWH AB (Zinc) (Qty. 2) (234-5101-00)  |  |      |              |
| 22   | Front Molding Lockdown Asm.                  | 1    | 500-7237-00  |
| Item 22 is secured by: #10-24 X 1-1/4" Carr. Bolt (Qty. 2) (231-5012-00) and #10-24 Keps Nut (Qty. 2) (240-5207-00)  |  |      |              |
| 23   | Lockdown Spring (connected to handle)        | 1    | 265-5008-00  |
| Item 23 is secured by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1) (234-5101-00) and #10 Washer, 7/32" ID X 1/2" OD X 1/16" Thick (Qty. 1) (242-5003-00)   |  |      |              |
| 24   | Grills 2-1/2" X 18" (on Back & Bottom)       | 3    | 545-5072-02  |
| Plumb Bob Tilt Switch Individual Parts Only Ind. Parts Only  |  |      |              |
| 25   | SWITCH:                                      |      |              |
| 25B: Bracket for Hanger Wire (535-5221-00)   |  |      |              |
| 25C: Contact Wire Form (535-7563-01)   |  |      |              |
| 25H: Hanger Wire (535-5319-02)   |  |      |              |
| 25W: Plumb Bob Weight (535-5029-00) (includes Thumb-Screw)   |  |      |              |
| Item 25B is secured to Cabinet by: #6 X 5/8" SHWH AB (Zinc) (Qty. 4) (234-5002-00)   |  |      |              |
| 26L  | Slide & Pivot Support Bracket (Left)         | 1    | 535-5989-00  |
| 26R  | Slide & Pivot Support Bracket (Right)        | 1    | 535-5990-00  |
| Items 26L & 26R are secured by: #10-24 X 1-1/4" Carriage Bolt Square Neck Black (3/per) (231-5012-00) and #10-24 KEPS Nut (3/per) (240-5207-00)  |  |      |              |

| Nr.  | CAB. PARTS & SWITCHES                     | QTY. | SPI PART Nr.   |
|--|---|------|----------------|
| 27   | Transformer 5.7VAC (with Ballast Winding) | 1    | 010-5012-01    |
| Item 27 is secured by: 1/4"-20 X 5/8" PPH MS (Zinc) (Qty. 4) (237-5854-00) and 1/4" Split Lock Washer (Qty. 4) (244-5000-00)   |   |      |                |
| 28   | Woofers (Speaker) Grill 7" X 7"           | 1    | 545-5072-03    |
| 29   | Woofers 8" ø Round 8010 4Ω                | 1    | 031-5007-01    |
| Items 28 & 29 are secured by: #6-32 X 1-1/4" Fin Shank Screw (Qty. 4) (237-5883-00) and #6-32 Keps Nut (Qty. 4) (240-5008-00)  |   |      |                |
|  | Power Input Box Asm. + Univ. Cable        | 1    | 515-5360-08    |
| 30A: Power Box (No Parts) Mounting Frame (535-5932-00)<br>30B*: Line Filter (150-5000-00)<br>30C*: Varistor* TNR159211KM (Domestic) (150-5001-00) or Varistor TRM15G431KM (Euro) (150-5002-00)<br>30D: On/Off Rocker Switch + Bracket Assembly (515-7085-00)<br>30D Incl.: Switch, APEM R2101C5NBB (180-5001-03) + Bracket (535-8318-00)<br>30E: Service Outlet (3-Prong / US) (180-5008-01) / International N/A<br>30F: Line Cord 10' ROJ 3" + Ring Terminal Asm. (515-6566-00)<br>30G: Recessed (Black) Cup (rear of Cabinet) (545-5122-00)<br>30H*: Snap Bushing 9/16" (White) (280-5001-01)<br>30I: Fuse 8 Amp 250V Slo-Blo (Domestic) (200-5000-05) or Fuse 5 Amp 250V Slo-Blo (International) (Qty. 2) (200-5003-00)<br>30J: Fuse Holder (205-5001-00) |   |      |                |
| Universal Cable & Jumper Caps (all voltage variations): See the Yellow Pages, Page y 10.   |   |      |                |
| 31   | Cash Box Plastic Bottom                   | 1    | 545-5090-00    |
| 32   | Cash Box Cover (Validator)                | 1    | 535-5013-03    |
| 33   | Cash Box Lock Bracket (U-Wire)            | 1    | 535-7562-00    |
| Item 33 is secured by: #8 X 5/8" SHWH AB (Green) (Qty. 2) (234-5102-04)  |   |      |                |
| 34   | Large Hair-Pin Clip                       | 1    | 535-7772-00    |
| 35   | Clamps [Multiple Sizes]                   | 36   | 040-5000-XX    |
| Item 35 is secured to Item 1 by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1/per) (234-5101-00) For following sizes, replace -XX with: 3/4" Single = -08 (Qty. 9); 1-1/2" Single = -10 (Qty. 3)   |   |      |                |
| 36   | Zip Cable Tie (Screw Down Style)          | 6    | 040-5005-00    |
| Item 36 is secured by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1/per) (234-5101-00)   |   |      |                |
| 37†  | Meter +12VDC with Bracket Optional        | opt. | G-0053-013-102 |
| † Meters (Diode included) are optional and were not included in this Pinball Machine. Order without the bracket use G-0053-013-102A. More information or Qs? Call Technical Support.   |   |      |                |

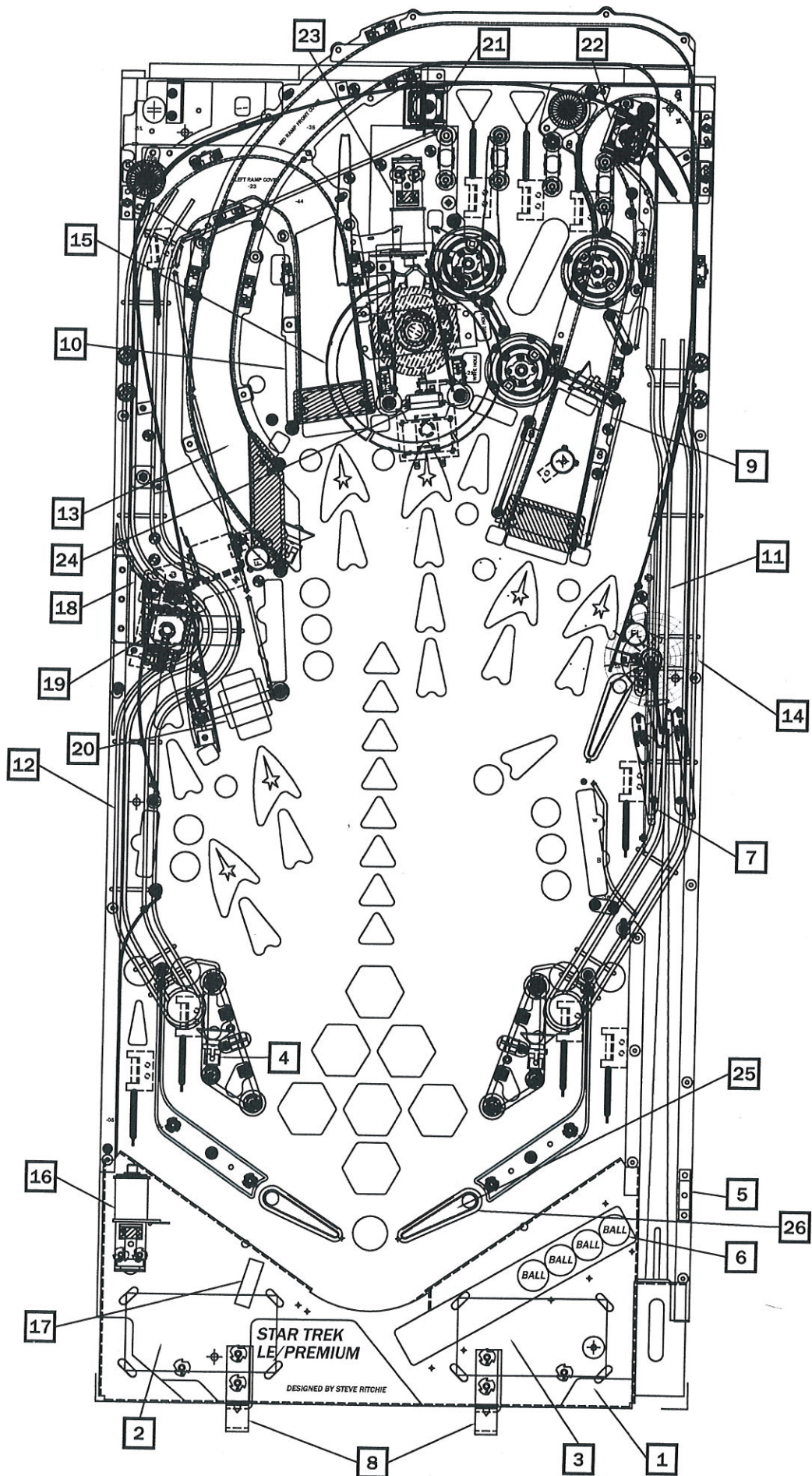
**Parts Identification**



## Main Playfield Top Parts

| PART NAME                                    | QTY | PART NUMBER    |
|--|-----|----------------|
| P/F Playfield Screened w/Inserts & No Parts  | 1   | 830-5100-E6    |
| P/F Playfield Complete w/Inserts & All Parts | 1   | 505-6004-E6    |
| 1. Metal Arch Assy.                          | 1   | 535-0861-01    |
| 2. Instruction Card                          | 1   | 755-5134-12-Y  |
| 3. Coin Card                                 | 1   | 755-5420-12-Y  |
| 4. Chrome Lamp Reflector                     | 3   | 545-5409-01    |
| 5. Bubble level Assy.                        | 1   | 516-0036-00    |
| 6. Pinball, Steel 1-1/16"                    | 4   | 260-5000-00    |
| 7. Shooter Lane Ramp                         | 1   | 535-8145-00    |
| 8. Playfield Hanger Brackets                 | 2   | 535-8385-00    |
| 9. Right Plastic Ramp                        | 1   | 545-7833-00    |
| 10. Left Plastic Ramp                        | 1   | 545-7832-00    |
| 11. Right Wire Ramp                          | 1   | 515-0181-00    |
| 12. Left Wire Ramp                           | 1   | 515-0182-00    |
| 13. Warp Plastic Ramp                        | 1   | 545-7835-00    |
| 14. Molded Enterprise Toy Assy.              | 1   | 500-9830-00    |
| 15. Molded Vengeance Toy Assy.               | 1   | 500-9828-00    |
| 16. Ball Saver Kickback Assy.                | 1   | 500-6697-01-ND |
| 17. Star Field Laser Assy.                   | 1   | 511-7512-00    |
| 18. Slinger Scoop                            | 1   | 511-7525-00    |
| 19. Rotating Deflector                       | 1   | 500-6867-02    |
| 20. Spinning Target Assy.                    | 1   | 500-7079-00    |
| 21. Left Electric Gate                       | 1   | 511-7507-00    |
| 22. Right Electric Gate                      | 1   | 511-7506-01    |
| 23. Vengeance Kickback                       | 1   | 500-6697-03-ND |
| 24. Resettable Memory Drop Target Assy.      | 1   | 500-7282-02-01 |
| 25. Flipper Bat White                        | 3   | 515-5133-08-06 |
| 26. Black Flipper Rubber                     | 3   | 545-5277-00    |



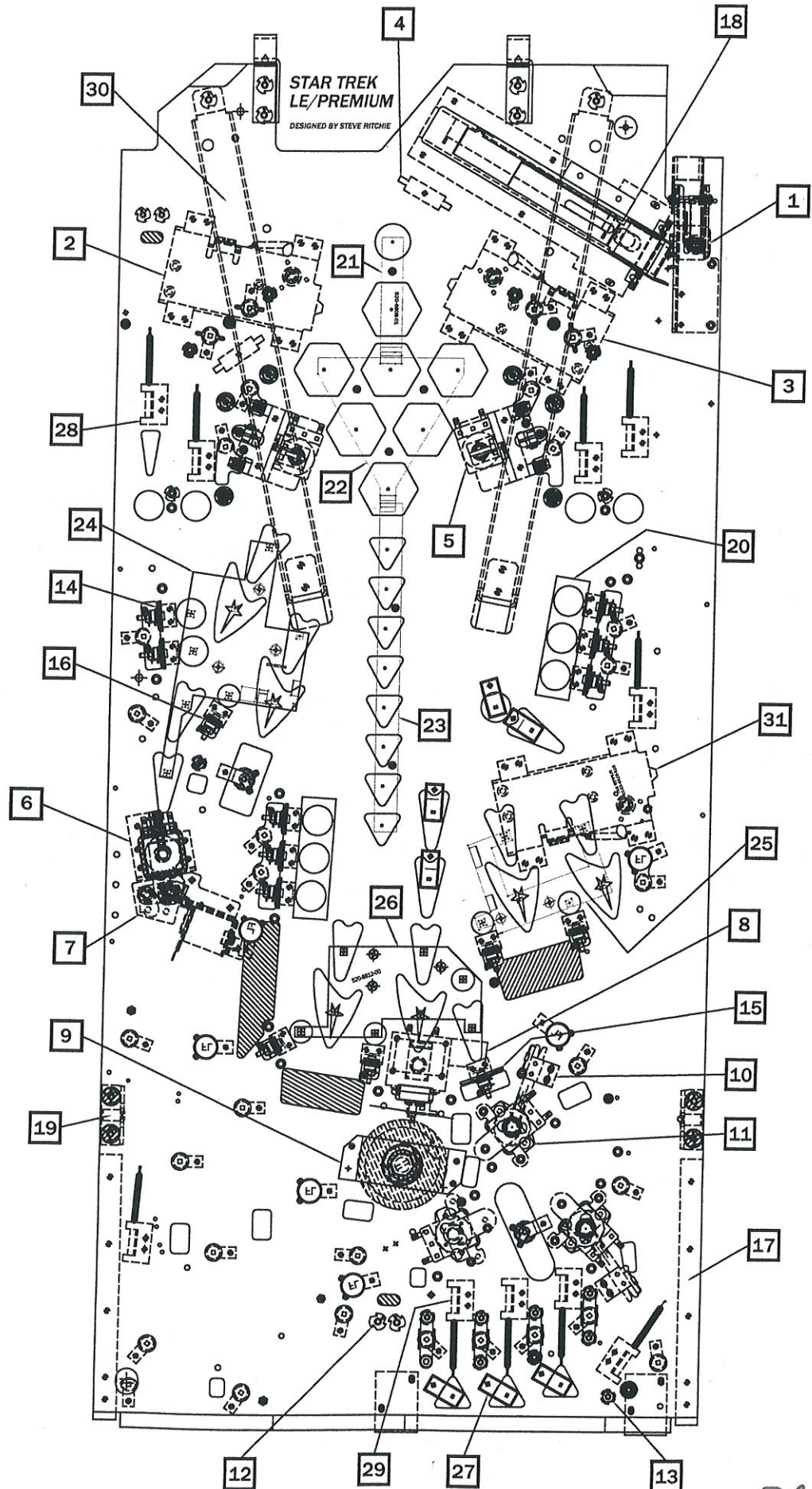


## Main Playfield Bottom Parts

| PART NAME                                     | QTY | PART NUMBER    |
|---|-----|----------------|
| 1. New Unitized Autoplunger                   | 1   | 500-9819-00    |
| 2. Flipper Assembly (Left)                    | 1   | 500-6543-12-ND |
| 3. Flipper Assembly (Right)                   | 2   | 500-6543-02-ND |
| 4. Fuse Holder Clip Socket                    | 3   | 516-0031-00    |
| 5. Slingshot Assembly                         | 2   | 500-5849-01-ND |
| 6. VUK Assembly                               | 1   | 500-6867-02-E6 |
| 7. Rotating Deflector Assembly                | 1   | 500-6867-02    |
| 8. Drop Target, Resettable & Memory           | 1   | 500-9826-01    |
| 9. Vengeance Magnet Assembly                  | 1   | 516-0018-00    |
| 10. Pop Bumper Switch Assembly                | 3   | 515-6459-09    |
| 11. Pop Bumper Bottom Assembly                | 1   | 515-6459-04-ND |
| 12. 8-32 T-Nut                                | 20  | 240-5101-00    |
| 13. 6-32 T-Nut                                | 35  | 240-5002-00    |
| 14. Stand Up Target Assembly 1" Square        | 8   | 500-5232-XX    |
| 15. Stand Up Target Assembly 1-½" Rectangular | 1   | 500-7282-02-01 |
| 16. Stand Up Target Assembly ½" Rectangular   | 5   | 500-6985-XX    |
| 17. Edge Slide Bracket                        | 2   | 535-5988-01    |
| 18. 4 Ball Trough Assembly                    | 1   | 500-6318-24-ND |
| 19. Pivot Slide Bracket Assembly              | 2   | 500-5329-03    |
| 20. LED Lamp PCB, 3 Bank Stand Up Targets     | 2   | 520-6813-00    |
| 21. LED Lamp PCB, 2 Position                  | 1   | 520-6808-01    |
| 22. LED Lamp PCB, Hex Inserts                 | 1   | 520-6808-00    |
| 23. LED Lamp PCB, 8 Position Strip            | 1   | 520-6808-02    |
| 24. LED Lamp PCB, Lower Left                  | 1   | 520-6811-00    |
| 25. LED Lamp PCB, Lower Right                 | 1   | 520-6812-01    |
| 26. LED Lamp PCB, Upper Center                | 1   | 520-6812-00    |
| 27. LED Lamp PCB, Tricolor                    | 12  | 520-5333-00    |
| 28. Rollover Switch Assembly, Left            | 3   | 500-6227-03    |
| 29. Rollover Switch Assembly, Right           | 7   | 500-6227-04    |
| 30. Playfield Support Slide Bracket           | 2   | 535-6862-05    |
| 31. Flipper Assembly (Upper Right)            | 1   | 500-6543-22-ND |

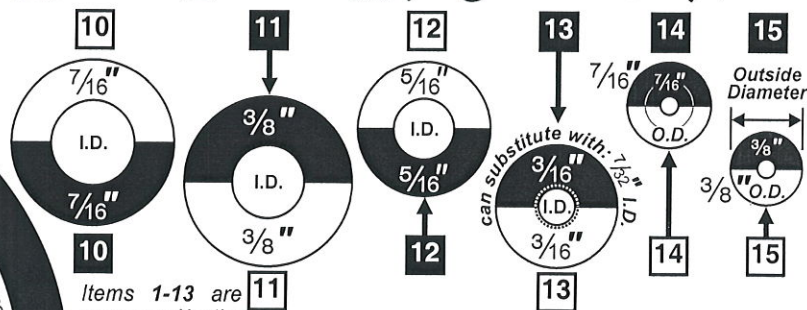
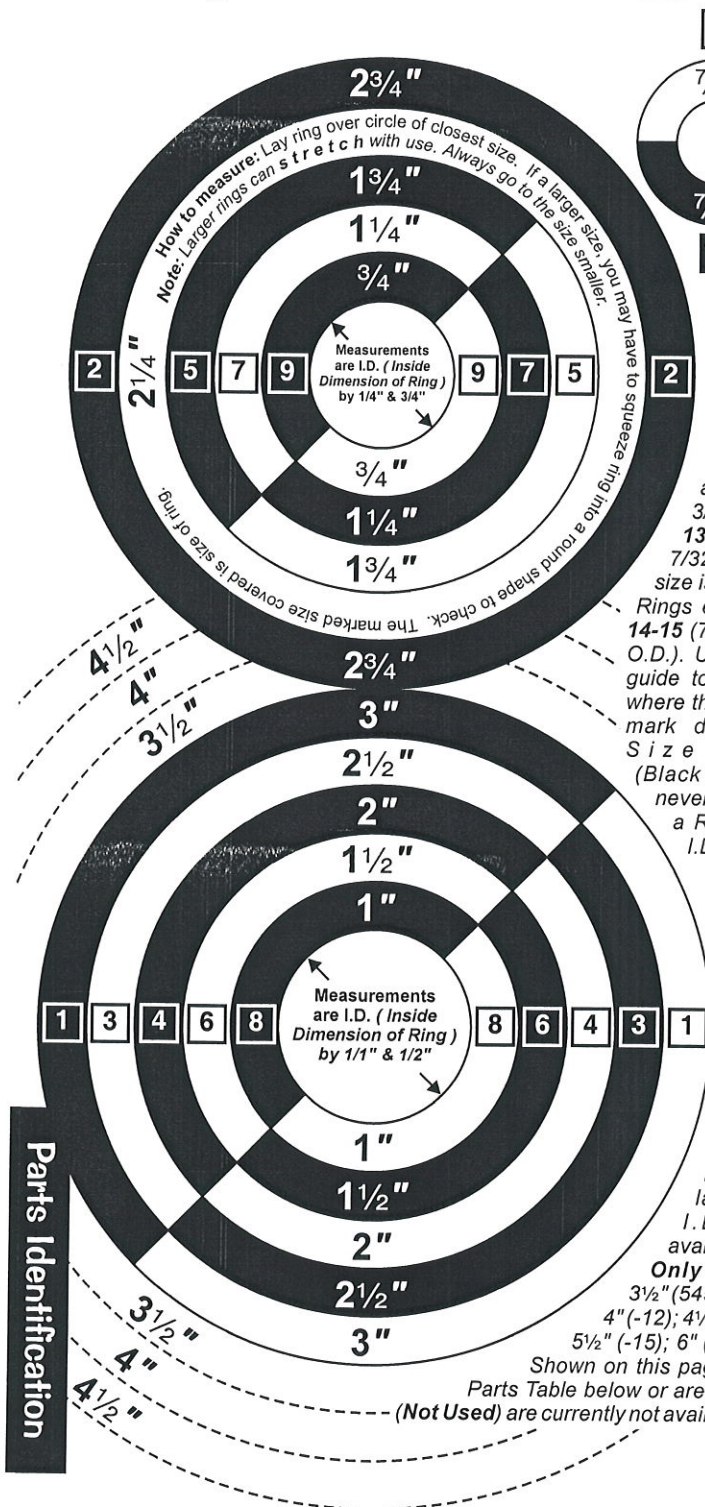


## Playfield Bottom Parts





**You can get this game at [www.magic-play.eu](http://www.magic-play.eu)**  
**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\"/>

| Nr.   | RUBBER RINGS  | QTY. | SPI PART Nr.   |
|---|---|------|----------------|
| 1   | 3" I.D. Rubber Ring <b>BLACK</b>                                |      | 545-5348-10    |
|   | 3" I.D. Rubber Ring <b>WHITE</b>                                |      | 545-5348-60    |
| 2   | 2¾" I.D. Rubber Ring <b>BLK</b>                                 |      | 545-5348-20    |
|   | 2¾" I.D. Rubber Ring <b>WHT</b>                                 | N/U  | 545-5348-70    |
| 3   | 2½" I.D. Rubber Ring <b>BLK</b>                                 | 2    | 545-5348-09    |
|   | 2½" I.D. Rubber Ring <b>WHT</b>                                 |      | 545-5348-59    |
| 4   | 2" I.D. Rubber Ring <b>BLACK</b>                                |      | 545-5348-08    |
|   | 2" I.D. Rubber Ring <b>WHITE</b>                                |      | 545-5348-58    |
| 5   | 1¾" I.D. Rubber Ring <b>BLK</b>                                 |      | 545-5348-21    |
|   | 1¾" I.D. Rubber Ring <b>WHT</b>                                 | N/U  | 545-5348-71    |
| 6   | 1½" I.D. Rubber Ring <b>BLK</b>                                 | 1    | 545-5348-07-40 |
|   | 1½" I.D. Rubber Ring <b>WHT</b>                                 |      | 545-5348-57    |
| 7   | 1¼" I.D. Rubber Ring <b>BLK</b>                                 | 1    | 545-5348-06    |
|   | 1¼" I.D. Rubber Ring <b>WHT</b>                                 |      | 545-5348-56    |
| 8   | 1" I.D. Rubber Ring <b>BLACK</b>                                |      | 545-5348-05-40 |
|   | 1" I.D. Rubber Ring <b>WHITE</b>                                |      | 545-5348-55    |
| 9   | ¾" I.D. Rubber Ring <b>BLACK</b>                                | 1    | 545-5348-04-40 |
|   | ¾" I.D. Rubber Ring <b>WHITE</b>                                |      | 545-5348-54    |
| 10  | 7/16" I.D. Rubber Ring <b>BLK</b>                               | 2    | 545-5348-18    |
|   | 7/16" I.D. Rubber Ring <b>WHT</b>                               |      | 545-5348-68    |
| 11  | ¾" I.D. Rubber Ring <b>BLACK</b>                                |      | 545-5348-03    |
|   | ¾" I.D. Rubber Ring <b>WHITE</b>                                | N/U  | 545-5348-53    |
| 12  | 5/16" I.D. Rubber Ring <b>BLK</b>                               | 3    | 545-5348-02    |
|   | 5/16" I.D. Rubber Ring <b>WHT</b>                               |      | 545-5348-52    |
| 13  | 3/16" I.D. Rubber Ring <b>BLK</b>                               | 6    | 545-5348-01-40 |
|   | 3/16" I.D. Rubber Ring <b>WHT</b>                               |      | 545-5348-51    |
| 14  | 7/16" O.D. Rubber Ring <b>BLK</b>                               | 17   | 545-5348-17-40 |
|   | 7/16" O.D. Rubber Ring <b>WHT</b>                               |      | 545-5348-67    |
| <b>Note:</b> 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  | ¾" O.D. Rubber Ring <b>BLK</b>                                  |      | 545-5348-19    |
|   | ¾" O.D. Rubber Ring <b>WHT</b>                                  |      | 545-5348-69    |
| 16  | Small Flipper <b>BLACK</b> Ring<br>(Soft Duro)                  |      | 545-5207-00    |
|   | Small Flipper <b>RED</b> Ring<br>(Soft Duro)                    |      | 545-5207-22    |
| 17  | Large Flipper <b>BLACK</b> Ring<br>(50 Duro)                    | 3    | 545-5277-00    |
|   | Large Flipper <b>YELLOW</b> Ring<br>(50 Duro) (use -06 40 Duro) |      | 545-5277-04    |
|   | Large Flipper <b>WHITE</b> Ring<br>(50 Duro)                    |      | 545-5277-08    |
|   | Large Flipper <b>RED</b> Ring<br>(Soft Duro)                    |      | 545-5277-22    |

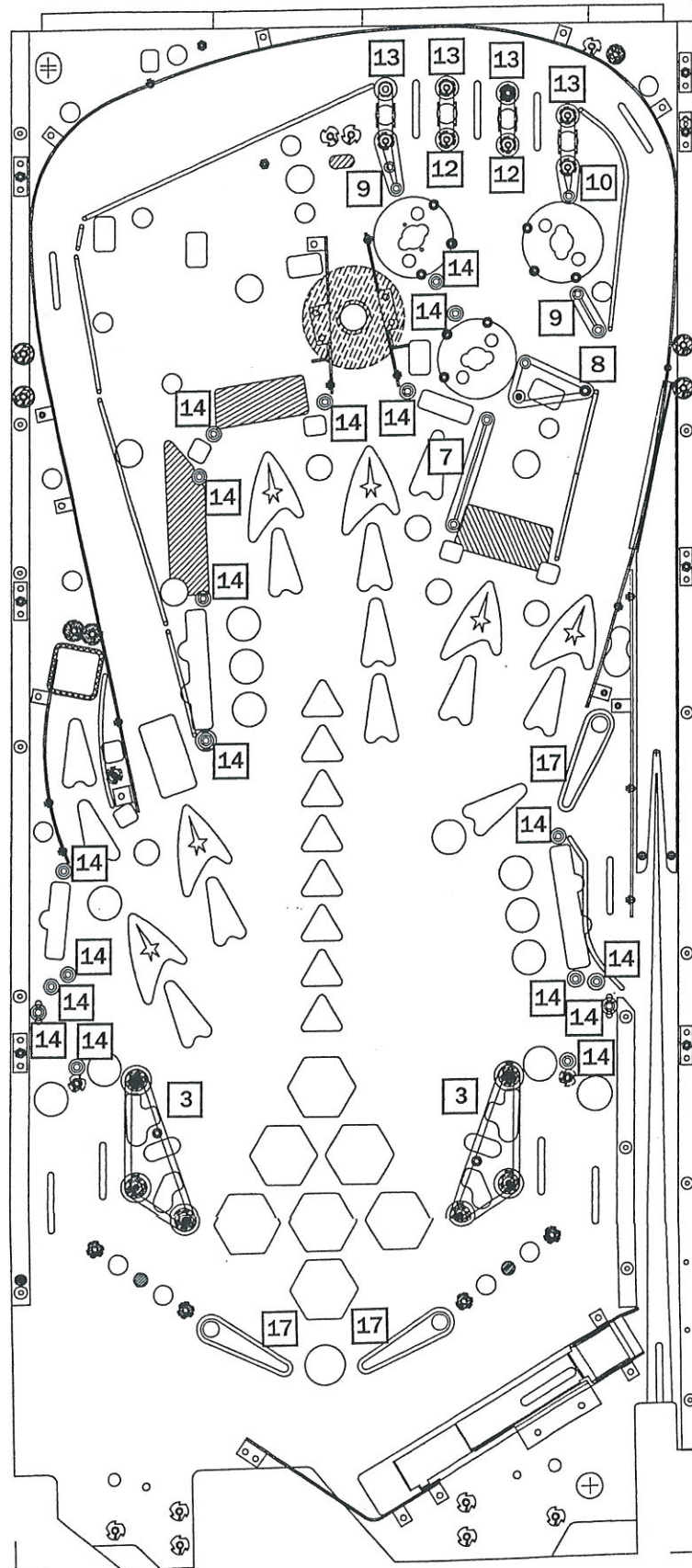
**Take Note:**  
For Blue Rubber Pads, see the next page and/or the Blue Pages for the assembly the pads are found on for the part number.

| Nr.  | RUBBER BUMPER PADS                     | QTY. | SPI PART Nr. |
|--|--|------|--------------|
| A*   | Bumper <b>BLK</b> Pad (Lg. w/ grommet) | 4    | 545-5428-00  |
| Item A are located on Flipper Assemblies. See next page for location.  |  |      |              |
| B*   | Bumper <b>BLK</b> Pad (Sm. w/ grommet) |      | 545-5105-00  |
| Item B are located on multiple assemblies. See next page for location. |  |      |              |

| Nr.   | RBR. BUMPER POST SLVS.                 | QTY. | SPI PART Nr. |
|---|--|------|--------------|
| D*  | Bumper <b>BLACK</b> Post Sleeve (Tall) |      | 545-5308-65  |
| Item D in RED use 545-5308-22; Item D in WHITE use 545-5308-08. |  |      |              |
| E*  | Bumper Post Sleeve (Short)             |      | 545-5151-00  |

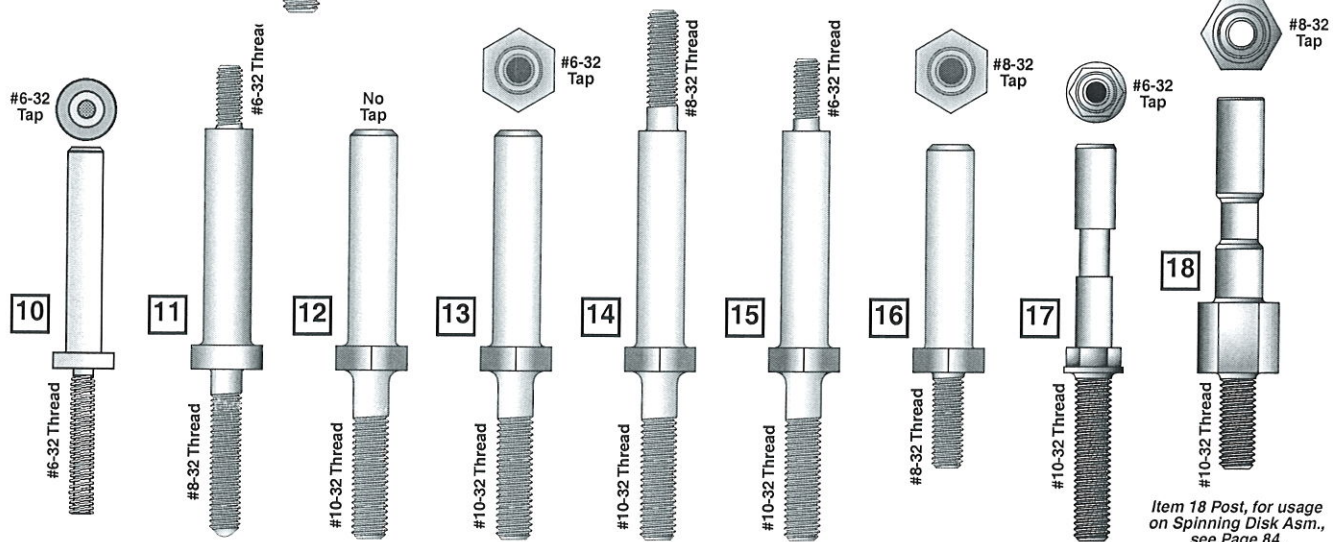
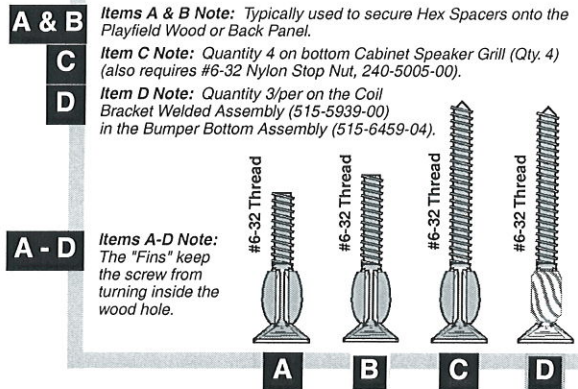
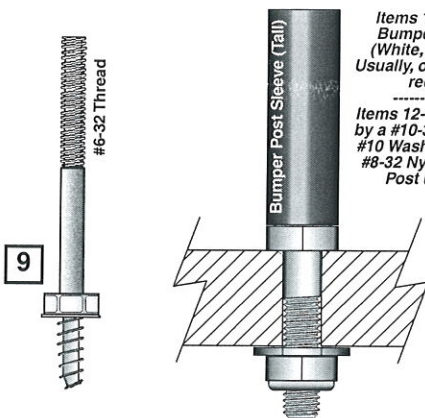
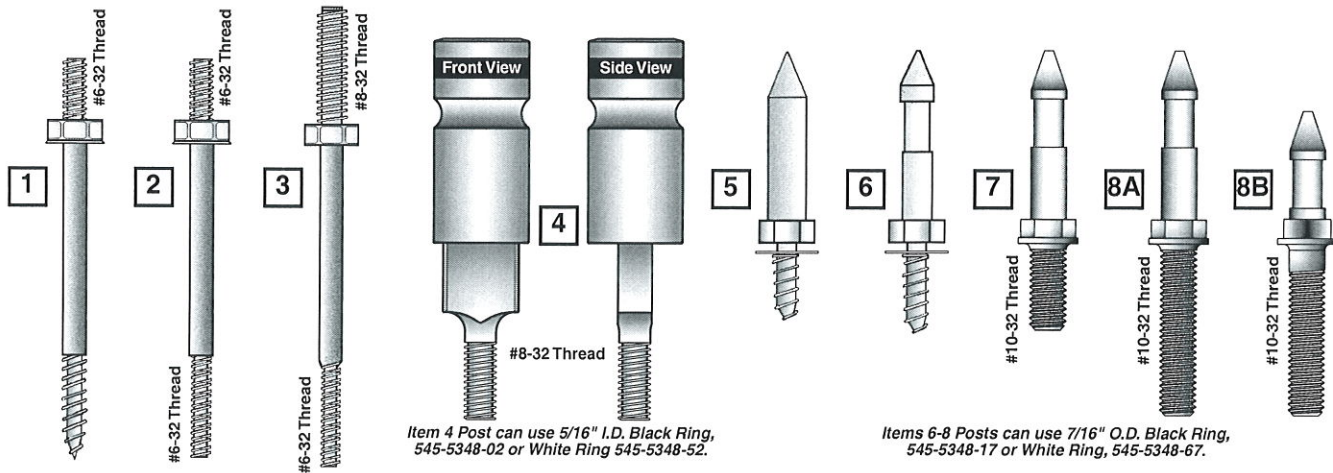


# Playfield Rubber Parts









| Nr. | METAL POSTS                                   | SPI PART Nr. | Nr. | METAL POSTS                                    | SPI PART Nr. |
|-----|---|--------------|-----|--|--------------|
| 1   | Post [Fasten] #6-32 Thread // Wood Screw      | 530-5010-02  | 12  | Post [Hex Base] NO TAP // 10-32 Thread         | 530-5332-00  |
| 2   | Post [Fasten] #6-32 Thread // #6-32 Thread    | 530-5012-02  | 13  | Post [Hex Bs.] #6-32 TAP // #10-32 Thread      | 530-5332-01  |
| 3   | Post [Fasten] #8-32 Thread // #6-32 Thread    | 530-5008-00  | 14  | Post [Hex Bs.] #8-32 Thread // #10-32 Thr.     | 530-5332-02  |
| 4   | Post Brass [Adjustable, Sliding] #8-32 Thread | 530-5621-00  | 15  | Post [Hex Bs.] #6-32 Thread // #10-32 Thr.     | 530-5332-03  |
| 5   | Mini-Post Wood Screw (no cut-away)            | 530-5004-01  | 16  | Post [Hex Bs.] #8-32 TAP // #8-32 Thread       | 530-5332-04  |
| 6   | Mini-Post Wood Screw                          | 530-5004-00  | 17  | Post [Hex Bs.+Groove] #6-32 TAP // #10-32 Thr. | 530-5679-00  |
| 7   | Mini-Post Machine Scr. // #10-32 .4" Thread   | 530-5005-01  | 18  | Post [Hex Bs.+Groove] #8-32 TAP // #10-32 Thr. | 530-5753-00  |
| 8A  | Mini-Post MS // #10-32 .875" Thread           | 530-5005-00  |     |  |              |
| 8B  | Mini-Post Short MS // #10-32 .875" Thread     | 530-5749-00  |     |  |              |
| 9   | Post [Fasten] #6-32 Thread // Wood Screw      | 530-5263-01  |     |  |              |
| 10  | Post #6-32 Tap // #6-32 Thread                | 530-5127-00  |     |  |              |
| 11  | Post [Fasten] #6-32 Thread // #8-32 Thread    | 530-5007-00  |     |  |              |
|     |   |              |     |  |              |
| Nr. | FIN SHANK SCREWS                              | SPI PART Nr. |     |  |              |
| A   | #6-32 X 3/4" Fin Shank Screw                  | 237-5921-02  |     |  |              |
| B   | #6-32 X 7/8" Fin Shank Screw                  | 237-5921-04  |     |  |              |
| C   | #6-32 X 1 1/4" Fin Shank Screw                | 237-5883-00  |     |  |              |
| D   | #6-32 X 1 3/16" Spiral Fin Shank Screw        | 237-5957-00  |     |  |              |

**NOT ALL PARTS LISTED ABOVE ARE USED ON THIS GAME (QUANTITIES PER GAME WILL DIFFER).  
 COMPARE ACTUAL PART ON GAME TO ABOVE DRAWINGS TO IDENTIFY THE PART NUMBER REQUIRED.**



**You can get this game at [www.magic-play.eu](http://www.magic-play.eu)**  
**Playfield - Nylon Stop, KEPS, Hex, T-, Flange, Pal\* & Wing Nuts\* (Actual Size) †**

| Nr.   | NYLON STOP NUTS*                      | SPI PART Nr. |
|---|---------------------------------------|--------------|
| N1  | #6-32 Nylon Stop Nut                  | 240-5005-00  |
| N2  | #6-32 N.S. Nut (with 1/4" Hex Body)   | 240-5010-00  |
| N3  | #8-32 Nylon Stop Nut                  | 240-5102-00  |
| N4  | #10-32 Nylon Stop Nut                 | 240-5203-00  |
| N5  | #10-24 Nylon Stop Nut                 | 240-5206-00  |
| <i>Item N5 used with #10-24 X 1-3/4" Carriage Bolt Square Neck Black (231-5022-00) located in the Cabinet for the Roto Lock (Male) (355-5006-01).</i> |                                       |              |
| N6  | #4-40 Nylon Stop Nut                  | 240-5303-00  |
| N7  | #4-40 (18/8 Stainless) Nylon Stop Nut | 240-5303-01  |
| N8  | 5/16"-18 Nylon Stop Nut               | 240-5316-00  |



| Nr. | KEPS NUTS*                          | SPI PART Nr. |
|-----|-------------------------------------|--------------|
| K1  | #6-32 Keps Nut (with Star Washer)   | 240-5008-00  |
| K2  | #6-32 Keps Nut (with 1/4" Hex Body) | 240-5011-00  |
| K3  | #8-32 Keps Nut                      | 240-5104-00  |
| K4  | #10-32 Keps Nut                     | 240-5208-00  |
| K5  | #10-24 Keps Nut                     | 240-5207-00  |
| K6  | #4-40 Keps Nut                      | 240-5318-00  |



| Nr.  | HEX NUTS*                      | SPI PART Nr. |
|--|--------------------------------|--------------|
| H1   | #6-32 Hex Nut (No Star Washer) | 240-5004-00  |
| H2   | #8-32 Hex Nut                  | 240-5103-00  |
| H3   | #10-32 Hex Nut                 | 240-5201-00  |
| H4   | #10-24 Hex Nut                 | 240-5202-00  |
| <i>Item H4 used with #10-24 X 1" Carriage Bolt Square Neck Black (231-5021-00) located in the Cabinet for the Side Armor Rear (towards Backbox).</i> |                                |              |
| H5   | #10-32 X 3/8" Hex Nut          | 240-5209-00  |
| H6   | 3/4"-16 Hex Nut                | 240-5315-00  |
| H7   | #2-56 Hex Nut                  | 240-5301-00  |
| H8   | 7/8"-14 Hex Nut                | 240-5317-00  |



| Nr. | T-NUTS*                          | SPI PART Nr. |
|-----|----------------------------------|--------------|
| T1  | #6-32 T-Nut                      | 240-5002-00  |
| T2  | #6-32 T-Nut (with Side Cut Off)  | 240-5002-01  |
| T3  | #8-32 T-Nut                      | 240-5101-00  |
| T4  | #10-32 (Black Oxide) T-Nut       | 240-5007-00  |
| T5  | #10-32 T-Nut (with Side Cut Off) | 240-5205-00  |
| T6  | #10-32 X 5/16" 3-Prong T-Nut     | 240-5204-00  |
| T7  | #10-24 T-Nut                     | 240-5200-00  |



| Nr.  | FLANGE NUT*          | SPI PART Nr. |
|--|----------------------|--------------|
| F1   | 1/4" X 20 Flange Nut | 240-5300-00  |
| <i>Item F1 used with 1/4-20 X 1-1/4 Sq. Neck Carriage Bolt Black (231-5003-00) located in the Cabinet for the Side Armor (Front) and Pivot Hinges.</i> |                      |              |



| Nr. | PAL NUTS*                            | SPI PART Nr. |
|-----|--------------------------------------|--------------|
| P1  | Plastic Pal Nut (on Flipper Buttons) | 240-5003-00  |
| P2  | Metal Pal Nut (on Flipper Buttons)   | 240-5003-01  |

\* Not Shown

| Nr. | WING NUTS*          | SPI PART Nr. |
|-----|---------------------|--------------|
| W1  | #6-32 Wing Nut      | 240-5001-00  |
| W2  | #8-32 Wing Nut      | 240-5100-00  |
| W3  | #10-24 Wing Nut     | 240-5211-00  |
| W4  | 1/4"-20 Wing Nut    | 240-5302-00  |
| W5  | 1/4"-20 Toggle Wing | 240-5324-00  |

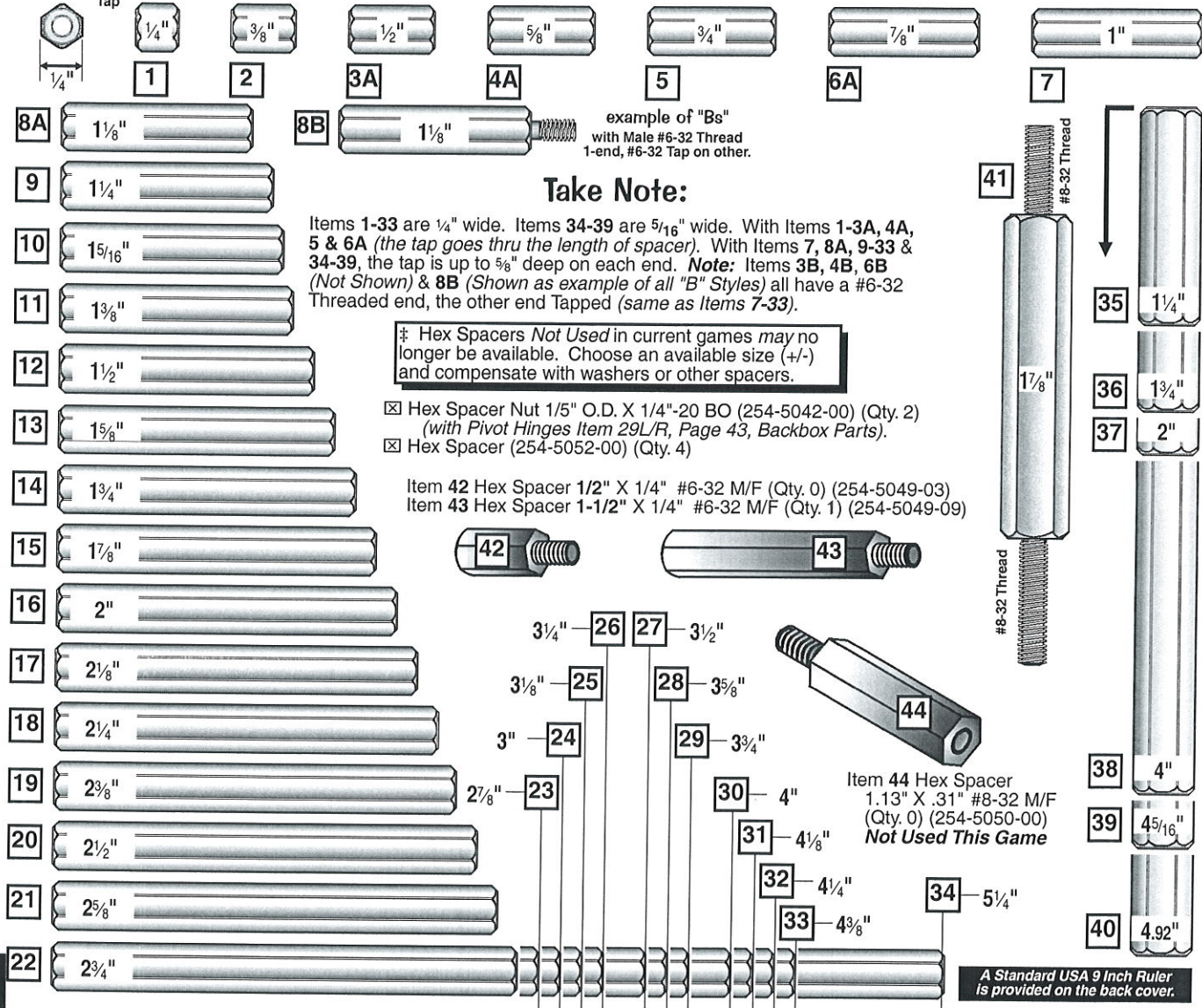
\* Not Shown





# You can get this game at [www.magic-play.eu](http://www.magic-play.eu) Playfield Top - Hex Spacers (Actual Size) †

Hex Spacers:  
#6-32  
Tap

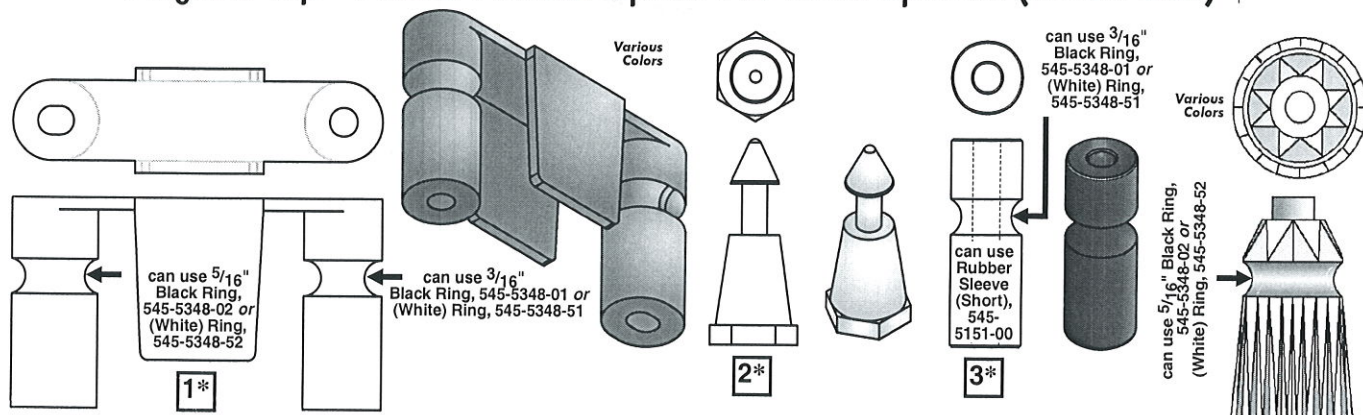


| Nr.  | HEX SPACERS                            | SPI PART Nr. | Nr. | HEX SPACERS                             | SPI PART Nr. |
|------|--|--------------|-----|---|--------------|
| 1    | 1/4" X 1/4" : #6-32 Tap (both ends)    | 254-5008-00  | 19  | 2 3/8" X 1/4" : #6-32 Tap (both ends)   | 254-5008-28  |
| 2    | 3/8" X 1/4" : #6-32 Tap (both ends)    | 254-5008-12  | 20  | 2 1/2" X 1/4" : #6-32 Tap (both ends)   | 254-5008-16  |
| 3A   | 1/2" X 1/4" : #6-32 Tap (both ends)    | 254-5008-03  | 21  | 2 5/8" X 1/4" : #6-32 Tap (both ends)   | 254-5008-08  |
| 3B*  | Identical to 3A with #6-32 Thread end  | 254-5024-03  | 22  | 2 3/4" X 1/4" : #6-32 Tap (both ends)   | 254-5008-15  |
| 4A   | 5/8" X 1/4" : #6-32 Tap (both ends)    | 254-5008-02  | 23  | 2 7/8" X 1/4" : #6-32 Tap (both ends)   | 254-5008-31  |
| 4B*  | Identical to 4A with #6-32 Thread end  | 254-5024-02  | 24  | 3" X 1/4" : #6-32 Tap (both ends)       | 254-5008-14  |
| 5    | 3/4" X 1/4" : #6-32 Tap (both ends)    | 254-5008-04  | 25  | 3 1/8" X 1/4" : #6-32 Tap (both ends)   | 254-5008-19  |
| 6A   | 7/8" X 1/4" : #6-32 Tap (both ends)    | 254-5008-05  | 26  | 3 1/4" X 1/4" : #6-32 Tap (both ends)   | 254-5008-26  |
| 6B*  | Identical to 6A with #6-32 Thread end  | 254-5024-05  | 27  | 3 1/2" X 1/4" : #6-32 Tap (both ends)   | 254-5008-27  |
| 7    | 1" X 1/4" : #6-32 Tap (both ends)      | 254-5008-06  | 28  | 3 5/8" X 1/4" : #6-32 Tap (both ends)   | 254-5008-25  |
| 8A   | 1 1/8" X 1/4" : #6-32 Tap (both ends)  | 254-5008-17  | 29  | 3 3/4" X 1/4" : #6-32 Tap (both ends)   | 254-5008-36  |
| 8B   | Identical to 8A with #6-32 Thread end  | 254-5024-17  | 30  | 4" X 1/4" : #6-32 Tap (both ends)       | 254-5008-21  |
| 9    | 1 1/4" X 1/4" : #6-32 Tap (both ends)  | 254-5008-11  | 31  | 4 1/8" X 1/4" : #6-32 Tap (both ends)   | 254-5008-23  |
| 10   | 1 5/16" X 1/4" : #6-32 Tap (both ends) | 254-5008-34  | 32  | 4 1/4" X 1/4" : #6-32 Tap (both ends)   | 254-5008-30  |
| 11 ‡ | 1 3/8" X 1/4" : #6-32 Tap (both ends)  | 254-5008-33  | 33  | 4 3/8" X 1/4" : #6-32 Tap (both ends)   | 254-5008-29  |
| 12   | 1 1/2" X 1/4" : #6-32 Tap (both ends)  | 254-5008-09  | 34  | 5 1/4" X 1/4" : #6-32 Tap (both ends)   | 254-5008-35  |
| 13 ‡ | 1 5/8" X 1/4" : #6-32 Tap (both ends)  | 254-5008-13  | 35  | 1 1/4" X 5/16" : #6-32 Tap (both ends)  | 254-5018-09  |
| 14   | 1 3/4" X 1/4" : #6-32 Tap (both ends)  | 254-5008-10  | 36  | 1 3/4" X 5/16" : #6-32 Tap (both ends)  | 254-5018-06  |
| 15 ‡ | 1 7/8" X 1/4" : #6-32 Tap (both ends)  | 254-5008-20  | 37  | 2" X 5/16" : #6-32 Tap (both ends)      | 254-5018-07  |
| 16   | 2" X 1/4" : #6-32 Tap (both ends)      | 254-5008-07  | 38  | 4" X 5/16" : #6-32 Tap (both ends)      | 254-5018-03  |
| 17   | 2 1/8" X 1/4" : #6-32 Tap (both ends)  | 254-5008-32  | 39  | 4 5/16" X 5/16" : #6-32 Tap (both ends) | 254-5018-00  |
| 18   | 2 1/4" X 1/4" : #6-32 Tap (both ends)  | 254-5008-18  | 40  | 4.92" X 5/16" : #6-32 Tap (both ends)   | 254-5018-04  |

NOT ALL PARTS LISTED ABOVE ARE USED ON THIS GAME (QUANTITIES PER GAME WILL DIFFER).  
COMPARE ACTUAL PART ON GAME TO ABOVE DRAWINGS TO IDENTIFY THE PART NUMBER REQUIRED.



**You can get this game at [www.magic-play.eu](http://www.magic-play.eu)  
Playfield Top - Plastic Posts & Spacers & Metal Spacers (Actual Size) †**

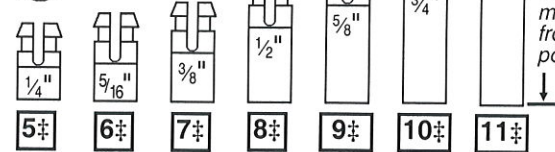
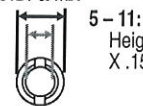


**PLASTIC PART COLOR CHART**

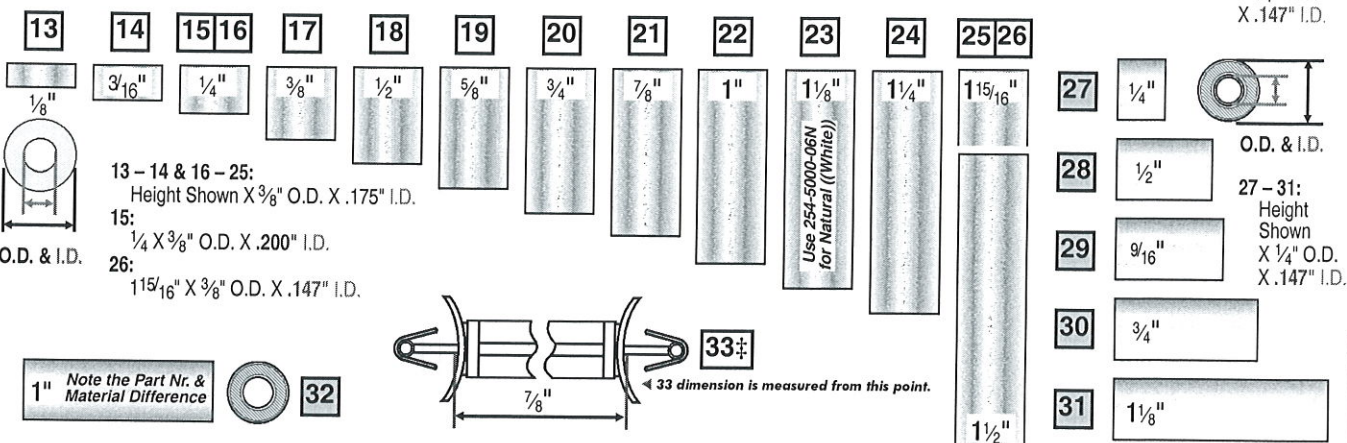
| Nr. | Color | Nr. | Color        | Nr. | Color       |
|-----|-------|-----|--------------|-----|-------------|
| -00 | Black | -06 | Yellow       | -12 | Fluor. Blue |
| -01 | Clear | -07 | Orange       | -13 | Teal Green  |
| -02 | Red   | -08 | (White)      | -14 | (Gray)      |
| -03 | Amber | -09 | Purple       | -15 | Luminescent |
| -04 | Green | -10 | Fluor. Org.  | -16 | Gold        |
| -05 | Blue  | -11 | Fluor. Green |     |             |

\* Items 1 & 5 come in various colors. The "-XX" (the last 2-Digits in the Part Number), should be replaced with the desired 2-Digit number from the above Color Chart (may not be available in every color; other colors used in prior games may no longer be available.) Call for availability.

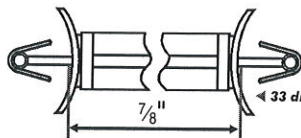
O.D. & I.D.



† Items 5 through 11 dimensions are measured from bottom to just under the cut-away. Item 33 dimension is measured from top-to-top of curve. See pictorials with Items 11 & 33.



1" Note the Part Nr. & Material Difference



33 dimension is measured from this point.

| Nr.  | PLASTIC POSTS & SPACERS                           | SPI PART Nr. | Nr.  | PLASTIC POSTS & SPACERS                                | SPI PART Nr. |
|--|---|--------------|--|--|--------------|
| 1**  | Top Lane Plastic Mini-Lite Hood (XX-Color)        | 550-5061-XX  | 21   | 7/8" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)       | 254-5000-11  |
| 2**  | Mini-Jewel Plastic Post (XX-Color)                | 550-5052-XX  | 22   | 1" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)         | 254-5000-04  |
| 3**  | 1 1/16" 1-Groove Plastic Post (XX-Color)          | 550-5059-XX  | 23   | 1 1/8" X 3/8" O.D. X .175" I.D. Pls. Spcr. (Gray)      | 254-5000-06  |
| Item 23 Only : Use Part Number (550-5059-00) for color Black.  |   |              |  |  |              |
| 4**  | 1-Groove Jewel Plastic Post (XX-Color)            | 550-5034-XX  | 24   | 1 1/4" X 3/8" O.D. X .175" I.D. Pls. Spcr. (Gray)      | 254-5000-05  |
| Items 3 & 4 typically sec'd by: Post Fastening Scr. #6-32 Top / #6-32 Bot. (530-5012-02). Use Color Chart above for last 2-digits. Not all colors are available. |   |              |  |  |              |
| Items 1-4 Note: Use Color Chart above for last 2-digits. Not all colors are available.   |   |              |  |  |              |
| 5 ‡  | 1/4" Self Retain. Plastic Spacer (White)          | 254-5007-02  | 25   | 1 1/2" X 3/8" O.D. X .175" I.D. Pls. Spcr. (Gray)      | 254-5000-08  |
| 6 ‡  | 9/16" Self Retain. Plastic Spacer (White)         | 254-5007-05  | 26   | 1 5/16" X 3/8" O.D. X .147" I.D. Plastic Spacer (Gray) | 254-5000-15  |
| 7 ‡  | 3/8" Self Retain. Plastic Spacer (White)          | 254-5007-01  | Items 13-26 Only : Spacers may also be Black in color (random from vendor).  |  |              |
| 8 ‡  | 1/2" Self Retain. Plastic Spacer (White)          | 254-5007-04  | Not Shown and listed for reference only : 254-5000-10: 2 1/2" X 3/8" O.D. X .175" I.D. -13: 5/16" X 1/4" X .147"; -16: 5/16" X 5/16" X .190"; -17: 1 3/4" X 3/8" O.D. X .175" I.D. |  |              |
| 9 ‡  | 5/8" Self Retain. Plastic Spacer (White)          | 254-5007-00  | 27   | 1/4" X 5/16" O.D. X .144" I.D. Metal Spacer            | 254-5014-03  |
| 10 ‡   | 3/4" Self Retain. Plastic Spacer (White)          | 254-5007-03  | 28   | 1/2" X 5/16" O.D. X .144" I.D. Metal Spacer            | 254-5014-00  |
| 11 ‡   | 1" Self Retain. Plastic Spacer (White)            | 254-5007-06  | 29   | 9/16" X 5/16" O.D. X .144" I.D. Metal Spacer           | 254-5014-04  |
| 12   | 1/2" X 1/4" O.D. X .147" I.D. Pls. Spacer (White) | 254-5000-03  | 30   | 3/4" X 5/16" O.D. X .144" I.D. Metal Spacer            | 254-5014-01  |
| 13   | 1/8" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)  | 254-5000-19  | 31   | 1 1/8" X 5/16" O.D. X .144" I.D. Metal Spacer          | 254-5014-02  |
| 14   | 3/16" X 3/8" O.D. X .175" I.D. Pls. Spcr. (Gray)  | 254-5000-18  | 32   | 1" X 5/16" O.D. X .144" I.D. Metal Spacer              | 254-5001-00  |
| 15   | 1/4" X 3/8" O.D. X .200" I.D. Pls. Spcr. (Gray)   | 254-5000-02  | 33 ‡   | 7/8" Plastic Spacer Support (Dual-Locking)             | 254-5039-14  |
| 16   | 1/4" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)  | 254-5000-09  | 34   | Plastic Spacer, .5"                                    | 254-5054-00  |
| 17   | 3/8" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)  | 254-5000-12  | 35   | Plastic Mounting                                       | 254-5054-01  |
| 18   | 1/2" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)  | 254-5000-01  |  |  |              |
| 19   | 5/8" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)  | 254-5000-14  |  |  |              |
| 20   | 3/4" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)  | 254-5000-07  |  |  |              |

**NOT ALL PARTS LISTED ABOVE ARE USED ON THIS GAME (QUANTITIES PER GAME WILL DIFFER). COMPARE ACTUAL PART ON GAME TO ABOVE DRAWINGS TO IDENTIFY THE P/N REQUIRED.**

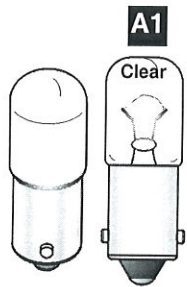
You can get this game at [www.magic-play.eu](http://www.magic-play.eu)

**Parts Identification**

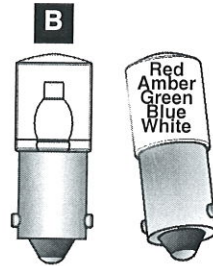
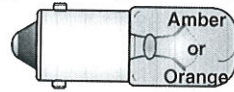
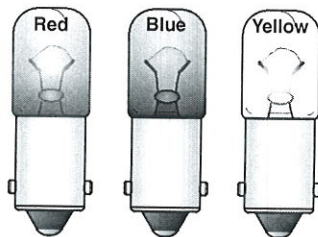




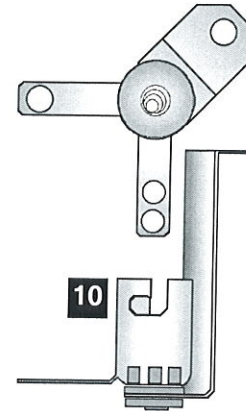
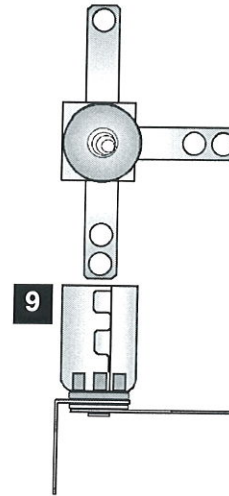
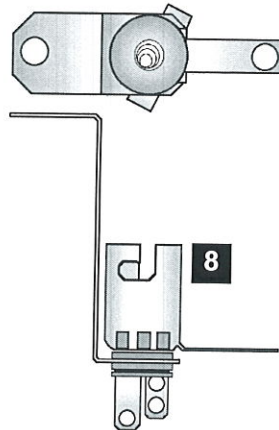
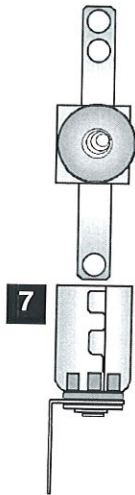
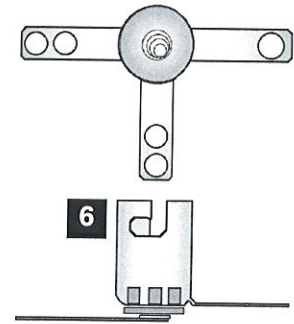
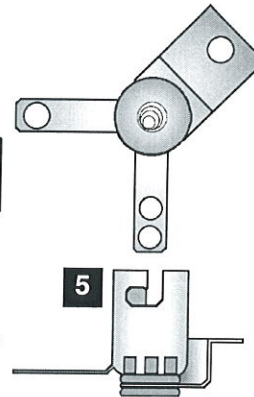
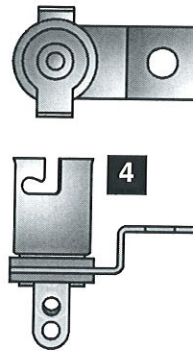
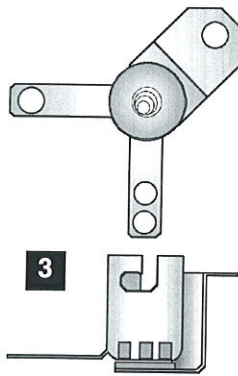
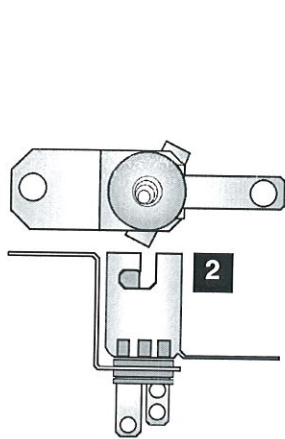
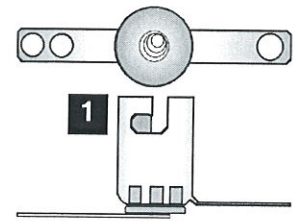
**You can get this game at [www.magic-play.eu](http://www.magic-play.eu)**  
**Playfield Top & Bottom - Small Bayonet Sockets & Bulbs ■ (Actual Size) †**



**#44  
Bulbs**



**LED Bulb  
(Bayonet Style)**

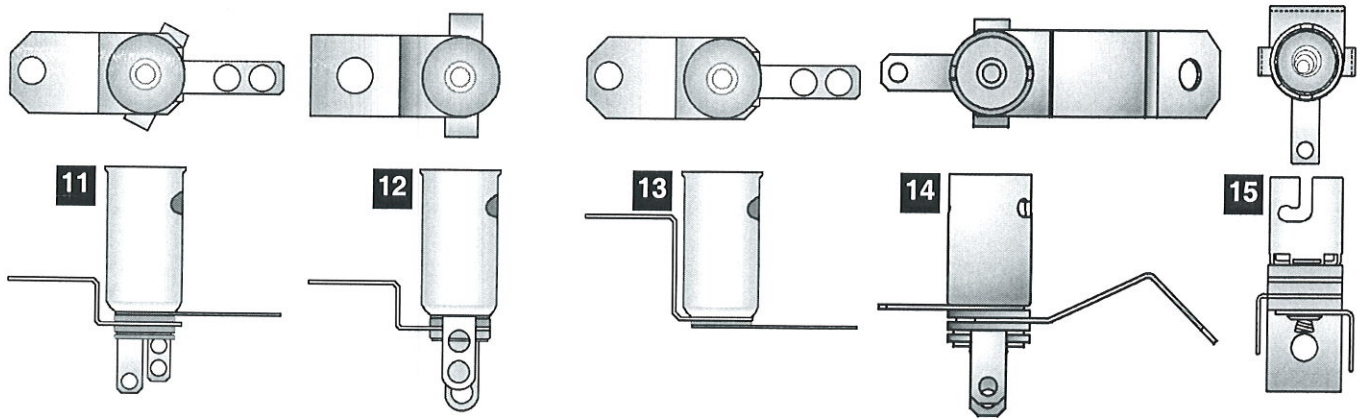


**Parts Identification**

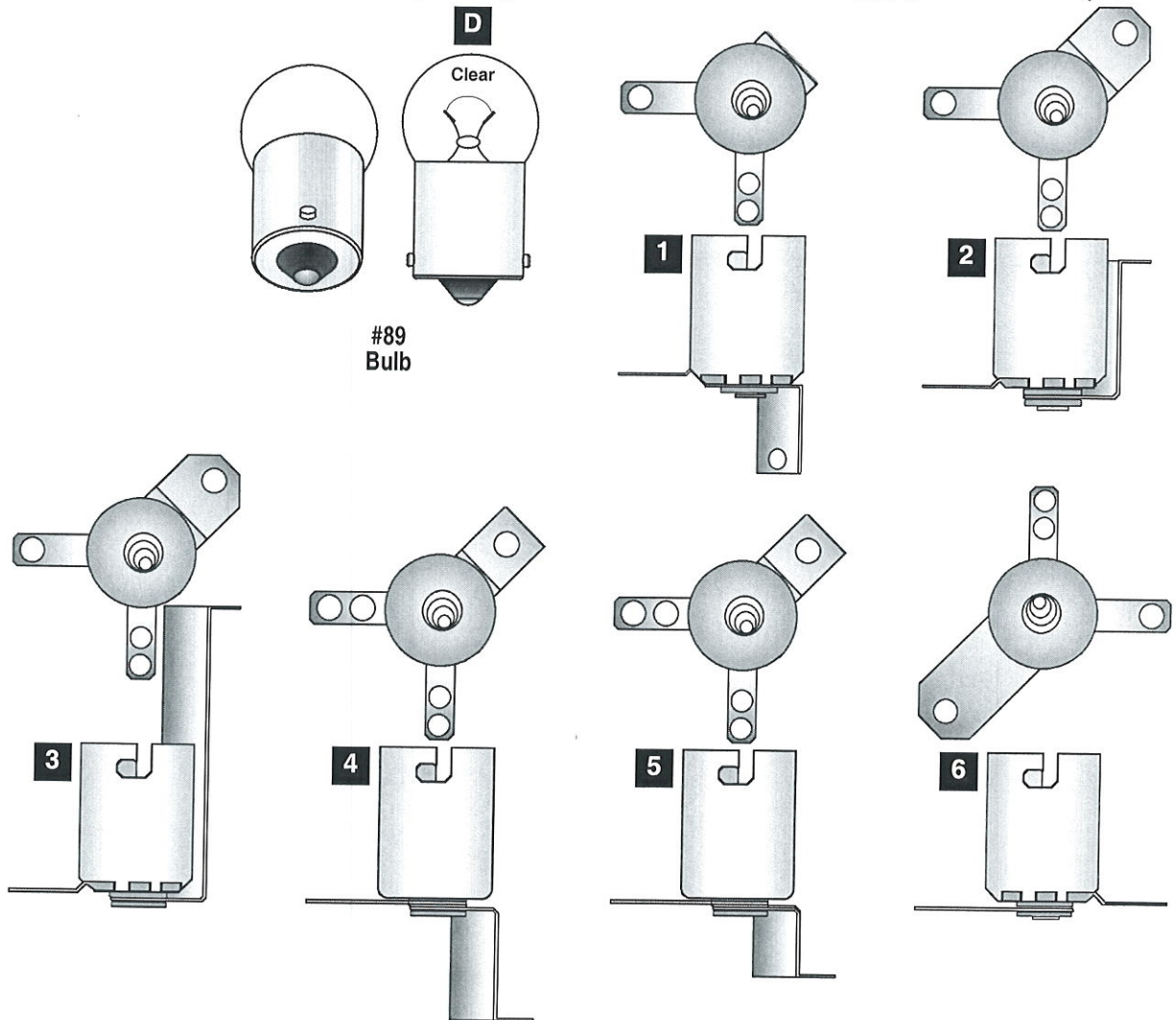
| Nr. | BULBS (#44)  | SPI PART Nr.   | Nr. | BULBS (LED & #455)   | SPI PART Nr. |
|-----|--|----------------|-----|--|--------------|
| A   | #44 Bulb (Clear) Heavy Filament  | 165-5000-44-HF | B   | LED Module (WHT) (12.8v 20-25mA) Bynt.   | 112-5023-08  |
|     | #44 Bulb (replace -XX w/color below)   | 165-5053-XX-HF |     | Item B Note: Different Colors may be available ~                                 |              |
|     | Item A Note: Amber (165-5053-03-HF); Green (165-5053-04-HF); Yellow (165-5053-06-HF); Red (165-5053-02-HF); Blue (165-5053-05-HF); Orange (165-5053-07-HF) |                |     | Red (112-5023-02); Amber (112-5023-03); Green (112-5023-04); Blue (112-5023-05); |              |

| Nr. | SMALL BAYONET SOCKETS                | SPI PART Nr. | Nr. | SMALL BAYONET SOCKETS                  | SPI PART Nr. |
|-----|--------------------------------------|--------------|-----|--|--------------|
| 1   | 2-Lug Staple Down Socket             | 077-5000-00  | 10  | 2-Lug Stand-Up Socket (Tall Bracket)   | 077-5005-00  |
| 2   | 3-Lug Stand-Up Socket (Med. Brkt.)   | 077-5008-00  | 11  | 3-Lug Stand-Up Long Shell Socket       | 077-5013-00  |
| 3   | 2-Lug Stand-Up Socket (Med. Brkt.)   | 077-5002-00  | 12  | 2-Lug Stand-Up Lg. Shell Socket (Gls)  | 077-5031-00  |
| 4   | 2-Lug Stand-Up Socket (Short Brkt.)  | 077-5223-00  | 13  | 1-Lug S-U Lg. Shell Sckt. (Med. Brkt.) | 077-5012-00  |
| 5   | 2-Lug Stand-Up Sckt. (Short Bracket) | 077-5002-31  | 14  | 3-Lug S-U Lg. Shell Sckt. (45° Brkt.)  | 077-5035-00  |
| 6   | 3-Lug Staple Down Socket             | 077-5001-00  | 15  | 3-Lug Laydown Socket (2 Lugs Bent)     | 077-5032-00  |
| 7   | 2-Lug Laydown Socket                 | 077-5003-00  |     |  |              |
| 8   | 3-Lug Stand-Up Socket (Tall Bracket) | 077-5009-00  |     |  |              |
| Nr. | SMALL BAYONET SOCKETS                | SPI PART Nr. |     |  |              |
| 9   | 3-Lug Laydown Socket (3 Lugs Flat)   | 077-5006-00  |     |  |              |

**NOT ALL PARTS LISTED ABOVE ARE USED ON THIS GAME (QUANTITIES PER GAME WILL DIFFER).  
 COMPARE ACTUAL PART ON GAME TO ABOVE DRAWINGS TO IDENTIFY THE PART NUMBER REQUIRED.**



Playfield Bottom - Large Bayonet Sockets & Bulbs ■ (Actual Size) †



| Nr. | BULBS (#89)             | SPI PART Nr.   |
|-----|-------------------------|----------------|
| D   | #89 Bulb Heavy Filament | 165-5000-89-HF |

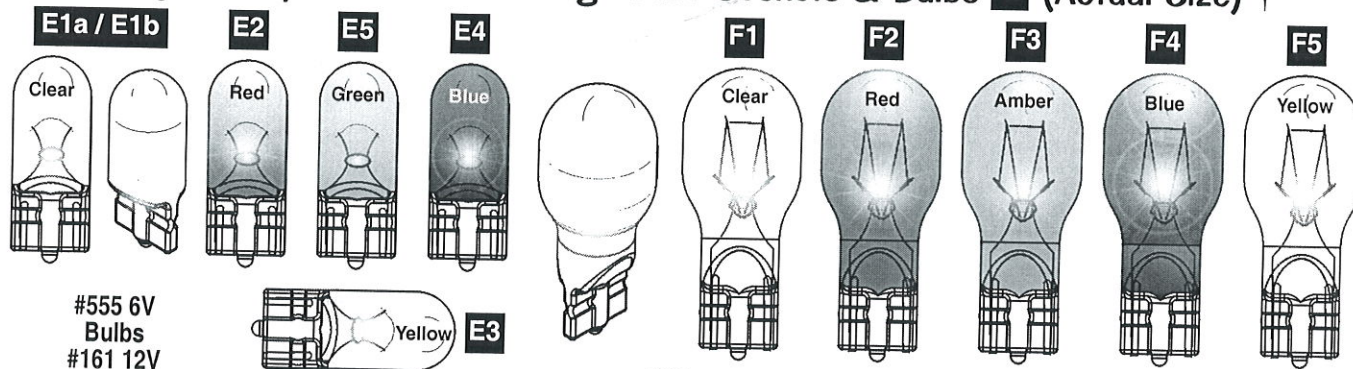
|   |                                      |             |
|---|--------------------------------------|-------------|
| 1 | 2-Lug Laydown Standard Socket        | 077-5100-00 |
| 2 | 2-Lug Stand-Up Short Socket          | 077-5101-00 |
| 3 | 2-Lug Stand-Up Long Socket           | 077-5102-00 |
| 4 | 2-Lug Stand-Up Rev. Mount Socket     | 077-5103-00 |
| 5 | 2-Lug Stand-Up Rv. Mnt. Short Socket | 077-5106-00 |
| 6 | 2-Lug Straight Leg Socket            | 077-5107-00 |

| Nr. | LARGE BAYONET SOCKETS | SPI PART Nr. |
|-----|-----------------------|--------------|
|-----|-----------------------|--------------|

NOT ALL PARTS LISTED ABOVE ARE USED ON THIS GAME (QUANTITIES PER GAME WILL DIFFER).  
 COMPARE ACTUAL PART ON GAME TO ABOVE DRAWINGS TO IDENTIFY THE PART NUMBER REQUIRED.

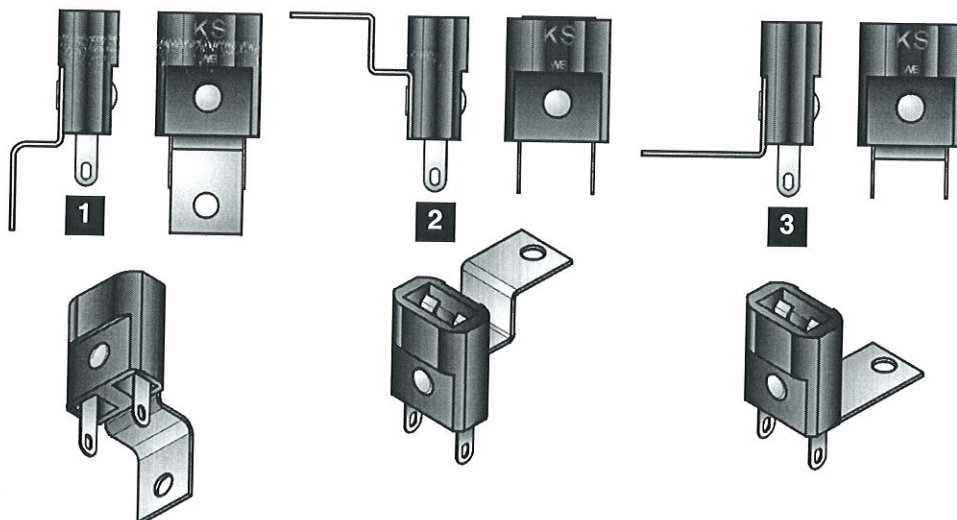


**You can get this game at [www.magic-play.eu](http://www.magic-play.eu)**  
**Playfield Top & Bottom - Wedge Base Sockets & Bulbs** (Actual Size) †



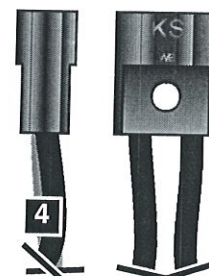
**#906 Bulbs**

*Note: Always replace with same type bulb in original application.*



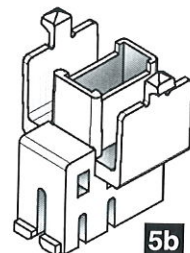
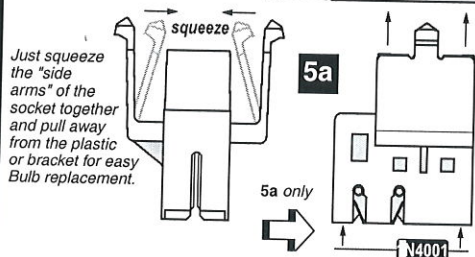
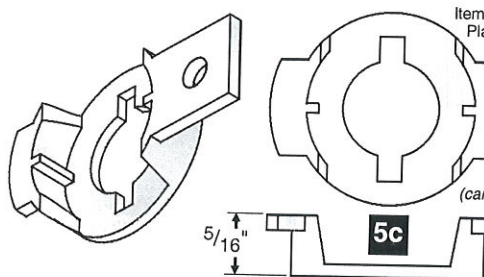
**LED Bulb (Wedge Base)**

*Item 4 Socket does not require brackets. Old stock may include "L" style brackets (each side); do not secure to assembly. Black Wires (Qty. 2) are 12" each.*

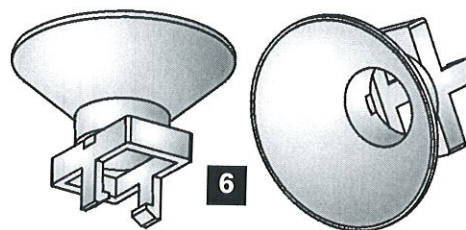


Item 5a or 5b sockets are secured to the playfield or assembly by Item 5c Plastic Bracket or may also be snapped into specially cut Clear and / or Screened Plastic Pieces or Metal Brackets (used for multiple mounting of sockets when positioned closely together or in tight areas). If Plastic Pieces or Metal Brackets are used to mount Item 5a or 5b Sockets, it will be noted on Playfield Bottom - Miscellaneous Parts and Brackets, page earlier in this Chapter.

Item 5a is a solderless IDC (Insulation Displacement Connection) Socket with a built-in Diode, 1N4003 (112-5003-00) (can be replaced with 1N4001 Diode, 112-5001-00). Item 5b Socket (Yellow) is identical to 5a (Socket) except it does NOT REQUIRE a diode (Flash Lamp usage).



**5b is Yellow with No Diode**



**Parts Identification**

| Nr.   | BULBS (#555)                       | SPI PART Nr. | Nr.   | BULBS (LED & #906)                      | SPI PART Nr. |
|---|------------------------------------|--------------|---|---|--------------|
| E1a   | #555 Wedge Base Bulb (Clear)       | 165-5002-00  | E6  | LED Module (WHT) (5v - 6.3v) Wedge Base | 112-5024-08  |
| E2-E5   | #555 Wedge Base Bulb (Multi-Color) | 165-5054-XX  | <i>Item E6 Bulb Note: Typically used with Item 4 Socket in Pop Bumpers.</i>   |   |              |
| <i>Item E2-E5 Bulb Note: Different Colors available (not used in this game) ~ Red (165-5054-02); Green (165-5054-04); Blue (165-5054-05); Yellow (165-5054-06);</i> |                                    |              | F   | #906 Wedge Base Bulb (Clear)            | 165-5004-00  |
| E1b   | #161 12V Wedge Base Bulb (Clear)   | 165-5032-00  | <i>Item F Note: Different Colors available (not used in this game) ~ Red (165-5004-02); Amber (165-5004-03); Blue (165-5004-05); Yellow (165-5004-06)</i> |   |              |

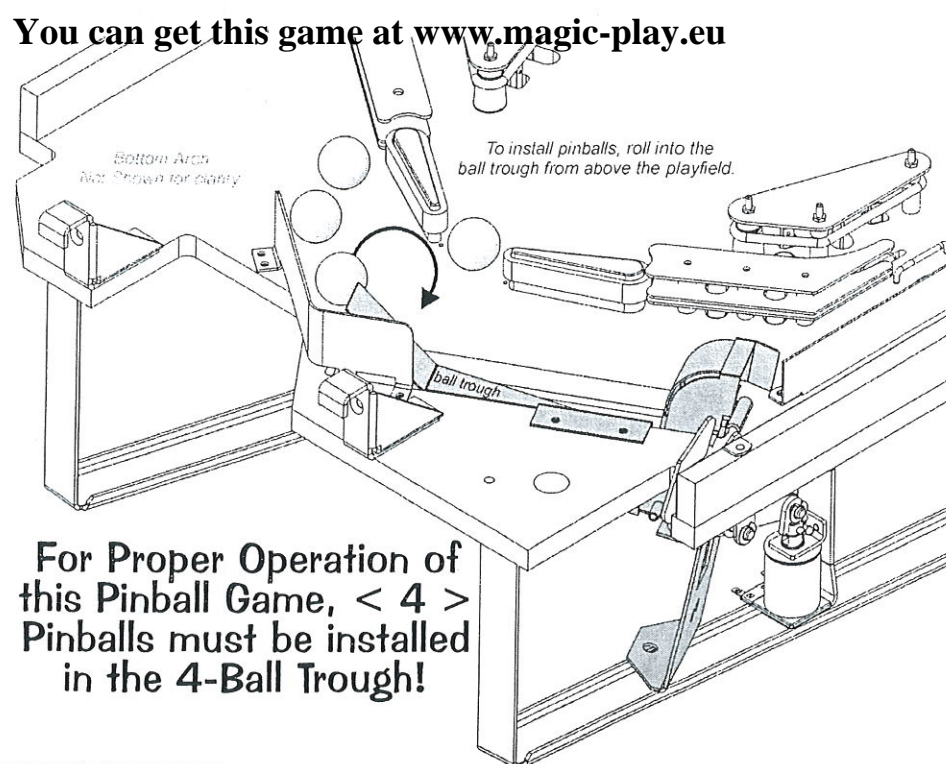
| Nr. | WEDGE BASE SOCKETS                 | SPI PART Nr. | Nr. | WEDGE BASE SOCKETS                        | SPI PART Nr. |
|-----|------------------------------------|--------------|-----|---|--------------|
| 1   | Wedge Base Socket (Laydown)        | 077-5026-01  | 5a  | IDC Snap-On Socket (Biege)                | 077-5216-00  |
| 2   | Wedge Base Socket (Offset)         | 077-5029-00  | 5b  | IDC Snap-On Socket <b>No Diode</b> (Yel.) | 077-5216-01  |
| 3   | Wedge Base Socket (Laydown GI)     | 077-5030-00  | 5c  | 5/16" Ht. Bracket (White)                 | 545-5760-18  |
| 4   | W.B. Socket (Bumpers/Special App.) | 077-5206-00  | 6   | Light Reflector (Silver Plst.) REF540N    | 545-5409-01  |

*Note Item 6: Typically used with Item 1 (but will fit on any similar Wedge Base Socket).*

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 COMPARE ACTUAL PART ON GAME TO ABOVE DRAWINGS TO IDENTIFY THE PART NUMBER REQUIRED.**

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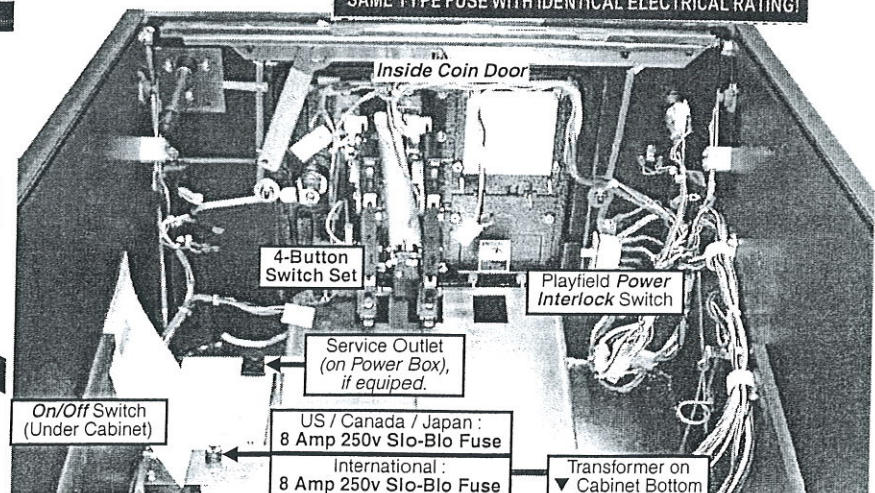
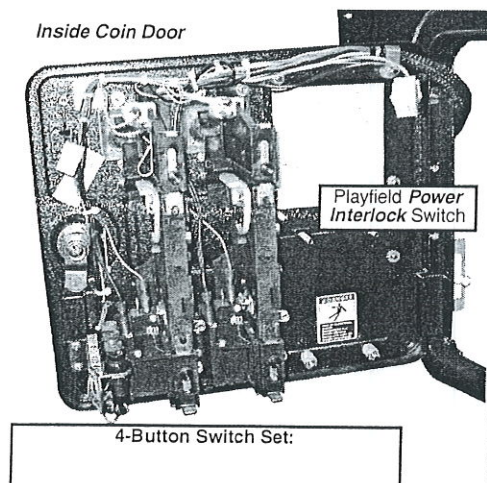




For Proper Operation of  
this Pinball Game, < 4 >  
Pinballs must be installed  
in the 4-Ball Trough!

| 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   |   | CABINET FUSES  |   |
| I/O POWER DRIVER BOARD  |   | POWER (SERVICE OUTLET) BOX                                 |   |
| with RED LED STATUS INDICATORS (if any RED LED is OFF, check the fuse)  |   | (Access through Coin Door inside cabinet, front bottom.)   |   |
| F1  | 5A S.B. 5.7VAC~G.I. Lamps [BROWN-WHITE~WHT-BRN]       | 8A S.B.  | 110-120V Main Line US / Canada / Japan  |
| F2  | 5A S.B. 5.7VAC~G.I. Lamps [YELLOW~WHITE-YEL Circuit]  | 5A S.B.  | 220-240V Main Line International        |
| 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] | <b>PLAYFIELD FUSES</b>                                     |   |
| F6  | 3A S.B. 24VAC~ Motor or Special Application           | <b>FLIPPER OR SPECIAL APPLICATION</b>                      |   |
| F7  | 4A S.B. 50VDC Magnet(s) or Special Application        | (Coil Fuses are located under the playfield near assembly) |   |
| F8  | 3A S.B. 50VDC Coils                                   | 3A S.B.  | 50VDC R. Flipper [BLU-YEL~RED-YEL]      |
| F9  | 5A S.B. 5VDC Logic Power [13VAC feed to BRDG 4]       | 3A S.B.  | 50VDC L. Flipper [GRY-YEL~RED-YEL]      |
| F10   | 5A S.B. 20VDC Coils / Flashers [16VAC feed to BRDG 2] | 3A S.B.  | 50VDC Additional Flipper Coil, if used. |
| F12   | 5A S.B. 12VDC Audio [19VAC feed to BRDG 3]            | 3A S.B.  | 50VDC Spcl. Application Coil, if used.  |
| F13   | 5A S.B. 12VDC Audio [19VAC feed to BRDG 3]            | 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!



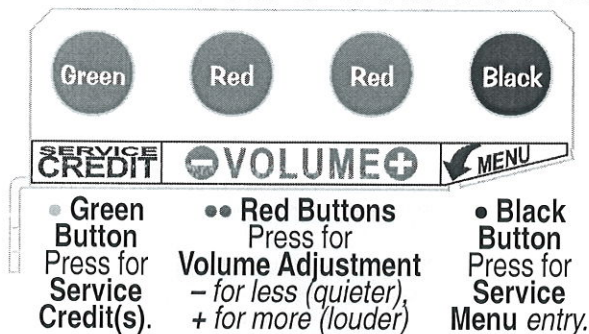


**You can get this game at [www.magic-play.eu](http://www.magic-play.eu)**  
**OPEN THE COIN DOOR TO ACCESS THE SERVICE SWITCH X4 SET.**

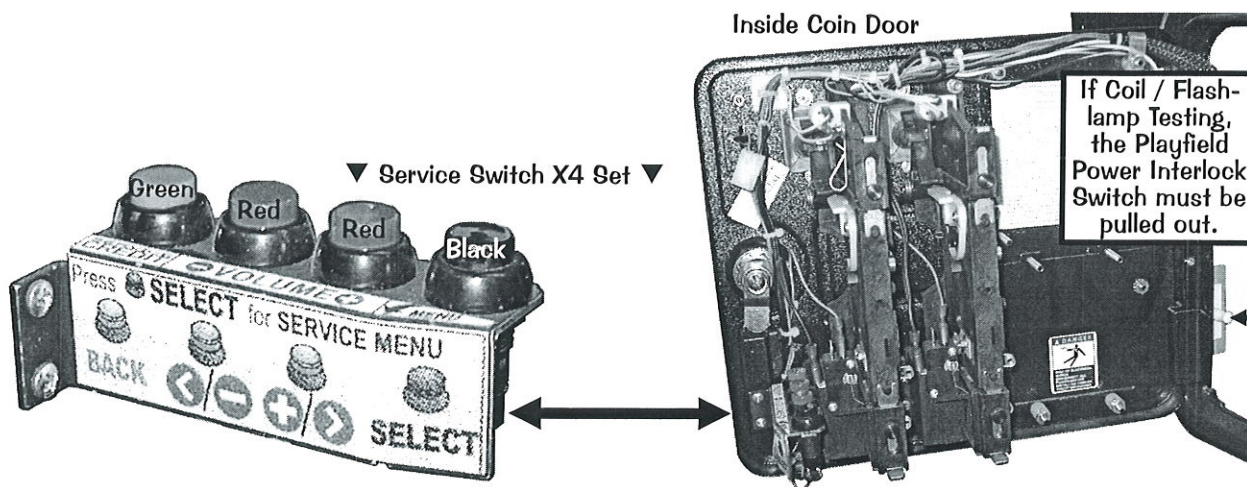
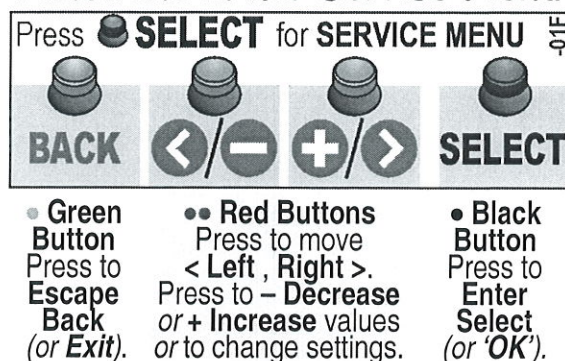
● ● ● ● **Service Switch X4 Set Overview**

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**



**Functions in the Service Menu**



**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

'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**.

**GAME NAME**  
V0.00 SYS. 0.00 HDW. 0  
**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.



# SWITCH MATRIX GRID [ #1 - #64] (Switch Locations : next page)

| CPU/<br>Sound<br>Board          | 01<br>IC-U22A<br>RETURN                                       | 02<br>IC-U22B<br>RETURN                                       | 03<br>IC-U22C<br>RETURN                                    | 04<br>IC-U22D<br>RETURN                                     | 05<br>IC-U16A<br>RETURN   | 06<br>IC-U16B<br>RETURN   | 07<br>IC-U16C<br>RETURN   | 08<br>IC-U16D<br>RETURN  | 09<br>IC-U36A<br>RETURN  | 10<br>IC-U36B<br>RETURN   | 11<br>IC-U36C<br>RETURN   | 12<br>IC-U36D<br>RETURN   | 13<br>IC-U40A<br>RETURN                                     | 14<br>IC-U40B<br>RETURN                                     | 15<br>IC-U40C<br>RETURN                                  | 16<br>IC-U40D<br>RETURN                                  |
|---------------------------------|---|---|--|---|---|---|---|--|--|---|---|---|---|---|--|--|
| 01<br>DRIVE<br>GRN-BRN<br>J1-P1 | S.W. #1<br>(BEAM)<br>ME UP<br>500-6227-03<br>BELOW P.F.       | S.W. #2<br>BEAM<br>(ME)UP<br>500-6227-04<br>BELOW P.F.        | S.W. #3<br>BEAM<br>(ME)UP<br>500-6227-03<br>BELOW P.F.     | S.W. #4<br>BEAM<br>(ME)UP<br>500-6227-03<br>BELOW P.F.      | S.W. #5<br>BEAM<br>(ME)UP<br>500-6227-03<br>BELOW P.F.          | S.W. #6<br>RT. 3 BANK<br>TARGET<br>(TOP)<br>515-7588-05<br>BELOW P.F. | S.W. #7<br>RT. 3 BANK<br>TARGET<br>(TOP)<br>515-7588-05<br>BELOW P.F. | S.W. #8<br>RT. 3 BANK<br>TARGET<br>(CENTER)<br>515-7588-05<br>BELOW P.F. | S.W. #9<br>RT. 3 BANK<br>TARGET<br>(BOTTOM)<br>515-7588-05<br>BELOW P.F. | S.W. #10<br>LEFT<br>EJECT<br>520-5209-00<br>BELOW P.F.                | S.W. #11<br>CENTER<br>DROPP<br>TARGET<br>520-5252-01<br>BELOW P.F.    | S.W. #12<br>SPINNER<br>ENTER<br>180-5010-02<br>ABOVE P.F.           | S.W. #13<br>WARP RAMP<br>ENTER<br>500-6775-01<br>ABOVE P.F. | S.W. #14<br>LEFT RAMP<br>ENTER<br>500-6775-01<br>ABOVE P.F. | S.W. #15<br>TOURN<br>START<br>180-5174-00<br>IN CABINET  | S.W. #16<br>TOURN<br>START<br>180-5174-00<br>IN CABINET  |
| 02<br>DRIVE<br>GRN-RED<br>J1-P3 | S.W. #17<br>TROUGH<br># 4 (L)<br>180-5119-02<br>BELOW P.F.    | S.W. #18<br>TROUGH<br># 3<br>180-5119-02<br>BELOW P.F.        | S.W. #19<br>TROUGH<br># 2<br>180-5119-02<br>BELOW P.F.     | S.W. #20<br>TROUGH<br># 1 (R)<br>515-0173-00<br>515-0174-00 | S.W. #21<br>TROUGH<br>JAM<br>515-0173-00<br>515-0174-00         | S.W. #22<br>TROUGH<br>SHOOTER<br>LANE<br>180-5157-00<br>BELOW P.F.    | S.W. #23<br>TROUGH<br>(T)REK<br>500-6227-04<br>BELOW P.F.             | S.W. #24<br>TROUGH<br>(T)REK<br>500-6227-04<br>BELOW P.F.                | S.W. #25<br>LEFT<br>SLINGSHOT<br>180-5054-00<br>BELOW P.F.               | S.W. #26<br>RIGHT<br>SLINGSHOT<br>180-5054-00<br>BELOW P.F.           | S.W. #27<br>TR(E)K<br>500-6227-04<br>BELOW P.F.                       | S.W. #28<br>TR(E)K<br>500-6227-04<br>BELOW P.F.                     | S.W. #29<br>LEFT<br>BUMPER<br>500-6227-04<br>BELOW P.F.     | S.W. #30<br>LEFT<br>BUMPER<br>180-5015-04<br>BELOW P.F.     | S.W. #31<br>RIGHT<br>BUMPER<br>180-5015-04<br>BELOW P.F. | S.W. #32<br>RIGHT<br>BUMPER<br>180-5015-04<br>BELOW P.F. |
| 03<br>DRIVE<br>GRN-ORG<br>J1-P4 | S.W. #33<br>CENTER<br>LOCK (BOT)<br>500-6775-01<br>ABOVE P.F. | S.W. #34<br>CENTER<br>LOCK (TOP)<br>500-6775-01<br>ABOVE P.F. | S.W. #35<br>LEFT RAMP<br>EXIT<br>500-6775-01<br>ABOVE P.F. | S.W. #36<br>WARP RAMP<br>EXIT<br>500-6775-01<br>ABOVE P.F.  | S.W. #37<br>RIGHT RAMP<br>ENTRANCE<br>500-6775-01<br>ABOVE P.F. | S.W. #38<br>RIGHT RAMP<br>EXIT<br>500-6775-01<br>BELOW P.F.           | S.W. #39<br>C. 3-BANK<br>TARGET<br>(TOP)<br>515-7588-02<br>BELOW P.F. | S.W. #40<br>C. 3-BANK<br>TARGET<br>(BOT)<br>515-7588-02<br>BELOW P.F.    | S.W. #41<br>C. 3-BANK<br>TARGET<br>(BOT)<br>515-7588-02<br>BELOW P.F.    | S.W. #42<br>L. 2-BANK<br>TARGET<br>(TOP)<br>515-7588-08<br>BELOW P.F. | S.W. #43<br>L. 2-BANK<br>TARGET<br>(BOT)<br>515-7588-08<br>BELOW P.F. | S.W. #44<br>BEHIND<br>UPPER<br>FLIPPER<br>500-6227-04<br>BELOW P.F. | S.W. #45<br>RED<br>TARGET 1<br>515-7561-02<br>BELOW P.F.    | S.W. #46<br>RED<br>TARGET 2<br>515-7561-02<br>BELOW P.F.    | S.W. #47<br>RED<br>TARGET 3<br>515-7561-02<br>BELOW P.F. | S.W. #48<br>RED<br>TARGET<br>515-7498-02<br>BELOW P.F.   |
| 04<br>DRIVE<br>GRN-YEL<br>J1-P5 | S.W. #49<br>RED<br>TARGET 5<br>515-7581-02<br>BELOW P.F.      | S.W. #50<br>RED<br>TARGET 6<br>515-7581-02<br>BELOW P.F.      | S.W. #51<br>RIGHT<br>ORBIT<br>500-6227-03<br>BELOW P.F.    | S.W. #52<br>LEFT<br>ORBIT<br>500-6227-03<br>BELOW P.F.      | S.W. #53<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.          | S.W. #54<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.                | S.W. #55<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.                | S.W. #56<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.                   | S.W. #57<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.                   | S.W. #58<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.                | S.W. #59<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.                | S.W. #60<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.              | S.W. #61<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.      | S.W. #62<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.      | S.W. #63<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.   | S.W. #64<br>SHIP<br>CRASH<br>500-6775-01<br>ABOVE P.F.   |

Wire Color Abbreviations used:

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

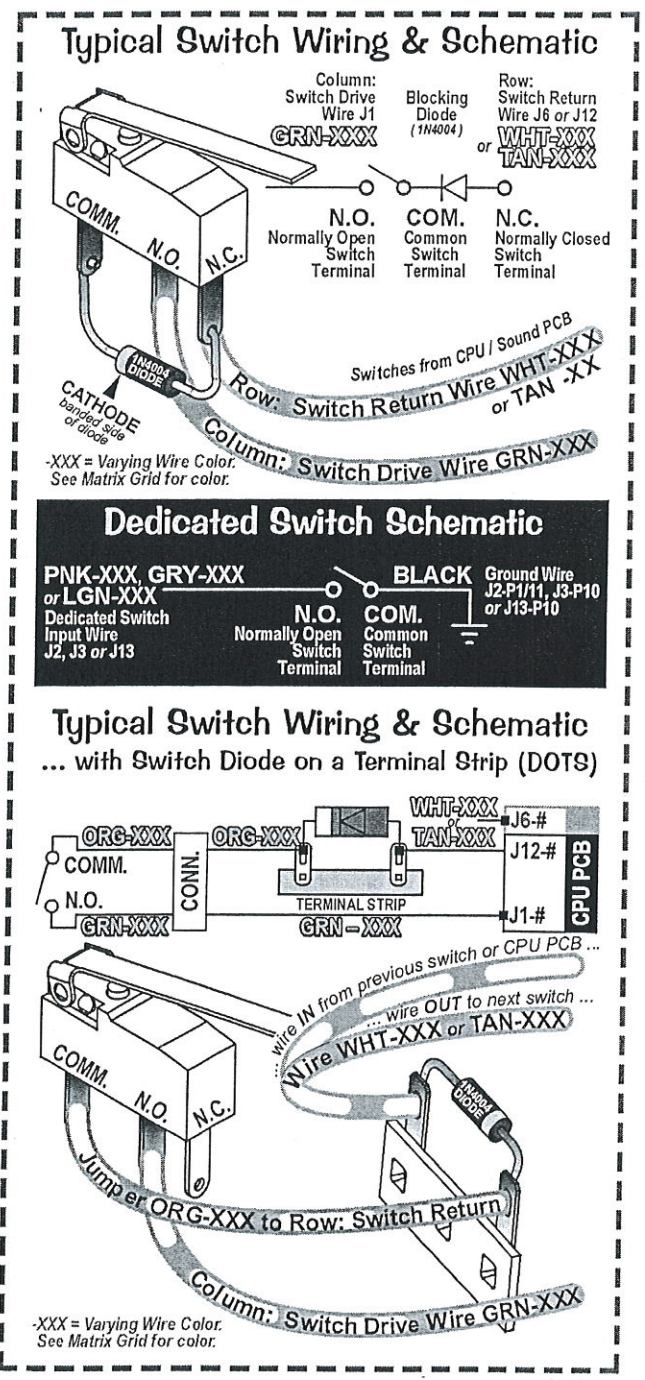
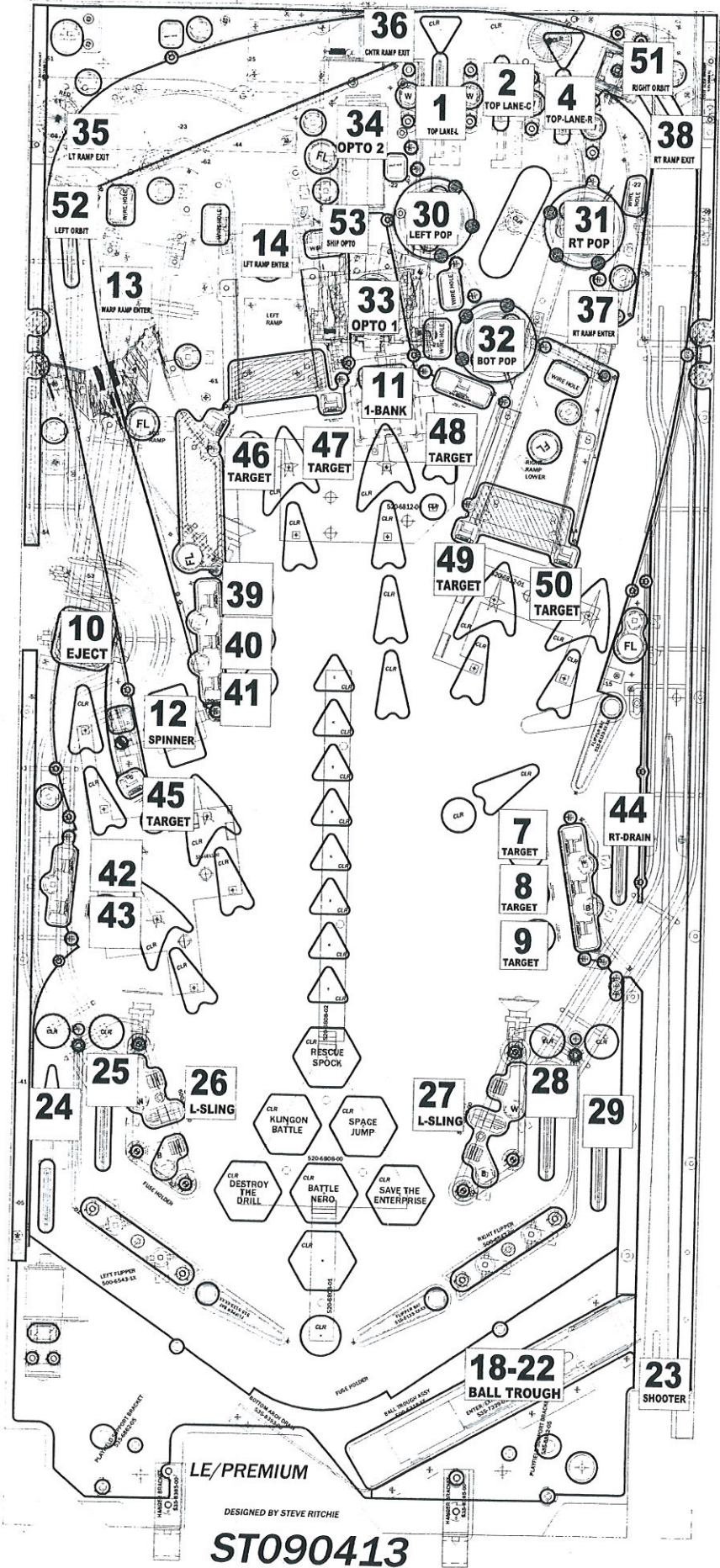
## Dedicated Switches [ #D-1 - #D-32] (Dedicated Switch Locations : next page)

|                                   |   |   |  |  |   |                           |   |                           |  |  |  |   |                           |                           |  |                           |
|-----------------------------------|---|---|--|--|---|---------------------------|---|---------------------------|--|--|--|---|---------------------------|---------------------------|--|---------------------------|
| CPU/SND Board                     | IC-U2<br>PKX-BRN<br>J2-P2                                     | IC-U2<br>PKX-RED<br>J2-P3                               | IC-U2<br>PKX-ORG<br>J2-P4                                      | IC-U2<br>PKX-YEL<br>J2-P5                                      | IC-U2<br>PKX-BRN<br>J2-P6                     | IC-U2<br>PKX-BLU<br>J2-P7 | IC-U2<br>PKX-VIO<br>J2-P8                             | IC-U2<br>PKX-GRN<br>J2-P9 | IC-U4<br>GRY-BRN<br>J3-P1  | IC-U4<br>GRY-RED<br>J3-P2  | IC-U4<br>GRY-ORG<br>J3-P3  | IC-U4<br>GRY-YEL<br>J3-P4   | IC-U4<br>GRY-BLU<br>J3-P5 | IC-U4<br>GRY-VIO<br>J3-P6 | IC-U4<br>GRY-GRN<br>J3-P7                          | IC-U4<br>GRY-BLK<br>J3-P8 |
| GROUND (BLK)<br>J2-P1/11 & J3-P10 | S.W. #D-1<br>LEFT<br>COIN<br>SLOT<br>180-5204-00<br>COIN DOOR | S.W. #D-2<br>CENTER<br>COIN<br>SLOT<br>DBA<br>COIN DOOR | S.W. #D-3<br>RIGHT<br>COIN<br>SLOT<br>180-5204-00<br>COIN DOOR | S.W. #D-4<br>FORTH<br>COIN<br>SLOT<br>180-5204-00<br>COIN DOOR | S.W. #D-5<br>FIFTH<br>COIN<br>SLOT<br>IF USED | S.W. #D-6                 | S.W. #D-7<br>FIRE<br>BUTTON<br>180-5218-00<br>CABINET | S.W. #D-8                 | S.W. #D-9<br>LEFT<br>FLIPPER<br>BUTTON<br>500-6889-01<br>CABINET | S.W. #D-10<br>LEFT<br>FLIPPER<br>E.O.S.<br>180-5149-00<br>FLIP ASSY. | S.W. #D-11<br>RIGHT<br>FLIPPER<br>BUTTON<br>500-6889-01<br>CABINET | S.W. #D-12<br>RIGHT<br>FLIPPER<br>E.O.S.<br>180-5149-00<br>FLIP ASSY. | S.W. #D-13                | S.W. #D-14                | S.W. #D-15<br>U.R.<br>FLIPPER<br>BUTTON<br>CABINET | S.W. #D-16                |

| CPU/SOUND BD. SW1 DIP SWITCH (located between Connectors J3/J13) |                      |                      |                      |                      |                      |                      |                      |                      |                       |                       |                       |                       |                       |                 |                 |                 |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------|-----------------|-----------------|
| CPU/SND Board  | IC-41 LGN-BRN J13-P1 | IC-41 LGN-RED J13-P3 | IC-41 LGN-ORG J13-P4 | IC-41 LGN-YEL J13-P5 | IC-41 LGN-BLK J13-P6 | IC-41 LGN-BLU J13-P7 | IC-41 LGN-VIO J13-P8 | IC-41 LGN-GRN J13-P9 | S.W. #D-25            | S.W. #D-26            | S.W. #D-27            | S.W. #D-28            | S.W. #D-29            | S.W. #D-30      | S.W. #D-31      | S.W. #D-32      |
| S.W. #D-17   | TILT PENDULUM        | S.W. #D-18           | SLAM TILT            | TICKET NOTCH         | S.W. #D-19           | IF USED              |                      | 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      |
| GROUND (BLK) J13-P10   | CABINET              | IF USED              | IF USED              |                      |                      |                      |                      |                      | 180-5192-04 COIN DOOR | 180-5192-02 COIN DOOR | 180-5192-02 COIN DOOR | 180-5192-02 COIN DOOR | 180-5192-00 COIN DOOR |                 |                 |                 |
|  |                      |                      |                      |                      |                      |                      |                      |                      | S.W. POS. #1 ON       | S.W. POS. #2 ON       | S.W. POS. #3 ON       | S.W. POS. #4 ON       | S.W. POS. #5 ON       | S.W. POS. #6 ON | S.W. POS. #7 ON | S.W. POS. #8 ON |

CPU/SOUND BD. SW1 DIP SWITCH (located between Connectors J3/J19)





**ST090413**



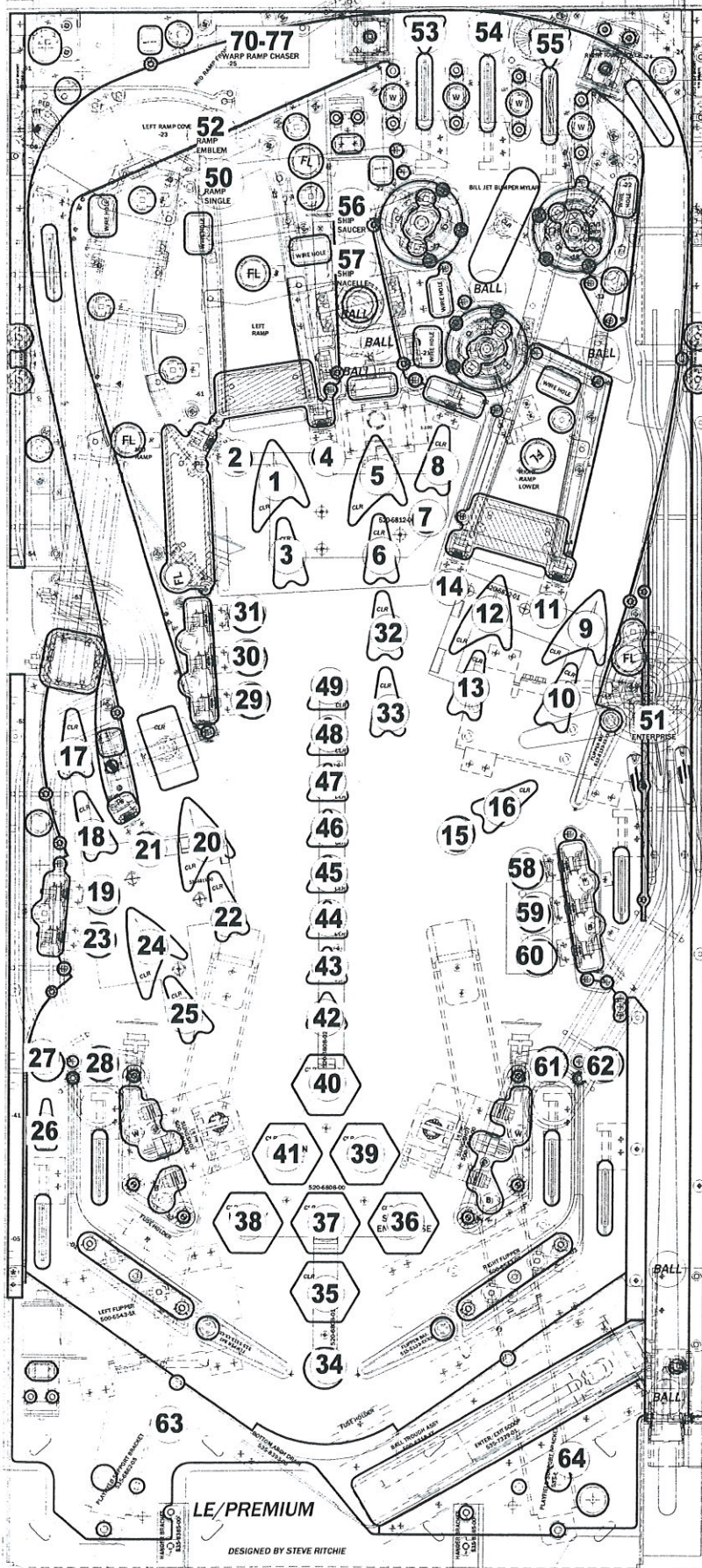
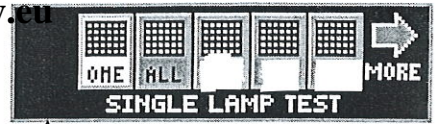
| LAMP | NAME                         | BOARD | COMPONENT  | TYPE | LOCATION | BOARD PART# |
|------|------------------------------|-------|------------|------|----------|-------------|
| 1    | LEFT RAMP EMBLEM             | 5     | D25        | RGB  | PF       | 520-6812-00 |
| 2    | RED TARGET 2                 | 5     | D24        | RGB  | PF       | 520-6812-00 |
| 3    | LEFT RAMP ENTERPRISE ARROW   | 5     | D26        | RGB  | PF       | 520-6812-00 |
| 4    | RED TARGET 3                 | 5     | D27        | RGB  | PF       | 520-6812-00 |
| 5    | CENTER LANE EMBLEM           | 5     | D28        | RGB  | PF       | 520-6812-00 |
| 6    | CENTER LANE ENTERPRISE ARROW | 5     | D29        | RGB  | PF       | 520-6812-00 |
| 7    | RED TARGET 4                 | 5     | D34        | RGB  | PF       | 520-6812-00 |
| 8    | BLACK HOLE ARROW             | 5     | D35        | RGB  | PF       | 520-6812-00 |
| 9    | RIGHT ORBIT EMBLEM           | 5A    | D1         | RGB  | PF       | 520-6812-01 |
| 10   | RIGHT ORBIT ENTERPRISE ARROW | 5A    | D2         | RGB  | PF       | 520-6812-01 |
| 11   | RED TARGET 6                 | 5A    | D3         | RGB  | PF       | 520-6812-01 |
| 12   | RIGHT RAMP EMBLEM            | 5A    | D4         | RGB  | PF       | 520-6812-01 |
| 13   | RIGHT RAMP ENTERPRISE ARROW  | 5A    | D5         | RGB  | PF       | 520-6812-01 |
| 14   | RED TARGET 5                 | 5A    | D6         | RGB  | PF       | 520-6812-01 |
| 15   | SPECIAL                      | 5A    | CN2-P2-4   | RGB  | PF       | 520-5333-00 |
| 16   | AWAY TEAM                    | 5A    | CN2-P5-7   | RGB  | PF       | 520-5333-00 |
| 17   | LEFT EJECT LOCK              | 6     | D24        | RGB  | PF       | 520-6811-00 |
| 18   | MISSION START                | 6     | D25        | RGB  | PF       | 520-6811-00 |
| 19   | LEFT 2 BANK (TOP)            | 6     | D26        | RGB  | PF       | 520-6811-00 |
| 20   | LEFT ORBIT EMBLEM            | 6     | D27        | RGB  | PF       | 520-6811-00 |
| 21   | RED TARGET 1                 | 6     | D28        | RGB  | PF       | 520-6811-00 |
| 22   | LEFT ORBIT ENTERPRISE ARROW  | 6     | D29        | RGB  | PF       | 520-6811-00 |
| 23   | LEFT 2 BANK (BOTTOM)         | 6     | D23        | RGB  | PF       | 520-6811-00 |
| 24   | LEFT EJECT EMBLEM            | 6     | D31        | RGB  | PF       | 520-6811-00 |
| 25   | LEFT EJECT ENTERPRISE ARROW  | 6     | D32        | RGB  | PF       | 520-6811-00 |
| 26   | KICKBACK                     | 6     | CN13-P8-10 | RGB  | PF       | 520-5333-00 |
| 27   | (T)REK                       | 6     | CN13-P5-7  | RGB  | PF       | 520-5333-00 |
| 28   | T(R)EK                       | 6     | CN13-P2-4  | RGB  | PF       | 520-5333-00 |
| 29   | CENTER 3 BANK (BOTTOM)       | 6A    | D1         | RGB  | PF       | 520-6813-00 |
| 30   | CENTER 3 BANK (CENTER)       | 6A    | D2         | RGB  | PF       | 520-6813-00 |
| 31   | CENTER 3 BANK (TOP)          | 6A    | D3         | RGB  | PF       | 520-6813-00 |
| 32   | CENTER LANE LOCK             | 6A    | CN2-P2-4   | RGB  | PF       | 520-6813-00 |
| 33   | EXTRA BALL                   | 6A    | CN2-P5-7   | RGB  | PF       | 520-6813-00 |
| 34   | SHOOT AGAIN                  | 7A    | D23        | RGB  | PF       | 520-6808-01 |
| 35   | THE CAPTAIN'S CHAIR          | 7A    | D22        | RGB  | PF       | 520-6808-01 |
| 36   | SAVE THE ENTERPRISE          | 7     | D24        | RGB  | PF       | 520-6808-00 |
| 37   | NERO                         | 7     | D25        | RGB  | PF       | 520-6808-00 |
| 38   | DESTROY THE DRILL            | 7     | D26        | RGB  | PF       | 520-6808-00 |
| 39   | SPACE JUMP                   | 7     | D27        | RGB  | PF       | 520-6808-00 |
| 40   | PRIME DIRECTIVE              | 7     | D28        | RGB  | PF       | 520-6808-00 |
| 41   | KLINGON BATTLE               | 7     | D29        | RGB  | PF       | 520-6808-00 |
| 42   | STATUS 1 (BOTTOM)            | 7B    | D1         | RGB  | PF       | 520-6808-02 |
| 43   | STATUS 2                     | 7B    | D2         | RGB  | PF       | 520-6808-02 |
| 44   | STATUS 3                     | 7B    | D3         | RGB  | PF       | 520-6808-02 |
| 45   | STATUS 4                     | 7B    | D4         | RGB  | PF       | 520-6808-02 |
| 46   | STATUS 5                     | 7B    | D5         | RGB  | PF       | 520-6808-02 |



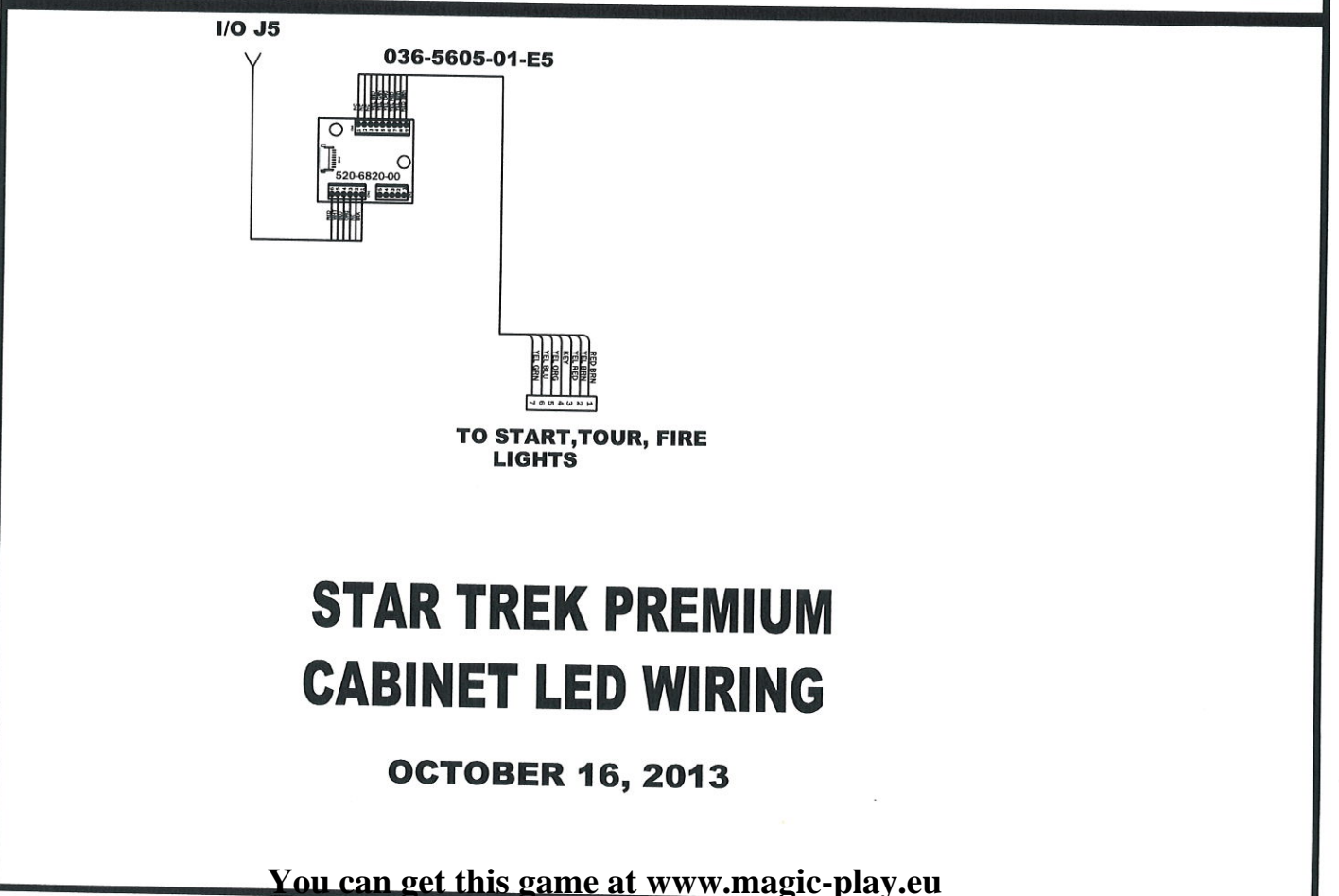
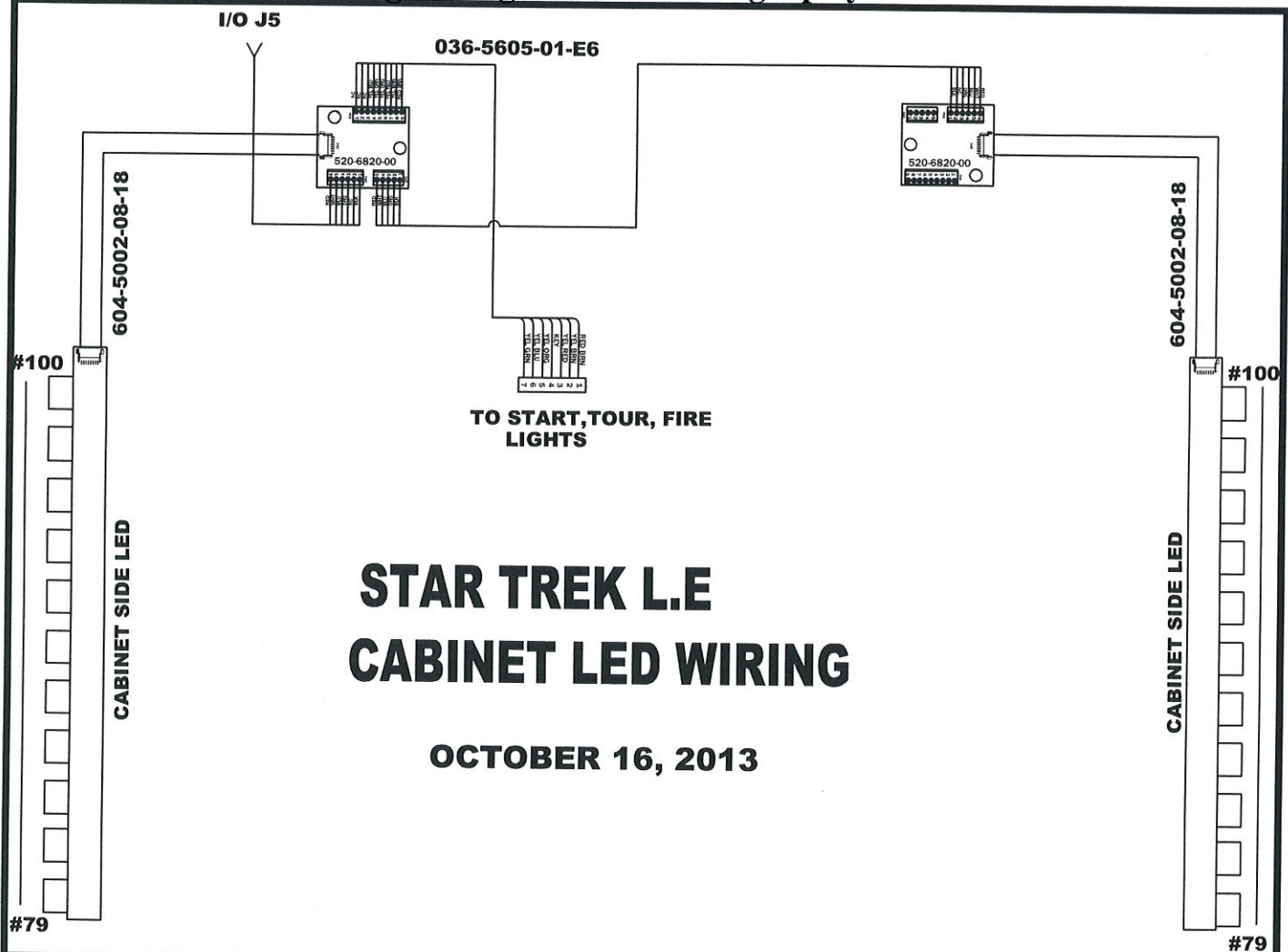
|    |   |    |           |         |          |              |
|----|---|----|-----------|---------|----------|--------------|
| 47 | STATUS 6                                | 7B | D6        | RGB     | PF       | 520-6808-02  |
| 48 | STATUS 7                                | 7B | D7        | RGB     | PF       | 520-6808-02  |
| 49 | STATUS 8 (TOP)                          | 7B | D8        | RGB     | PF       | 520-6808-02  |
| 50 | WARP RAMP RED                           | 8  | CN2-P4    | R       | PF       | 520-5322-00E |
| 51 | ENTERPRISE (X2)                         | 8  | CN2-P5-7  | B       | PF       | 520-5322-00E |
| 52 | WARP RAMP EMBLEM                        | 8  | CN2-P6-8  | RGB     | PF       | 520-5322-00E |
| 53 | (BEAM) ME UP                            | 8  | CN2-P9-11 | RGB     | PF       | 520-5322-00E |
| 54 | BEAM (ME) UP                            | 8  | CN4-P4-6  | RGB     | PF       | 520-5322-00E |
| 55 | BEAM ME (UP)                            | 8  | CN4-P7-9  | RGB     | PF       | 520-5322-00E |
| 56 | VENGEANCE SAUCER                        | 8  | CN4       | B       | PF       | 520-5322-00E |
| 57 | VENGEANCE NACELLES (X2)                 | 8  | CN4       | B       | PF       | 520-5322-00E |
| 58 | RIGHT 3 BANK (TOP)                      | 8A | D1        | RGB     | PF       | 520-6813-00  |
| 59 | RIGHT 3 BANK (CENTER)                   | 8A | D2        | RGB     | PF       | 520-6813-00  |
| 60 | RIGHT 3 BANK (BOTTOM)                   | 8A | D3        | RGB     | PF       | 520-6813-00  |
| 61 | TR(E)K                                  | 8A | CN2-P2-4  | RGB     | PF       | 520-6813-00  |
| 62 | TRE(K)                                  | 8A | CN2-P5-7  | RGB     | PF       | 520-6813-00  |
| 63 | LEFT APRON (X2)                         | 8  | CN6-P4-6  | RGB     | PF       | 520-5322-00E |
| 64 | RIGHT APRON (X2)                        | 8  | CN6-P7-9  | RGB     | PF       | 520-5322-00E |
| 65 | START BUTTON                            | IO | CN4-P8    | White   | CAB      | 112-5033-08  |
| 66 | FIRE (RED)                              | IO | CN4-P6    | R (RGB) | CAB      | 520-5333-00  |
| 67 | FIRE (GREEN)                            | IO | CN4-P5    | G (RGB) | CAB      | 520-5333-00  |
| 68 | FIRE (BLUE)                             | IO | CN4-P4    | B (RGB) | CAB      | 520-5333-00  |
| 69 | TOURNAMENT START BUTTON                 | IO | CN4-P7    | White   | CAB      | 112-5033-08  |
| 70 | WARP CHASER 1 (LE)                      | 8  | CN6       | B       | PF (LE)  | 520-5322-00E |
| 71 | WARP CHASER 2 (LE)                      | 8  | CN6       | B       | PF (LE)  | 520-5322-00E |
| 72 | WARP CHASER 3 (LE)                      | 8  | CN6       | B       | PF (LE)  | 520-5322-00E |
| 73 | WARP CHASER 4 (LE)                      | 8  | CN6       | B       | PF (LE)  | 520-5322-00E |
| 74 | WARP CHASER 5 (LE)                      | 8  | CN6       | B       | PF (LE)  | 520-5322-00E |
| 75 | WARP CHASER 6 (LE)                      | 8  | CN6       | B       | PF (LE)  | 520-5322-00E |
| 76 | WARP CHASER 7 (LE)                      | 8  | CN6       | B       | PF (LE)  | 520-5322-00E |
| 77 | WARP CHASER 8 (LE)                      | 8  | CN6       | B       | PF (LE)  | 520-5322-00E |
| 78 | CABINET SIDE ENTERPRISE (X2) (LE)       | IO |           | B       | CAB (LE) | 520-6809-03  |
| 79 | CABINET SIDE PHASER 1 (X2) (FRONT) (LE) | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 80 | CABINET SIDE PHASER 2 (X2) (LE)         | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 81 | CABINET SIDE PHASER 3 (X2) (LE)         | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 82 | CABINET SIDE PHASER 4 (X2) (LE)         | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 83 | CABINET SIDE PHASER 5 (X2) (LE)         | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 84 | CABINET SIDE PHASER 6 (X2) (LE)         | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 85 | CABINET SIDE PHASER 7 (X2) (LE)         | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 86 | CABINET SIDE PHASER 8 (X2) (LE)         | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 87 | CABINET SIDE PHASER 9 (X2) (LE)         | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 88 | CABINET SIDE PHASER 10 (X2) (LE)        | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 89 | CABINET SIDE PHASER 11 (X2) (LE)        | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 90 | CABINET SIDE PHASER 12 (X2) (LE)        | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 91 | CABINET SIDE PHASER 13 (X2) (LE)        | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 92 | CABINET SIDE PHASER 14 (X2) (LE)        | IO |           | R       | CAB (LE) | 520-6809-0X  |
| 93 | CABINET SIDE PHASER 15 (X2) (LE)        | IO |           | R       | CAB (LE) | 520-6809-0X  |

|     |   |    |  |   |          |             |
|-----|---|----|--|---|----------|-------------|
| 94  | CABINET SIDE PHASER 16 (X2) (LE)        | IO |  | R | CAB (LE) | 520-6809-0X |
| 95  | CABINET SIDE PHASER 17 (X2) (LE)        | IO |  | R | CAB (LE) | 520-6809-0X |
| 96  | CABINET SIDE PHASER 18 (X2) (LE)        | IO |  | R | CAB (LE) | 520-6809-0X |
| 97  | CABINET SIDE PHASER 19 (X2) (LE)        | IO |  | R | CAB (LE) | 520-6809-0X |
| 98  | CABINET SIDE PHASER 20 (X2) (LE)        | IO |  | R | CAB (LE) | 520-6809-0X |
| 99  | CABINET SIDE PHASER 21 (X2) (LE)        | IO |  | R | CAB (LE) | 520-6809-0X |
| 100 | CABINET SIDE PHASER 22 (X2) (BACK) (LE) | IO |  | R | CAB (LE) | 520-6809-0X |





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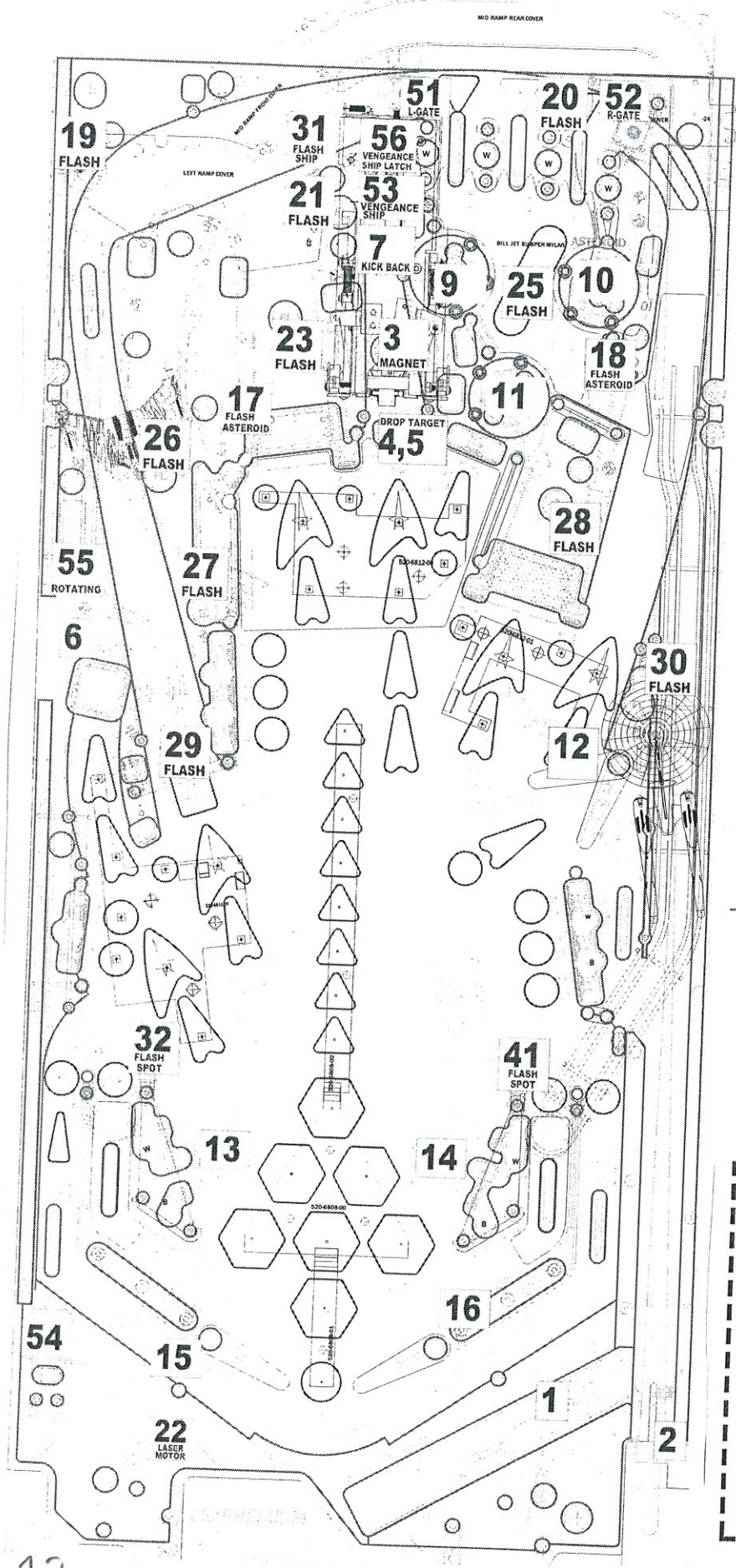




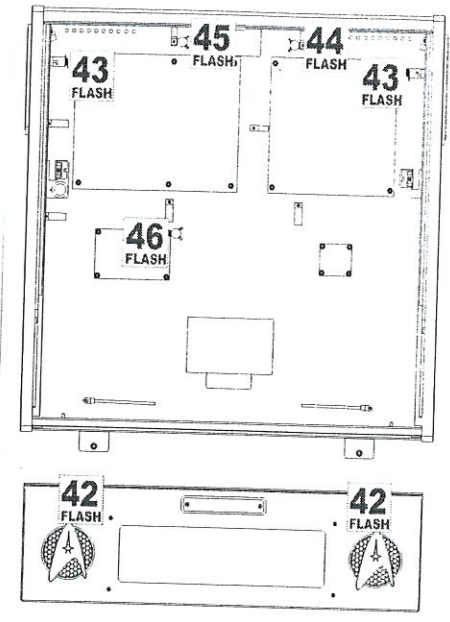
**COILS DETAILED CHART TABLE**

| 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-NB       |
| #2                         | AUTO LAUNCH                 | Q2               |                    | YEL-VIO                 | J10-P9/10             | 50VDC         | BRN-RED                             | J8-P3                     | 23-900 090-5001-NB        |
| #3                         | MAGNET                      | Q3               |                    | VIO-YEL                 | J10-P8                | 50VDC         | BRN-ORG                             | J8-P4                     | 22-850 511-5065-NB        |
| #4                         | CENTER DROP TARGET UP       | Q4               |                    | YEL-VIO                 | J10-P8                | 50VDC         | BRN-YEL                             | J8-P5                     | 25-1240 090-5034-ND       |
| #5                         | CENTER DROP TARGET DOWN     | Q5               |                    | YEL-VIO                 | J10-P9/10             | 50VDC         | BRN-GRN                             | J8-P6                     | 32-1800 090-5031-00       |
| #6                         | LEFT EJECT                  | Q6               |                    | YEL-VIO                 | J10-P9/10             | 50VDC         | BRN-BLU                             | J8-P7                     | 27-1500 090-5004-NB       |
| #7                         | VENGEANCE KICK BACK         | Q7               |                    | YEL-VIO                 | J10-P9/10             | 50VDC         | BRN-VIO                             | J8-P8                     | 23-800 090-5001-NB        |
| #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-NB       |
| #10                        | RIGHT POP BUMPER            | Q10              |                    | YEL-VIO                 | J10-P9/10             | 50VDC         | BLU-RED                             | J8-P2                     | 28-1200 090-5044-NB       |
| #11                        | BOTTOM POP BUMPER           | Q11              |                    | YEL-VIO                 | J10-P9/10             | 50VDC         | BLU-ORG                             | J8-P4                     | 28-1200 090-5044-NB       |
| #12                        | UPPER RIGHT FLIPPER         | Q12              |                    | GRY                     | J10-P9/10             | 50VDC         | BLU-YEL                             | J8-P5                     | 22-1080 090-5032-NB       |
| #13                        | LEFT SLINGSHOT              | Q13              |                    | YEL-VIO                 | J10-P9/10             | 50VDC         | BLU-GRN                             | J8-P6                     | 28-1200 090-5044-NB       |
| #14                        | RIGHT SLINGSHOT             | Q14              |                    | YEL-VIO                 | J10-P9/10             | 50VDC         | BLU-BLU                             | J8-P7                     | 28-1200 090-5044-NB       |
| #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-NB       |
| #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-NB       |
| 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                        | FLASH: ASTEROID (LEFT)      | Q17              | I / O Power Driver | ORG                     | J6-P10                | 20VDC         | VIO-BRN                             | J7-P2                     | LED 113-5034-08           |
| #18                        | FLASH: ASTEROID (RIGHT)     | Q18              |                    | ORG                     | J6-P10                | 20VDC         | VIO-RED                             | J7-P3                     | LED 113-5034-08           |
| #19                        | FLASH: LEFT RAMP (TOP)      | Q19              |                    | ORG                     | J6-P10                | 20VDC         | VIO-ORG                             | J7-P4                     | LED 113-5034-08           |
| #20                        | FLASH: RIGHT RAMP (TOP)     | Q20              |                    | ORG                     | J6-P10                | 20VDC         | VIO-YEL                             | J7-P6                     | LED 113-5034-08           |
| #21                        | FLASH: KICK BACK            | Q21              |                    | ORG                     | J6-P10                | 20VDC         | VIO-GRN                             | J7-P7                     | LED 113-5034-08           |
| #22                        | LASER MOTOR                 | Q22              |                    | BRN                     | J7-P1                 | 20VDC         | VIO-BLU                             | J7-P8                     | MOTOR 041-5111-00         |
| #23                        | FLASH: RAMP (LEFT)          | Q23              |                    | ORG                     | J6-P10                | 20VDC         | VIO-BLK                             | J7-P9                     | LED 113-5034-08           |
| #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: WARP RAMP ENTRANCE   | Q26              |                    | ORG                     | J6-P10                | 20VDC         | BLK-RED                             | J6-P2                     | LED 113-5034-08           |
| #27                        | FLASH: CENTER THREE BANK    | Q27              |                    | ORG                     | J6-P10                | 20VDC         | BLK-ORG                             | J6-P3                     | LED 113-5034-08           |
| #28                        | FLASH: RAMP (RIGHT)         | Q28              |                    | ORG                     | J6-P10                | 20VDC         | BLK-YEL                             | J6-P4                     | LED 113-5034-08           |
| #29                        | FLASH: LEFT LOOP            | Q29              |                    | ORG                     | J6-P10                | 20VDC         | BLK-GRN                             | J6-P5                     | LED 113-5034-05           |
| #30                        | FLASH: UPPER RIGHT FLIPPER  | Q30              |                    | ORG                     | J6-P10                | 20VDC         | BLK-BLU                             | J6-P6                     | LED 113-5034-08           |
| #31                        | FLASH: VENGEANCE SHIP       | Q31              |                    | ORG                     | J6-P10                | 20VDC         | BLK-VIO                             | J6-P7                     | LED 112-5044-08           |
| #32                        | FLASH: BOTTOM SPOT (LEFT)   | Q32              |                    | ORG                     | J6-P10                | 20VDC         | BLK-GRY                             | J6-P8                     | LED 112-5041-08           |

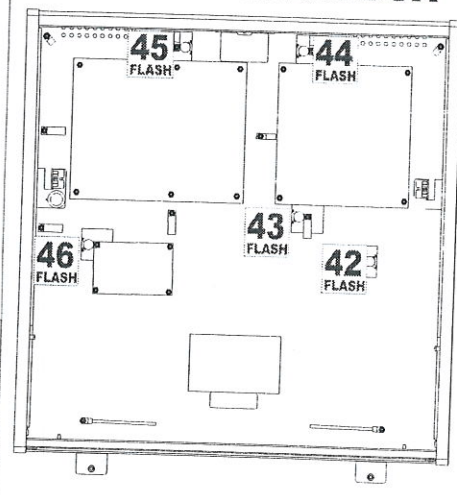




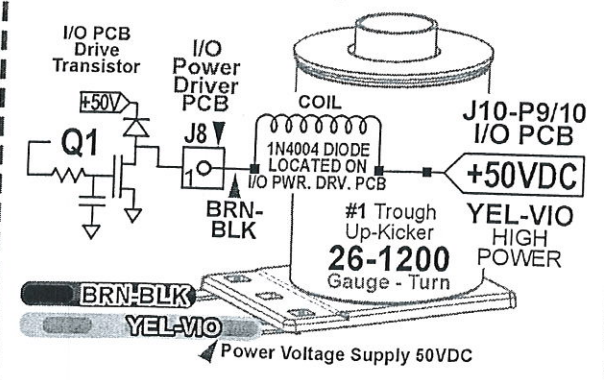
## L.E BACK BOX



## PREMIUM BACK BOX



## Typical Coil Wiring & Schematic





**12- TRANSISTOR DRIVER BOARD COIL/FLASHER CHART.**

L/E

| Driver N.O     | Assembly Name              | Drive Transistor | PWR line color | PWR voltage | Control line color | Coil Type                |
|----------------|----------------------------|------------------|----------------|-------------|--------------------|--------------------------|
| #41            | FLASH: BOTTOM SPOT (RT)    | Q41              | ORG            | 20VDC       | ORG-BRN            | LED (112-5041-08)        |
| #42            | FLASH: BACKBOX (X2)        | Q42              | ORG            | 20VDC       | ORG-RED            | LED (113-5034-05)        |
| #43            | FLASH: BACKBOX (X2)        | Q43              | ORG            | 20VDC       | ORG-BLK            | LED (113-5034-05)        |
| #44            | FLASH: BACKBOX             | Q44              | ORG            | 20VDC       | ORG-YEL            | LED (113-5034-08)        |
| #45            | FLASH: BACKBOX             | Q45              | ORG            | 20VDC       | ORG-GRN            | LED (113-5034-08)        |
| #46            | FLASH: BACKBOX             | Q46              | ORG            | 20VDC       | ORG-BLU            | LED (113-5034-08)        |
| #51            | Orbit control gate (LEFT)  | Q51              | YEL-VIO        | 50VDC       | YEL-BRN            | 32-1250 (090-5060-01)    |
| #52            | Orbit control gate (RIGHT) | Q52              | YEL-VIO        | 50VDC       | YEL-GRY            | 32-1250 (090-5060-01)    |
| #53            | VENGEANCE SHIP             | Q53              | YEL-VIO        | 50VDC       | YEL-ORG            | 23-800 (090-5001-ND)     |
| #54            | KICK BACK (BOTTOM)         | Q54              | YEL-VIO        | 50VDC       | YEL-BLK            | 23-800 (090-5001-ND)     |
| #55            | ROTATING VUK (RIGHT)       | Q55              | YEL-VIO        | 50VDC       | YEL-GRN            | 24-940 (090-5036-ND)     |
| #56            | VENGEANCE SHIP LATCH       | Q56              | YEL-VIO        | 50VDC       | YEL-BLU            | 32-1800 (090-5031-00)    |
| <u>PREMIUM</u> |                            |                  |                |             |                    |                          |
| #41            | FLASH: BOTTOM SPOT (RT)    | Q41              | ORG            | 20VDC       | ORG-BRN            | LED (112-5041-08)        |
| #42            | FLASH: BACKBOX             | Q42              | ORG            | 20VDC       | ORG-RED            | LED (113-5034-08)        |
| #43            | FLASH: BACKBOX             | Q43              | ORG            | 20VDC       | ORG-BLK            | LED (113-5034-08)        |
| #44            | FLASH: BACKBOX             | Q44              | ORG            | 20VDC       | ORG-YEL            | LED (113-5034-08)        |
| #45            | FLASH: BACKBOX             | Q45              | ORG            | 20VDC       | ORG-GRN            | LED (113-5034-08)        |
| #46            | FLASH: BACKBOX             | Q46              | ORG            | 20VDC       | ORG-BLU            | LED (113-5034-08)        |
| #51            | Orbit control gate (LEFT)  | Q51              | YEL-VIO        | 50VDC       | YEL-BRN            | 32-1250 (090-5060-01-FC) |
| #52            | Orbit control gate (RIGHT) | Q52              | YEL-VIO        | 50VDC       | YEL-GRY            | 32-1250 (090-5060-01-FC) |
| #53            | VENGEANCE SHIP             | Q53              | YEL-VIO        | 50VDC       | YEL-ORG            | 23-800 (090-5001-ND)     |
| #54            | KICK BACK (BOTTOM)         | Q54              | YEL-VIO        | 50VDC       | YEL-BLK            | 23-800 (090-5001-ND)     |
| #55            | ROTATING VUK (RIGHT)       | Q55              | YEL-VIO        | 50VDC       | YEL-GRN            | 24-940 (090-5036-ND)     |
| #56            | VENGEANCE SHIP LATCH       | Q56              | YEL-VIO        | 50VDC       | YEL-BLU            | 32-1800 (090-5031-00-ND) |



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.

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

Press [ **SELECT** ].

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

Press [ **SELECT** ].

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

Audit Number

Audit Name

Audit Result

EARNINGS AUDIT #1  
TOTAL PAID CREDITS  
0

### EARNINGS AUDITS [ #1 – #13 ] ▼

| 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            |             |

### 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 ADJUSTMENT 1

## GO TO ADJUSTMENTS MENU: STANDARD ADJUSTMENTS [ #1 – #63 ]

Perform the below steps to review the adjustments. Enter the **ADJUSTMENTS MENU**, then enter the **STANDARD ADJUSTMENTS MENU**. For adjustment definitions or summary, review the Adjustments Section (**GO TO ADJUSTMENTS MENU**). See Utilities Section (**GO TO INSTALLS MENU**), to easily change all adjustments required depending on the Install Type (Easy, Hard, 5-Ball, Home Play, etc.) desired.

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

**Step 2** Press [ > ]. Go to the "ADJ" Icon.  
Press [ **SELECT** ].

Adjustment Number  
Adjustment Name  
Adjustment Setting  
Adjustment Comment

**STANDARD ADJUSTMENT #1**  
**REPLAY TYPE**  
**AUTO**  
**(INSTALLED/FACTORY DEFAULT)**

**Step 3** ... "S.P.I." Icon. Press [ **SELECT** ].

**Step 4** **STANDARD ADJUSTMENT #1** appears with the Adjustment Name [ **REPLAY TYPE** ] flashing. With the Adjustment Name flashing, press [ < ] [ > ] to move between adjustments.

**Step 5** To change the Adjustment Setting, press [ **SELECT** ]. With the Adjustment Setting flashing, press [ < ] [ > ] repeatedly until the desired setting appears. Press the [ **SELECT** ] to "install" the change. The Adjustment Comment (bottom text line) will indicate [ **INSTALLED/FACTORY DEFAULT** ], if the Factory Default Setting is selected or [ **INSTALLED** ] if the change is not the Factory Default Setting.

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

| Nr. | STANDARD ADJUSTMENT NAME | USA DEFAULT | YOUR SETTING |
|-----|--------------------------|-------------|--------------|
| 1   | REPLAY TYPE              | AUTO        |              |
| 2   | ‡ REPLAY PERCENTAGE      | 10%         |              |
| 3   | ‡ REPLAY AWARD           | CREDIT      |              |
| 4   | ‡ REPLAY LEVELS          | 1           |              |
| 5   | ‡ AUTO REPLAY START      | ___,000,000 |              |
| 6   | ‡ DYNAMIC REPLAY START   | 60,000,000  |              |
| 7   | ‡ REPLAY LEVEL #1        | 15,000,000  |              |
| 8   | ‡ REPLAY LEVEL #2        | 30,000,000  |              |
| 9   | ‡ REPLAY LEVEL #3        | 45,000,000  |              |
| 10  | ‡ REPLAY LEVEL #4        | 60,000,000  |              |
| 11  | ‡ REPLAY BOOST           | YES         |              |
| 12  | SPECIAL LIMIT            | 1           |              |
| 13  | ‡ SPECIAL PERCENTAGE     | 10%         |              |
| 14  | SPECIAL AWARD            | CREDIT      |              |
| 15  | FREE GAME LIMIT          | 5           |              |
| 16  | EXTRA BALL LIMIT         | 5           |              |
| 17  | ‡ EXTRA BALL PERCENTAGE  | 25%         |              |
| 18  | GAME PRICING             | USA 10      |              |
| 19  | MATCH PERCENTAGE         | 9%          |              |
| 20  | MATCH AWARD              | CREDIT      |              |
| 21  | BALLS PER GAME           | 3           |              |
| 22  | TILT WARNINGS            | 2           |              |
| 23  | CREDIT LIMIT             | 30          |              |
| 24  | ALLOW HIGH SCORES        | YES         |              |
| 25  | HIGH SCORE AWARD         | CREDIT      |              |
| 26  | GRAND CHAMPION AWARDS    | 1           |              |
| 27  | HIGH SCORE #1 AWARDS     | 1           |              |
| 28  | HIGH SCORE #2 AWARDS     | 0           |              |
| 29  | HIGH SCORE #3 AWARDS     | 0           |              |
| 30  | HIGH SCORE #4 AWARDS     | 0           |              |
| 31  | GRAND CHAMPION SCORE     | ___,000,000 |              |

| Nr. | STANDARD ADJUSTMENT NAME | USA DEFAULT | YOUR SETTING |
|-----|--------------------------|-------------|--------------|
| 32  | HIGH SCORE #1            | ___,000,000 |              |
| 33  | HIGH SCORE #2            | ___,000,000 |              |
| 34  | HIGH SCORE #3            | ___,000,000 |              |
| 35  | HIGH SCORE #4            | ___,000,000 |              |
| 36  | HSTD INITIALS            | 3 INITIALS  |              |
| 37  | HSTD RESET COUNT         | 2000        |              |
| 38  | FREE PLAY                | NO          |              |
| 39  | LANGUAGE                 | ENGLISH     |              |
| 40  | PLAYER LANGUAGE SELECT   | YES         |              |
| 41  | CUSTOM MESSAGE           | ON          |              |
| 42  | FLASH LAMP POWER         | NORMAL      |              |
| 43  | COIL PULSE POWER         | NORMAL      |              |
| 44  | KNOCKER VOLUME           | NORMAL      |              |
| 45  | GAME RESTART             | YES         |              |
| 46  | BILL VALIDATOR           | NO          |              |
| 47  | MUSIC VOLUME             | 1           |              |
| 48  | BALL SAVE TIME           | 0:05        |              |
| 49  | TIMED PLUNGER            | OFF         |              |
| 50  | FLIPPER BALL LAUNCH      | OFF         |              |
| 51  | COINDOOR BALL SAVER      | NO          |              |
| 52  | COMPETITION MODE         | NO          |              |
| 53  | CONSOLATION BALL         | YES         |              |
| 54  | FAST BOOT                | YES         |              |
| 55  | Q24 OPTION               | COIN METER  |              |
| 56  | TICKET DISPENSER         | NO          |              |
| 57  | PLAYER COMPETITION       | YES         |              |
| 58  | TEAM SCORES              | NO          |              |
| 59  | LOCATION ID              | 0           |              |
| 60  | GAME ID                  | 0           |              |
| 61  | TIME FORMAT              | 12-HOUR     |              |
| 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.





Perform the below steps to review the audits. Enter the **AUDITS MENU**, then enter the **FEATURE 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 Utilities Section (**GO TO UTILITIES MENU**), for more information.

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

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

Press [ **SELECT** ].

**Step 3** Press [ **>** ]. Go to the "GAME" Icon. Press [ **SELECT** ].

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



% = AUDIT RESULT DIVIDED BY STANDARD AUDIT 16 (TOTAL PLAYS).

Feature Audits are subject to change (with or without notice). View Feature Audits on the Dot Display only. To export all audits to your memory stick (creating a text file), perform the following. Enter the **AUDITS MENU**, then enter the **DUMP AUDITS TO USB**. **Note:** The **"DUMP"** Icon can also be accessed in the **USB MENU** via the **UTILITIES MENU** (see the Utilities Section (**GO TO USB MENU**) for details).



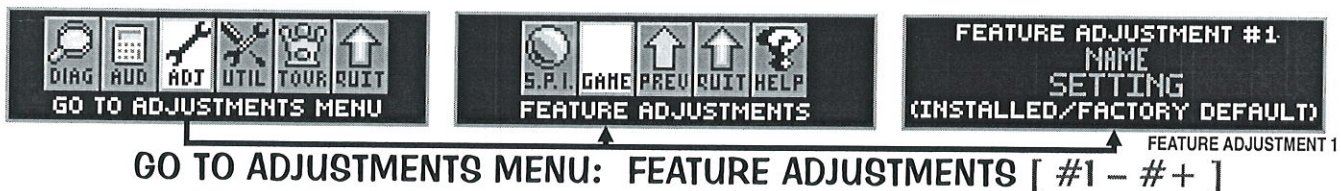
**Step 1** Insert your **USB Compatible Memory Stick** into the USB port on the CPU/Sound Board (S.A.M. System). If the Memory Stick has space available and is free of errors, a dated file\* is generated (\* ensure your Date & Time is set prior to selecting or the dated file will have the default date of 20XX\_01\_01; see Section 3, Chapter 5, SET DATE / TIME via the **UTILITIES MENU** for details).



**Step 2** Press [ **SELECT** ] to save the file to your Memory Stick. Press [ **SELECT** ] again to continue or [ **BACK** ] to exit or escape at any time.



**Step 3** Remove the Memory Stick and insert into your PC or Mac to save the file (which can then be copied, printed or emailed). The audits are numbered sequentially **without** a number restart between the three types of audits (Earnings, Standard and Feature).



Perform the below steps to review the adjustments. Enter the **SERVICE MENU**, then enter the **FEATURE ADJUSTMENTS MENU**. For adjustment definitions or summary, review the Adjustments Section (**GO TO ADJUSTMENTS MENU**). See Utilities Section (**GO TO INSTALLS MENU**), to easily change all adjustments required depending on the Install Type (Easy, Hard, 5-Ball, Home Play, etc.) desired.

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

**Step 2** Press [ **>** ]. Go to the "ADJ" Icon.

Press [ **SELECT** ].

**Step 3** Press [ **>** ]. Go to the "GAME" Icon.

Press [ **SELECT** ].



**Step 4** **FEATURE ADJUSTMENT #1** appears with the Adjustment Name [ **FEATURE ADJ. NAME** ] flashing. With the Adjustment Name flashing, press [ **<** ] [ **>** ] to move between adjustments.

**Step 5** To change the Adjustment Setting, press [ **SELECT** ]. With the Adjustment Setting flashing, press [ **<** ] [ **>** ] repeatedly until the desired setting appears. Press the [ **SELECT** ] to "install" the change. The Adjustment Comment (bottom text line) will indicate [ **INSTALLED/FACTORY DEFAULT** ], if the Factory Default Setting is selected or [ **INSTALLED** ] if the change is not the Factory Default Setting.

Feature Adjustments are subject to change (with or without notice). View Feature Adjustments on the Dot Display only. Use the Installs Menu (via the **UTILITIES MENU**) to automatically change a select group of Feature Adjustments (see the Utilities Section) or adjust them one-by-one.



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

## GAME DIMENSIONS

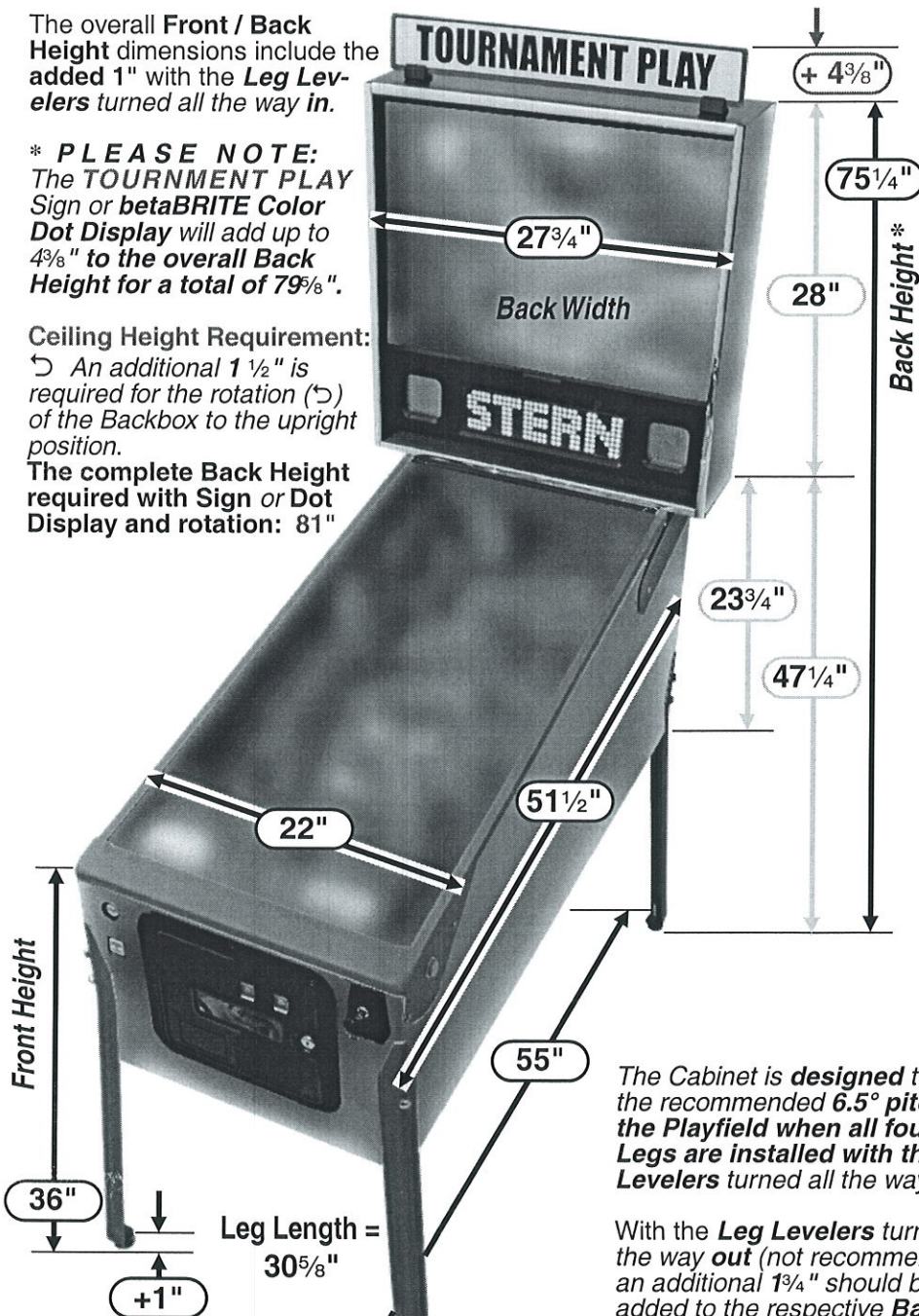
## TRANSPORTATION

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"**



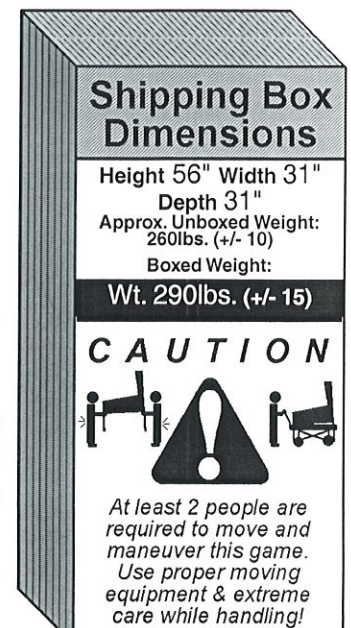
### BEFORE TRANSPORTING



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.

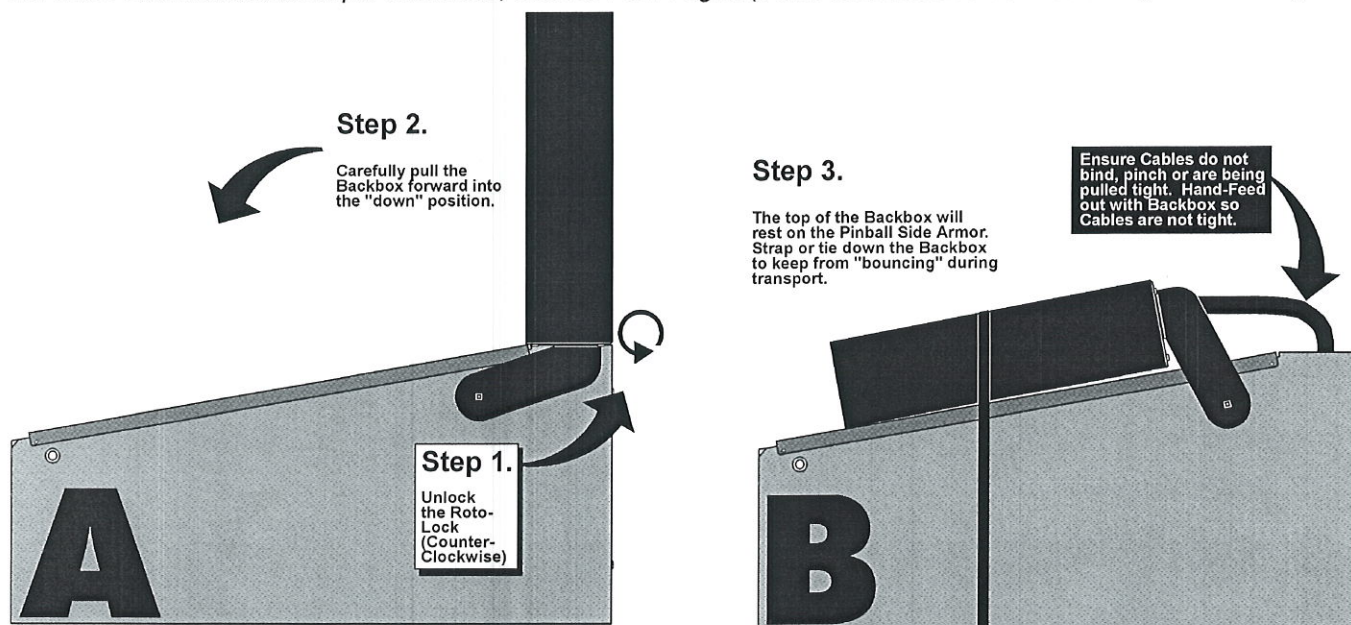
**SAVE AND RETAIN ALL PRINTED INFORMATION INSIDE THE CABINET !**





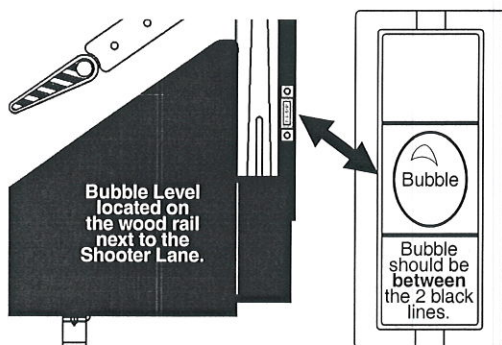
## How to Secure the Backbox for Transporting

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.



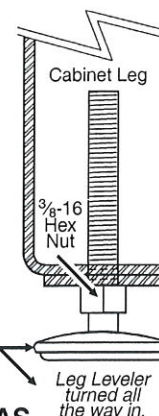
Start adjustment with the leg levelers *turned all the way in*.

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!**



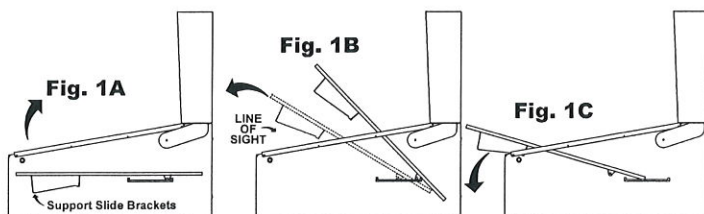
**Note:** For custom adjustment greater than >6.5° can be achieved by turning out the rear leg leveler(s), however, **it is not recommended**.

## 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*).

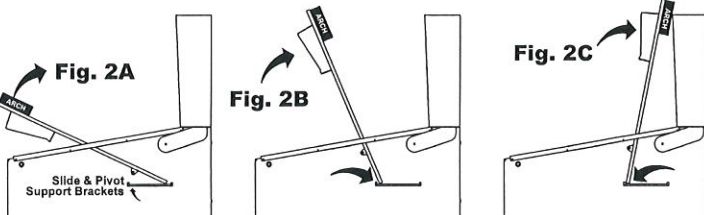
### Position 1

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).





## 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:



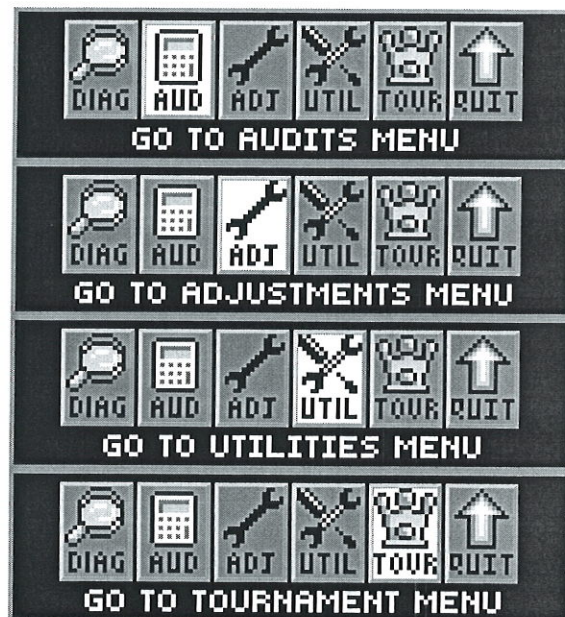
As the operator views the Menu Screen(s), the **MORE MORE** symbols indicates that there are more **Icons** to select in each direction. The **Icon** selected will blink. Pushing the **Black [ SELECT ] Button** will select the **Icon** and the Menu Screen will change to the menu selected. Select the **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.

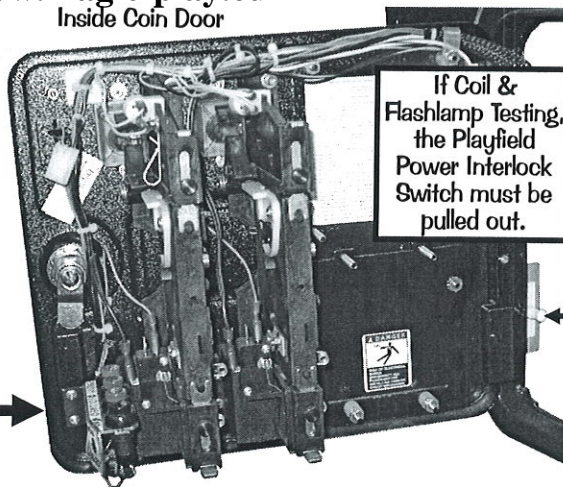
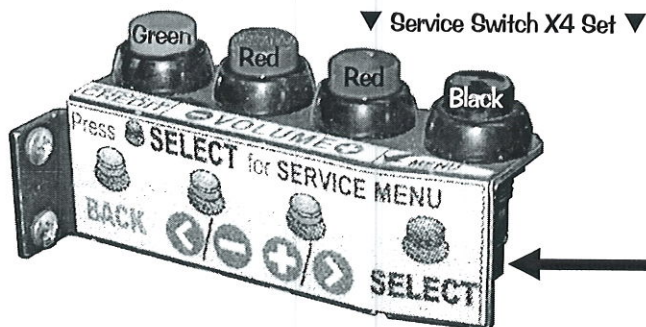




## Service Switch X4 Set Access & Use

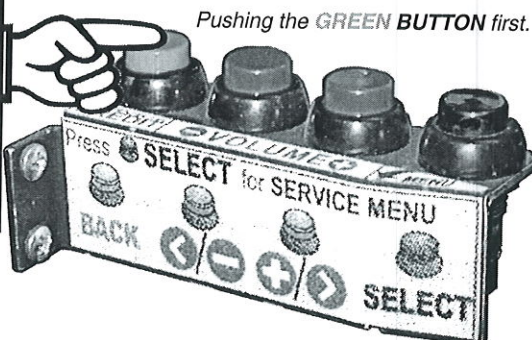
Inside Coin Door

The 4-Button Service Switch Set provides access for **three (3) functions** available for your use: 1: **SERVICE CREDIT**, 2: **VOLUME** [ - ] / [ + ] and 3: **SERVICE MENU**.



To access any of these **three (3) functions** you must first open the **Coin Door** (see pictorial above) with the Game in the **Attract Mode** (not already in any Function or Menu stated below) and then follow below.

Service Menu Intro.



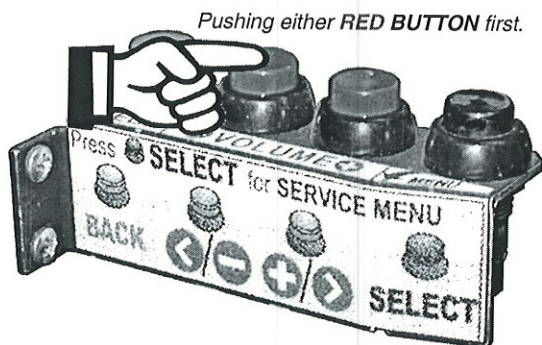
Pushing the **GREEN BUTTON** first.

### ◀ Function 1: SERVICE CREDITS MENU

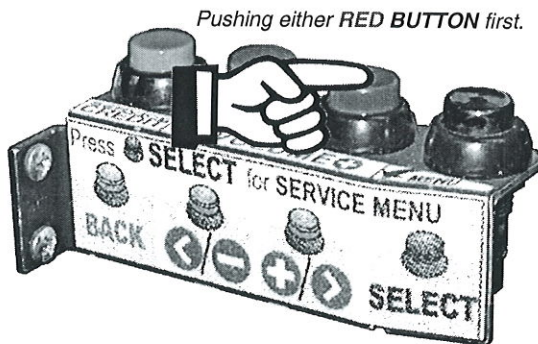
Pushing the **Green** [ **SERVICE CREDIT** ] Button first, adds a **Service Credit** per push (will not affect your audits as "paid" credits). This is useful for the technician to test games in regular play without affecting the game audits. Each depression adds 1 credit; up to 50 credits can be applied. **Standard Adjustment 23, Credit Limit**, determines this, however, it can be changed from 04-50; for details see the **Adjustments Section**.

**Note:** Once your credits are added, this menu will **automatically exit** a few seconds after the last button depression or when the **Green** [ **BACK** ] or **Black** [ **SELECT** ] Button is pushed. This function is disabled if **Standard Adjustment 38, Free Play**, is set to **YES**. The Service Credits are limited to the Credit Limit in addition to any paid credits present in the game (e.g. If the Credit Limit is 30, with 8 paid credits present, only 22 Credits can be applied.).

38, **Free Play**, is set to **YES**. The Service Credits are limited to the Credit Limit in addition to any paid credits present in the game (e.g. If the Credit Limit is 30, with 8 paid credits present, only 22 Credits can be applied.).



Pushing either **RED BUTTON** first.

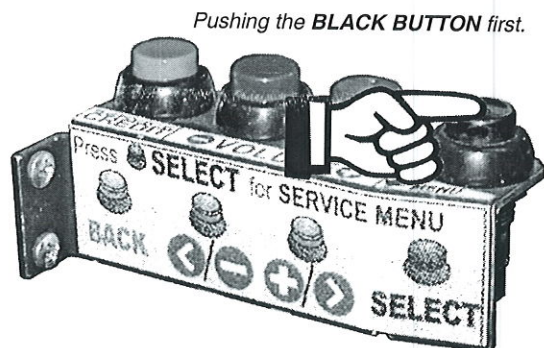


Pushing either **RED BUTTON** first.

### ▲ Function 2: VOLUME MENU ▲

Pushing either of the **Red** [ **VOLUME** ] Buttons first, enters the **VOLUME MENU**. While in this Mode, to **DECREASE** the volume, hold down or depress the 1st Red [ < / - ] Button until desired the volume is achieved; to **INCREASE** the volume, hold down or depress the 2nd Red [ + / > ] Button until the desired volume is achieved.

**Note:** The volume can be set between 0-63; Once your adjustments are made, this menu will **automatically exit** a few seconds after the last button depression or when the **Green** [ **BACK** ] or **Black** [ **SELECT** ] Button is pushed.



Pushing the **BLACK BUTTON** first.

### ◀ Function 3: SERVICE MENU

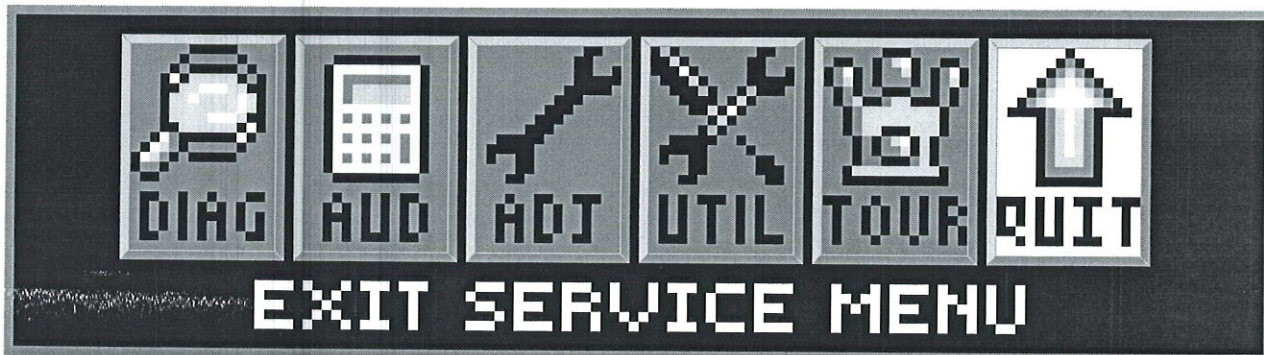
Pushing the **Black** [ **SELECT** ] Button first, enters the **SERVICE MENU**. Once in, navigate through all menus by depressing the **Service Menu Buttons**. Use the **Red** [ < / - ] or [ + / > ] Buttons to move **LEFT / RIGHT, NEXT/PREVIOUS** (audits/adjustments) or to **INCREASE / DECREASE** an adjustment (setting). Use the **Black** [ **SELECT** ] Button to select a highlighted **Icon**, move to the next line of text or to answer "OK" where applicable. Use the **Green** [ **BACK** ] Button to exit or escape back.





## 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.



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

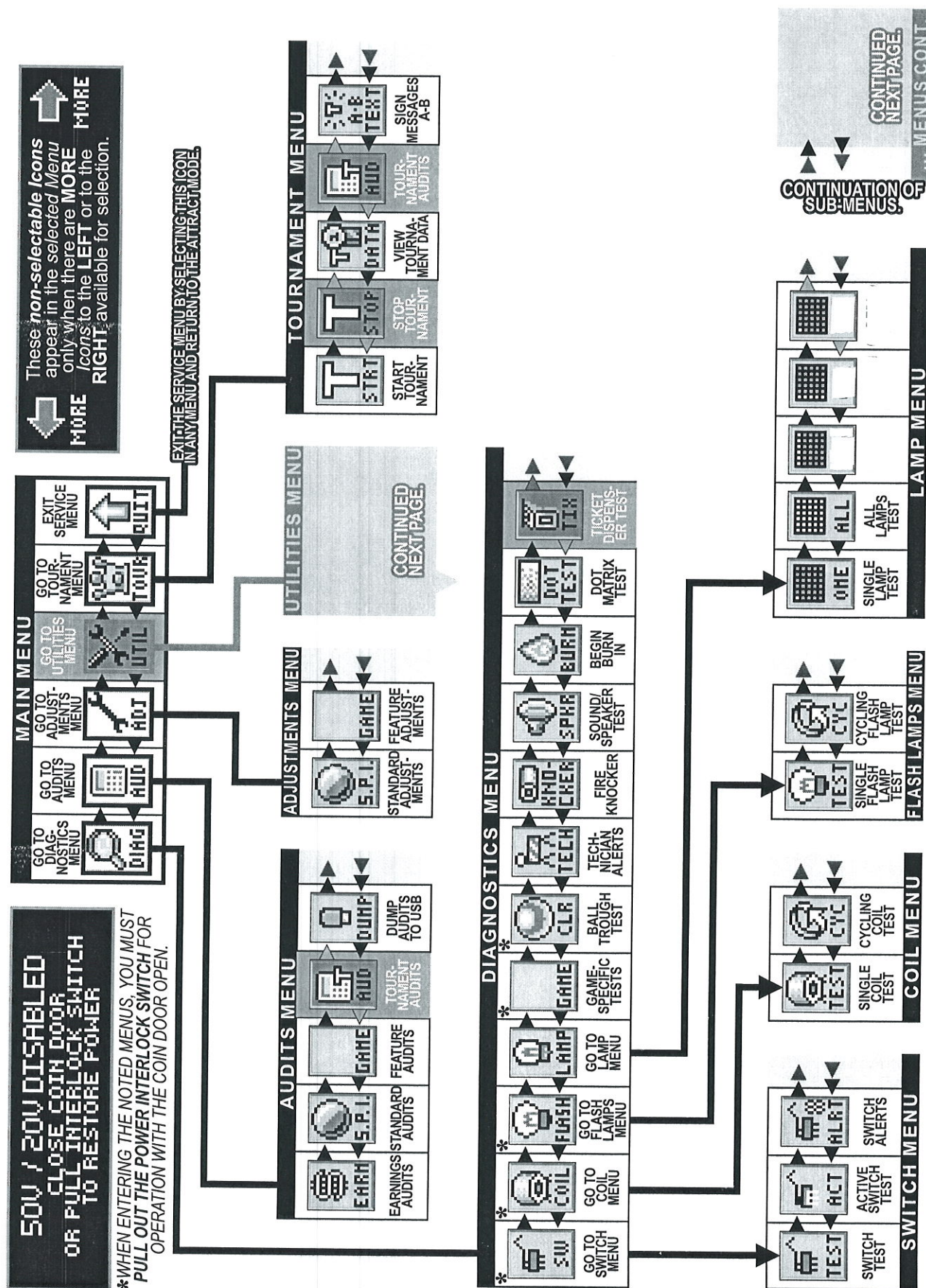
### Problem / Solution Table

| 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</b>, <b>RED (x2)</b> &amp; <b>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</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 "scroll" 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 Icons 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 Icon 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 in Diagnostic's Switch &amp; Active Switch Tests (see previous Problem).</i></li> </ul>   |
| Some Icons 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 "HELP" Icon, 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.**

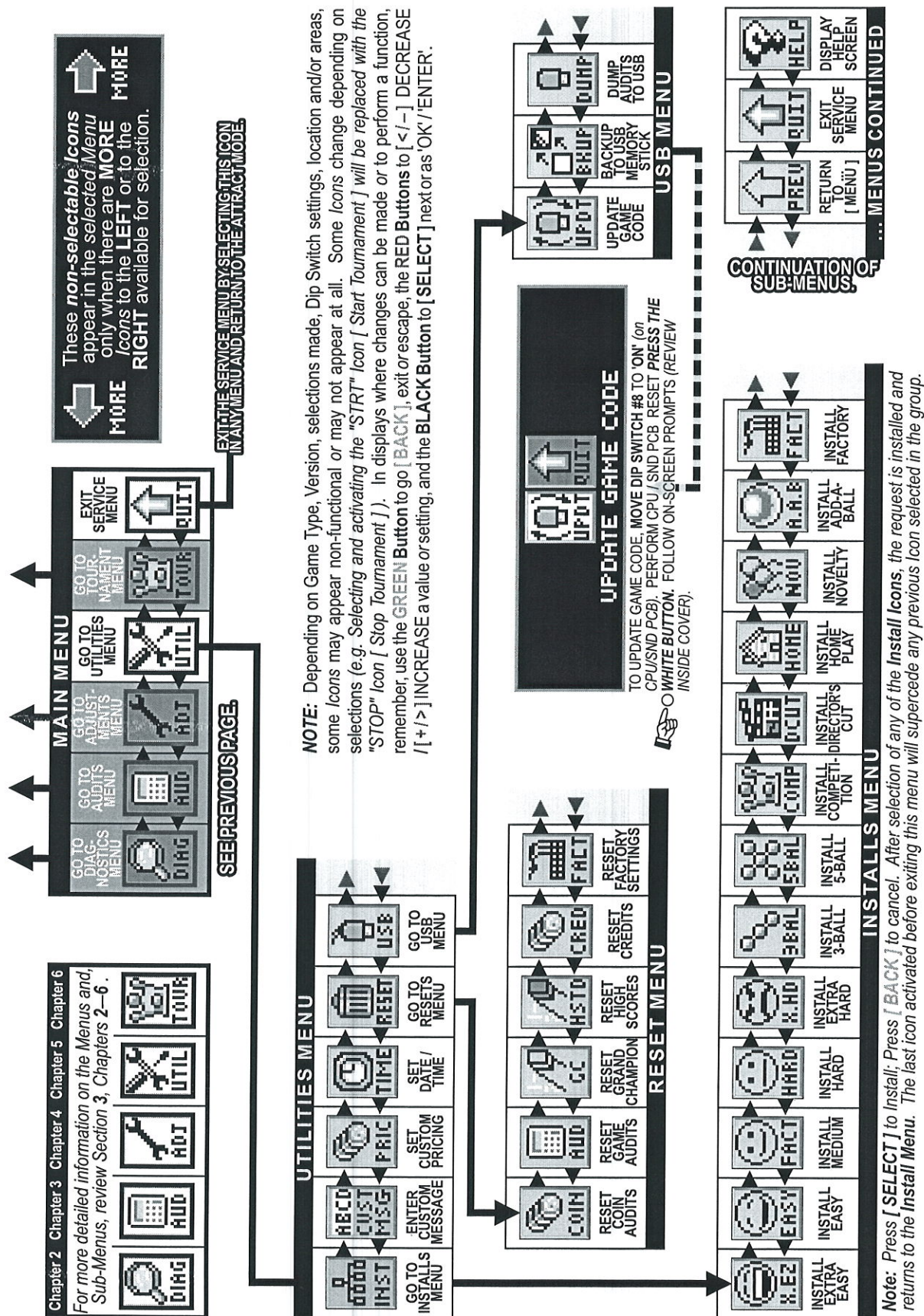


## Pinball Service Menu Icon Tree





## Pinball Service Menu Icon Tree Continued







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'.



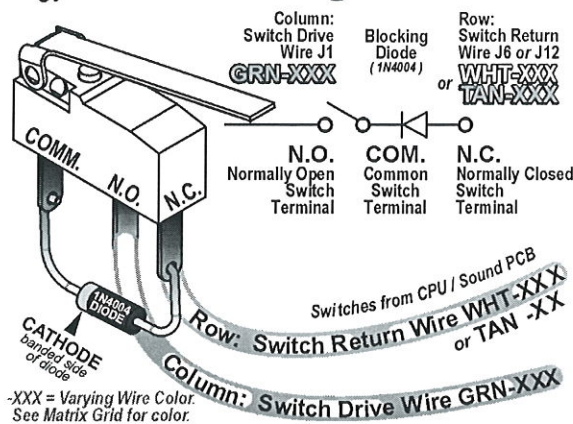
D-24 position is highlighted and accompanied by a short audible tone when pressed.



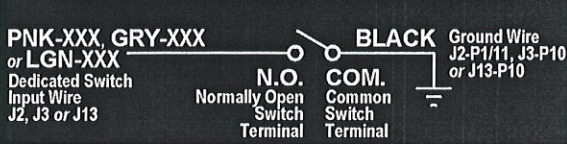
After pressing the switch (to make it close), the display will indicate the last switch number.



## Typical Switch Wiring & Schematic



## Dedicated Switch Schematic



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







## 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*).

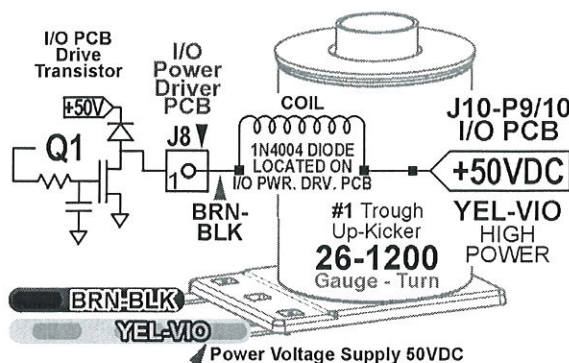


## Cycling Coil Test

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**.



## Typical Coil Wiring & Schematic



## 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*).

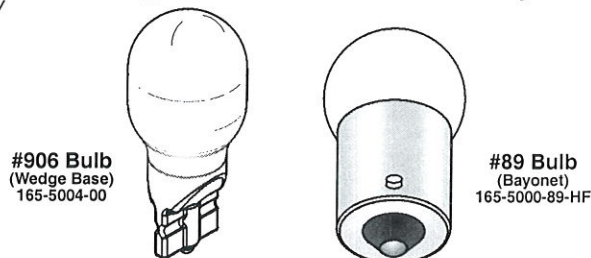


## Cycling Flash Lamp Test

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**.



## Bulb Types used for Flash Lamps







## 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 it's 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.

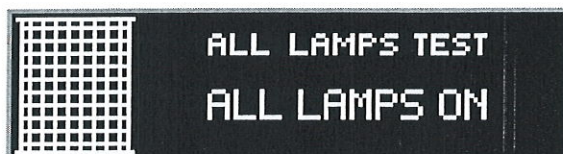
Upon entering All Lamps Test, ... the Dot Matrix Display is flashing "ALL LAMPS ON" ... ▶



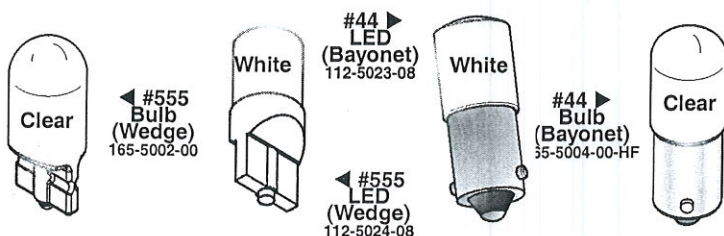
### All Lamps Test

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

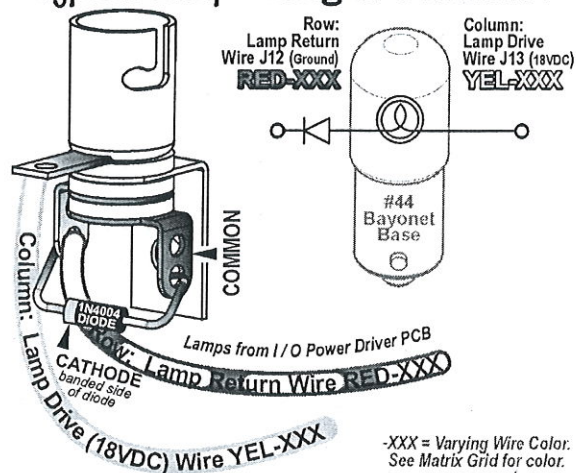
lamps on the playfield will be lit, alternating between the rows in the Lamp Matrix Grid. The Dot Matrix Display will light up (*highlight*) all of the *dots* in the on-screen matrix.



## 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.





## Game-Specific Tests

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.

TECHNICIAN ALERT - (1/2)  
2  
BALLS MISSING  
PRESS 'SELECT' FOR TROUGH TEST

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.

TECHNICIAN ALERT - (2/2)  
DEVICE MALFUNCTION  
AUTO PLUNGER  
USE -/+ TO VIEW OTHER ALERTS

**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).

Diagnostics



## 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.

SOUND / SPEAKER TEST  
MUSIC: MAIN PLAY  
#1  
PRESS 'SELECT' TO PLAY

SOUND / SPEAKER TEST  
MUSIC: MAIN PLAY  
#1  
PLAYING SOUND #1

## Speaker Phase Testing

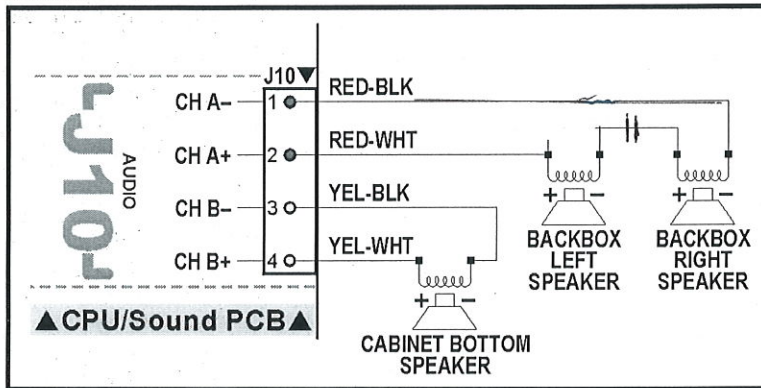
Connections to each of speakers are polarized and each must be connected appropriately for the best quality sound. If one speaker has the positive and negative connections reversed with respect to the other one, bass frequencies will not be produced properly and the overall sound quality will be poor.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





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**.

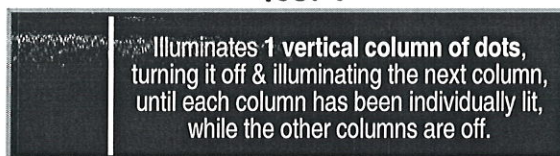
**Note:** To reset Burn-In minutes back to **0:00**, see Section 3, Chapter 5, **GO TO RESET MENU** (via the **UTILITIES MENU**), **Reset Factory Settings**. **CAUTION:** Performing a **FACTORY RESET** will reset all other information as well (read the Utilities Section (**GO TO RESET MENU**), for more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



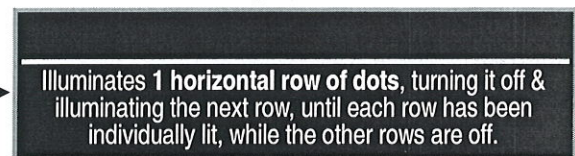
## Dot Matrix Test

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**.

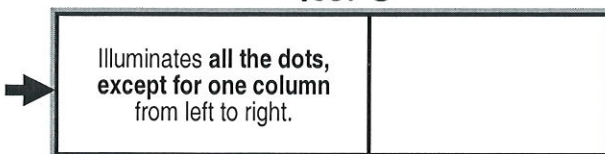
### Test 1



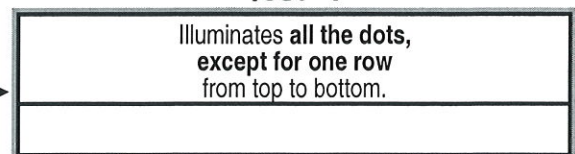
### Test 2



### Test 3



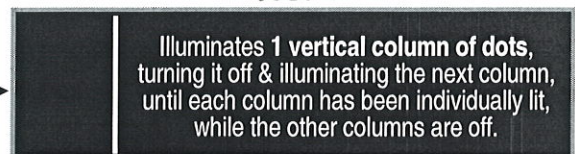
### Test 4



### 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**.



To initiate, from the **MAIN MENU**, select the "AUD" *Icon*. The **AUDITS MENU** provides 99\* Audits for accounting purposes and for evaluation of *Game Programming*. The Audits are divided into 4 groups: • **Earnings Audits** [ #1 – #13 ], • **Standard Audits** [ #1 – #59 ], • **Feature Audits (Programming Use Only)** [ #1 – #+ ] and • **Tournament Audits** [ #1 – #14 ], "T AUD" *Icon* provided as an alternate access to Tournament Audits (\*if data is available). For more information on the **TOURNAMENT MENU**, review the *Tournament Section (GO TO TOURNAMENT 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)*, for more information.

Audits which are named **Proprietary** are also for **Future Expansion** or **Programming**. Game code may get upgraded during production; compare all Audits in the Dot Matrix Display with the manual and make any corrections, as necessary. Audits are subject to change (*with or without notice*).

All **AUDITS 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 [ < / - ] **MOVE BACK / LEFT** / [ + / > ] **MOVE FORWARD / RIGHT** to view the next audit in the group, and the **BLACK Button** to [ **SELECT** ] the sub-menus.

## **Earnings Audits [ #1 – #13 ]**

To initiate, from the **AUDITS MENU**, select the "EARN" *Icon*. The Dot Matrix Display will indicate the audit number (in this group), audit name and the audit total or value. The current audit will remain on the display until the next audit is viewed or when this sub-menu is exited.

- #1 **TOTAL PAID CREDITS [ 0 ]**: Total number of *Paid Credits*.
- #2 **FREE GAME PERCENTAGE [ 0% ]**: Percentage value is 'Total Free Plays' (Standard Audit 15) divided by 'Total Plays' (Standard Audit 16).
- #3 **AVERAGE BALL TIME [ 0:00 ]**: In seconds, the average ball time is derived from the total play time divided by Standard Audit 1, Total Balls Played.
- #4 **AVERAGE GAME TIME [ 0:00 ]**: The average game time is expressed in minutes and seconds.
- #5 **COINS THROUGH LEFT SLOT [ 0 ]**: Total 'Left Coin Slot' Dedicated Switch (D-1) closures.
- #6 **COINS THROUGH RIGHT SLOT [ 0 ]**: Total 'Right Coin Slot' Dedicated Switch (D-3) closures.
- #7 **COINS THROUGH CENTER SLOT [ 0 ]**: Total 'Center Coin Slot' Dedicated Switch (D-2) closures.
- #8 **COINS THROUGH FOURTH SLOT [ 0 ]**: Total '4th Coin Slot' Dedicated Switch (D-4) closures.
- #9 **COINS THROUGH FIFTH SLOT [ 0 ]**: Total '5th Coin Slot' Dedicated Switch (D-5) closures.
- #10 **TOTAL COINS [ 0 ]**: Total amount of coins registered through all the *Coin Slots*.
- #11 **TOTAL EARNINGS [ USD 0.00 ]**: Total cash value accumulated since the last Factory Reset occurred (*review the Utilities Section (GO TO RESET MENU), Reset Coin Audits*).
- #12 **METER CLICKS [ 0 ]**: Total number of money clicks accumulated.  
*Based on the country's lowest coin denomination used for the game credit.*
- #13 **SOFTWARE METER [ 0 ]**: Continuing total of Meter Clicks.  
*This audit cannot be reset; the display shows the constant addition of Meter Clicks.*





## Standard Audits [ #1 – #59 ]

To initiate, from the **AUDITS MENU**, select the "S.P.I." *Icon*. The Dot Matrix Display will indicate the *audit number (in this group)*, *audit name* and the *audit total or value*. The current audit will remain on the display until the next audit is viewed or when this sub-menu is exited.

- #1 **TOTAL BALLS PLAYED [ 0 ]** : Total number of *Regular* and *Extra Balls*.
- #2 **TOTAL EXTRA BALLS [ 0 ]** : Total number of *Extra Balls* awarded.
- #3 **EXTRA BALLS PERCENTAGE [ 0% ]** : Percentage value is 'Total Extra Balls' (Standard Audit 2) divided by 'Total Plays' (Standard Audit 16).
- #4 **REPLAY 1 AWARDS [ 0 ]** : Total *Awards (Credits, Extra Balls or Scores)* for Level 1.
- #5 **REPLAY 2 AWARDS [ 0 ]** : Total *Awards (Credits, Extra Balls or Scores)* for Level 2.
- #6 **REPLAY 3 AWARDS [ 0 ]** : Total *Awards (Credits, Extra Balls or Scores)* for Level 3.
- #7 **REPLAY 4 AWARDS [ 0 ]** : Total *Awards (Credits, Extra Balls or Scores)* for Level 4.
- #8 **TOTAL REPLAYS [ 0 ]** : Total *Awards (Credits, Extra Balls or Scores)* for exceeding *Replay Score Levels*.
- #9 **REPLAY PERCENTAGE [ 0% ]** : Percentage value is 'Total Replays' (Standard Audit 8) divided by 'Total Plays' (Standard Audit 16). *The percentage reflects replay total awards for exceeding replay score levels.*
- #10 **TOTAL SPECIALS [ 0 ]** : Total *Awards (Credits, Extra Balls, or Scores)* for making *Specials*.
- #11 **SPECIAL PERCENTAGE [ 0% ]** : Percentage value is 'Total Specials' (Standard Audit 10) divided by 'Total Plays' (Standard Audit 16).
- #12 **TOTAL MATCHES [ 0 ]** : Total *Credits* awarded for matching the last two digits of the score with the *System-Generated Match Number* at the end of the game. Percentage of *Match Credits* is adjustable from **0%** to **10%** or **OFF** by Standard Adjustment 19, *Match Percentage*, if enabled (review the *Adjustments Section (GO TO ADJUSTMENTS MENU)*, *Standard Adjustments*).
- #13 **HIGH SCORE AWARDS [ 0 ]** : Total *Awards (Credits, Extra Balls, or Scores)* for exceeding the *High-Score-To-Date* scores.
- #14 **HIGH SCORE PERCENT [ 0% ]** : Percentage value is 'High Score Awards' (Standard Audit 13) divided by 'Total Plays' (Standard Audit 16).
- #15 **TOTAL FREE PLAYS [ 0 ]** : Total *Free Credits* for *Replays, High-Score-To-Date, Specials and Match*.
- #16 **TOTAL PLAYS [ 0 ]** : This total is derived by adding the sum of 'Total Paid Credits' (Earnings Audit 1) and 'Total Free Plays' (Standard Audit 15). *Note: Free credits are not recorded in the Audit until actually used.*
- #17 **0.0M–1.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 0 and 1,999,990 points.
- #18 **2.0M–3.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 2,000,000 and 3,999,990 points.
- #19 **4.0M–5.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 4,000,000 and 5,999,990 points.
- #20 **6.0M–7.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 6,000,000 and 7,999,990 points.
- #21 **8.0M–9.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 8,000,000 and 9,999,990 points.
- #22 **10.0M–12.49M SCORES [ 00 ]** : Total number of games the Player's final score was between 10,000,000 and 12,499,990 points.
- #23 **12.5M–14.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 12,500,000 and 14,499,990 points.
- #24 **15.0M–17.49M SCORES [ 00 ]** : Total number of games the Player's final score was between 15,000,000 and 17,499,990 points.
- #25 **17.50M–19.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 17,500,000 and 19,999,990 points.
- #26 **20.0M–24.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 20,000,000 and 24,999,990 points.
- #27 **25.0M–29.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 25,000,000 and 29,999,990 points.

*Standard Audits 28-59 continued on the next page.*





- #28 **30.0M–39.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 30,000,000 and 39,999,990 points.
- #29 **40.0M–49.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 40,000,000 and 49,999,990 points.
- #30 **50.0M–74.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 50,000,000 and 74,999,990 points.
- #31 **75.0M–99.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 75,000,000 and 99,999,990 points.
- #32 **100.0M–149.99M SCORES [ 00 ]** : Total number of games the Player's final score was between 100,000,000 and 149,999,990 points.
- #33 **150.0+M SCORES** : Total number of games the Player's final score was 150,000,000 points and over.
- #34 **AVERAGE SCORES [ 00 ]** : This total is derived by adding the Final Score of each game to a table and dividing this sum by 'Total Plays' (Standard Audit 16).
- #35 **SERVICE CREDITS [ 0 ]** : Total 'Green [ SERVICE CREDIT ] Button' Dedicated Switch (D-21) closures in **Attract Mode** (not while in the **SERVICE MENU**). See the *Service Menu Section, Service Switch X4 Set Access & Use*, for how to receive Service Credits. See the *Utilities Section (GO TO RESET MENU), Reset Credits*, for how to delete credits.
- #36 **BALL SEARCH STARTED [ 0 ]** : Total number of times the game performed a *Ball Search*.
- #37 **LOST BALL FEEDS [ 0 ]** : Total number of times the game added a pinball to play when it could not find a pinball after *Ball Search* (review the *Diagnostics Section (GO TO DIAGNOSTICS MENU), Technicians Alert [ Pinball Detection ]*).
- #38 **LOST BALL GAME STARTS [ 0 ]** : Total number of times the game started with a pinball missing from the ball trough at the start of a game (review the *Diagnostics Section (GO TO DIAGNOSTICS MENU), Technicians Alert [ Pinball Detection ]*).
- #39 **LEFT DRAINS [ 0 ]** : Total 'Left Outlane' Switch (24) closures.
- #40 **CENTER DRAINS [ 0 ]** : Total number of times the pinball had drained when the last switch closed was not the 'Left Outlane' (24) or the 'Right Outlane' Switch (29).
- #41 **RIGHT DRAINS [ 0 ]** : Total 'Right Outlane' Switch (29) closures.
- #42 **TILTS [ 0 ]** : Total 'Tilt Pendulum' Dedicated Switch (D-17) closures.
- #43 **TOTAL BALLS SAVED [ 0 ]** : Total number of times this feature was used. This feature is adjustable from 0:01–0:15, **AUTO** or **NO BALL SAVES** (review the *Adjustments Section (GO TO ADJUSTMENTS MENU), Standard Adj. 48, Ball Save Time*). This feature is enabled at the start of each pinball and is disabled as soon as a predetermined number of switches are "closed" or the allocated time has expired.
- #44 **LEFT FLIPPER USED [ 0 ]** : Total 'Left Flipper Button' Dedicated Switch (D-9) closures in **Game Mode**.
- #45 **RIGHT FLIPPER USED [ 0 ]** : Total 'Right Flipper Button' Dedicated Switch (D-11) closures in **Game Mode**.
- #46 **0 - 1 MINUTE GAMES [ 0 ]** : Total games in which the total game time was between 0:00 and 1:00 minute.
- #47 **1 – 1.5 MINUTE GAMES [ 0 ]** : Total games where play time was between 1:00 and 1:30 minutes.
- #48 **1.5 – 2 MINUTE GAMES [ 0 ]** : Total games where play time was between 1:30 and 2:00 minutes.
- #49 **2 – 2.5 MINUTE GAMES [ 0 ]** : Total games where play time was between 2:00 and 2:30 minutes.
- #50 **2.5 – 3 MINUTE GAMES [ 0 ]** : Total games where play time was between 2:30 and 3:00 minutes.
- #51 **3 – 3.5 MINUTE GAMES [ 0 ]** : Total games where play time was between 3:00 and 3:30 minutes.
- #52 **3.5 – 4 MINUTE GAMES [ 0 ]** : Total games where play time was between 3:30 and 4:00 minutes.
- #53 **4 – 5 MINUTE GAMES [ 0 ]** : Total games where play time was between 4:00 and 5:00 minutes.
- #54 **5 – 6 MINUTE GAMES [ 0 ]** : Total games where play time was between 5:00 and 6:00 minutes.
- #55 **6 – 8 MINUTE GAMES [ 0 ]** : Total games where play time was between 6:00 and 8:00 minutes.
- #56 **8 – 10 MINUTE GAMES [ 0 ]** : Total games where play time was between 8:00 and 10:00 minutes.
- #57 **10 – 15 MINUTE GAMES [ 0 ]** : Total games where play time was between 10:00 and 15:00 minutes.
- #58 **15+ MINUTE GAMES [ 0 ]** : Total games in which the total game time was 15:00 minutes and over.
- #59 **RECENT REPLAY PERCENT [ 0% ]** : Percent figured with programming thresholds for a determined number of games. The % reflects replay total awards for exceeding replay score levels.





## Feature Audits [ #1 - #+ ]

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

**Feature Audits Definition: Programming Use Only.** The proprietary information Total number of times a feature was started, awarded, lit, played and/or completed (awarded); also, the total number of Switch Closures during certain modes or features are tracked (a predetermined single/multiple variations of switch closures are used to determine the lighting and/or completion of the feature stated). **SEE THE DOT MATRIX DISPLAY FOR CURRENT FEATURE AUDITS.**

**Feature Audits are subject to change** (with or without notice). View Feature Audits on the Dot Display only. To export all audits to your memory stick (creating a text file), perform the following. Enter the **AUDITS MENU**, then enter the **DUMP AUDITS TO USB**. **Note:** The "DUMP" *Icon* can also be accessed in the **USB MENU** via the **UTILITIES MENU** (see the Utilities Section (**GO TO USB MENU**) for details).



## Tournament Audits [ #1 - #14 ] subject to change

"T AUD" *Icon* provided as an alternate access to Tournament Audits (if data is available). For more information on the **TOURNAMENT MENU**, review the Tournament Section (**GO TO TOURNAMENT MENU**).



## Dump Audits To USB (Memory Stick)

To initiate, from the **USB MENU**, select the "DUMP" *Icon*. Follow the on-screen prompts to perform a **Data Dump** (download). A dated text file will be created on your USB Memory Stick.



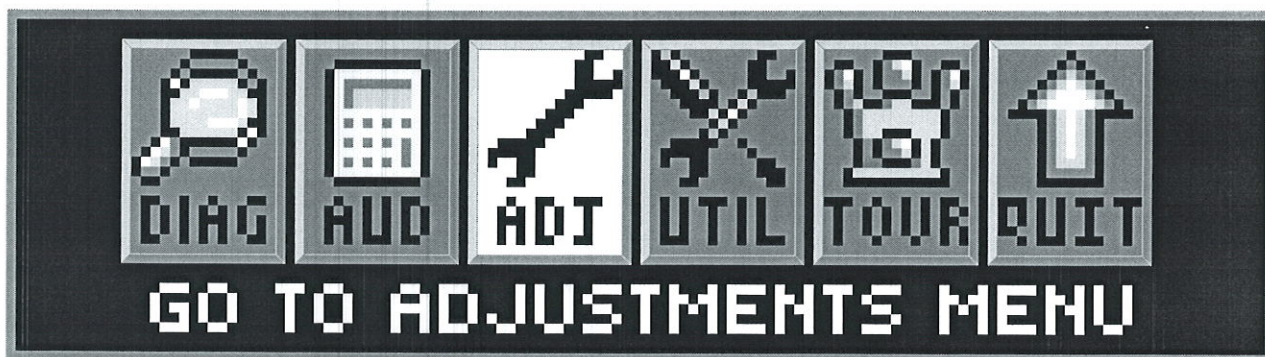
**Step 1** Insert your **USB Compatible Memory Stick** into the USB port on the CPU/Sound Board (S.A.M. System). If the Memory Stick has space available and is free of errors, a dated file\* is generated (\* ensure your Date & Time is set prior to selecting or the dated file will have the default date of 20XX\_01\_01; see the Utilities Section (**SET DATE / TIME**) for details).

**Step 2** Press [ **SELECT** ] to save the file to your Memory Stick. Press [ **SELECT** ] again to continue or [ **BACK** ] to exit or escape at any time.

**Step 3** Remove the Memory Stick and insert into your PC or Mac to save the file (which can then be copied, printed or emailed). The audits are numbered sequentially **without** a number restart between the three types of audits (Earnings, Standard and Feature).

**Note:** The "DUMP" *Icon* can also be accessed in the **USB MENU** via the **UTILITIES MENU** (see the Utilities Section (**GO TO USB MENU**) for details).





To initiate, from the **MAIN MENU**, select the "ADJ" *Icon*. The **ADJUSTMENTS MENU** provides 64+/- Adjustments to vary Game Functions to customize for your particular needs. The Adjustments are divided into 2 groups: • **Standard Adjustments [ #1 – #63 ]** and • **Feature Adjustments (Programming Use Only) [ #1 – #+ ]**. For **quick and easy customization of Game Play Difficulty or Game Play Type** or how to **RESET ONLY** the Adjustments, review the Utilities Section (**GO TO INSTALLS MENU**). **Shortcut: Enter Custom Message** (Standard Adj. 41) and **Set Custom Pricing** (via Standard Adjustment 18, Game Pricing) can be quickly accessed via the **UTILITIES MENU**. See the Utilities Section (**GO TO UTILITIES MENU**), for more information.

Adjustments which are named **Proprietary** are also for **Future Expansion** or **Programming**. Game code may get upgraded during production; compare all Adjustments in the Dot Matrix Display with the manual and make any corrections, as necessary. Adjustments are subject to change (*with or without notice*).

All **ADJUSTMENTS 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 *Adjustments* may appear non-functional or may not appear at all. **Adjustments and/or functions, order and operation are subject to change. If in doubt use the Factory Default Settings.**

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 [ **< / -** ] **SELECT PREVIOUS** [ **+ / >** ] **SELECT NEXT** when the adjustment name or setting is flashing and the **BLACK Button** to [ **SELECT** ] toggle between the **ADJUSTMENT** and **SETTING**.

## Standard Adjustments [ #1 – #63 ]

To initiate, from the **ADJUSTMENTS MENU**, select the "S.P.I." *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.

#1 **REPLAY TYPE:** Set to **AUTO**, **NONE**, **FIXED** or **DYNAMIC**. Factory Default = **AUTO**. **AUTO** & **DYNAMIC** are based on the **Replay Percentage** (Standard Adjustment 2). • Select **FIXED** to give the player a **Replay Award** (Standard Adjustment 3) as the **Replay Levels** (Standard Adjustments 7-10) are reached. The **Replay Level(s)** (Standard Adjustments 7-10) will not adjust up or down. • Select **AUTO** to give the player a **Replay Award** (Standard Adjustment 3) as the **Auto Replay Start** (Standard Adjustment 5) score level is reached. This *score threshold* will automatically adjust up or down based on the **Replay Percentage** chosen (Standard Adjustment 2). The game periodically adjusts based upon the Player Base Skill Level. • Select **DYNAMIC** to give the player a **Replay Award** (Standard Adjustment 3) as the **Dynamic Replay Start** (Standard Adjustment 6) score level is reached. This *score threshold* will go down every game based on the **Replay Percentage** (Standard Adjustment 2) selected. • Select **NONE** to turn off Standard Adjustments 2-11.

#2 **REPLAY PERCENTAGE:** Set between 1% – 50%. Factory Default = 10%. Adjustable only if **AUTO** or **DYNAMIC** is installed in Replay Type, Standard Adjustment 1. For [ **DYNAMIC** ] example, if the *score threshold* is 50,000,00 and the **Replay Percentage** selected is 10%, every game a player does not reach the *score threshold*, the score to reach will drop by 5,000,000 (10% of 50M). This will continue every game until the *threshold score* is reached. Thus, if the score then drops to 15,000,000 after 7 games and is then achieved, the **Replay Award** (Standard Adjustment 3) is given. The original *score threshold* is added to 15,000,000 and is now 65,000,000. It will then take the same player 10 games to reach 15,000,000. This adjustment is shown only if **AUTO** or **DYNAMIC** is installed in **Replay Type** (Standard Adjustment 1).

Standard Adjustments 3-18 continued on the next page.





- #3 **REPLAY AWARD:** Set to **CREDIT**, **TICKET\***, **TOKEN\*** or **EXTRA BALL**. Factory Default = **CREDIT**. Set the type of award to be given to the player when the appropriate Replay Score threshold or level is achieved. If awarding a **CREDIT**, **TICKET** or **TOKEN** is prohibited in your area, select **EXTRA BALL**. *This adjustment is not shown if **NONE** is installed in **Replay Type** (Standard Adjustment 1).*
- \*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.*
- #4 **REPLAY LEVELS:** Set between 1 – 4 for the number of Replay Levels to be active. Factory Default = 1. *This adjustment is not shown if **NONE** is installed in **Replay Type** (Standard Adjustment 1).*
- #5 **AUTO REPLAY START:** Set between 5,000,000 – 150,000,000 (increments of 1,000,000) for the Auto Replay Start threshold. Factory Default = \_\_,000,000. *This adjustment is shown only if **AUTO** is installed in **Replay Type** (Standard Adjustment 1).*
- #6 **DYNAMIC REPLAY START:** Set between 5,000,000 – 150,000,000 (increments of 1,000,000) for the Dynamic Replay Start threshold. Factory Default = \_\_,000,000. *This adjustment is shown only if **DYNAMIC** is installed in **Replay Type** (Standard Adjustment 1).*
- #7 **REPLAY LEVEL #1:** Set between 5,000,000 – 150,000,000 (increments of 1,000,000). Factory Default = \_\_,000,000. Set the first or only Replay Level. *This adjustment is shown only if **FIXED** is installed in **Replay Type** (Standard Adjustment 1).*
- #8 **REPLAY LEVEL #2:** Set between 5,000,000 – 150,000,000 (increments of 1,000,000). Factory Default = \_\_,000,000. Set the second Replay Level. *This adjustment is shown only if **FIXED** is installed in **Replay Type** (Standard Adjustment 1) and 2 is installed in **Replay Levels** (Standard Adjustment 4).*
- #9 **REPLAY LEVEL #3:** Set between 5,000,000 – 150,000,000 (increments of 1,000,000). Factory Default = \_\_,000,000. Set the third Replay Level. *This adjustment is shown only if **FIXED** is installed in **Replay Type** (Standard Adjustment 1) and 3 is installed in **Replay Levels** (Standard Adjustment 4).*
- #10 **REPLAY LEVEL #4:** Set between 5,000,000 – 150,000,000 (increments of 1,000,000). Factory Default = \_\_,000,000. Set the fourth Replay Level. *This adjustment is shown only if **FIXED** is installed in **Replay Type** (Standard Adjustment 1) and 4 is installed in **Replay Levels** (Standard Adjustment 4).*
- #11 **REPLAY BOOST:** Set to **YES** or **NO**. Factory Default = **YES**. When set to **YES**, while **FIXED** or **AUTO** maintains the Replay Levels, Replay Boost works as follows: If the Replay Level is 7,000,000 (regardless of the Replay Percentage), and the Player scores 20M, and receives the Replay Award, the next game the Current Replay Level is added to this base. Thus the next game, the Replay Level is 14,000,000. The Player again scores 20M. The next game the Player will need to achieve 21,000,000 to earn the Replay Award. If the Player does not achieve 21,000,000, the next game reverts back to the original 7,000,000 or the new adjusted level maintained by the Fixed or Autopercentaging Feature. *This adjustment is shown only if **AUTO** or **FIXED** is installed in **Replay Type** (Standard Adjustment 1).*
- #12 **SPECIAL LIMIT:** Set between 1 – 5, **UNLIMITED** or **NO SPECIALS**. Factory Default = 1. Set the maximum number of *Specials* that may be accumulated per game.
- #13 **SPECIAL PERCENTAGE:** Set between 1% – 50%. Factory Default = 10%. This adjustment allows the operator to adjust how frequently the **Special Feature** is made available to the player. *This adjustment is not shown if **NO SPECIALS** is installed in **Special Limit** (Standard Adjustment 12).*
- #14 **SPECIAL AWARD:** Set to **CREDIT**, **TICKET\***, **TOKEN\***, **POINTS** or **EXTRA BALL**. Factory Default = **CREDIT**. Select **EX. BALL** or **POINTS** if awarding a **CREDIT** or **TICKET** / **TOKEN** is prohibited in your area. *This adjustment is not shown if **NO SPECIALS** is installed in **Special Limit** (Standard Adjustment 12).*
- \*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.*
- #15 **FREE GAME LIMIT:** Set between 1 – 9, **UNLIMITED** or **NO FREE GAMES**. Factory Default = 5. Set the maximum number of *Free Games* that may be accumulated per game.
- #16 **EXTRA BALL LIMIT:** Set between 1 – 9, **UNLIMITED** or **NO EXTRA BALLS**. Factory Default = 5. Set the number of *Extra Balls* that may be accumulated per game.
- #17 **EXTRA BALL PERCENTAGE:** Set between 1% – 50%. Factory Default = 25%. This adjustment allows the operator to adjust how frequently the **Extra Ball Feature** is made available to the player. *This adjustment is not shown if **NO EXTRA BALLS** is installed in **Extra Ball Limit** (Standard Adjustment 16).*
- #18 **GAME PRICING:** There are two (2) methods available for *Coin Switch Programming*: **Standard** & **Custom**. Set between **AUSTRALIA 1 – UK 6** or **CUSTOM**. Factory Default = **USA 10**. Shortcut: **Set Custom Pricing** and instructions, review the *Utilities Section*, **Set Custom Pricing**. The appropriate Dip Switch Setting (Dip Sw. 1-8 location CPU/Sound PCB SW1) in relationship to the Pricing Scheme selected is important (view the tables on the following pages for more information).

Standard Adjustment 18, Game Pricing, continued on the next page.



**CPU/SOUND PCB  
DIP SWITCH SW1  
SETTING**

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   |   |   |   |   |   |   |   |   |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

**HIGHLIGHTED**  
= Factory Default

**HIGHLIGHTED**  
= Not Shown on Coin Card

**COUNTRY  
SETTING  
OPTION(S)**

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

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

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

AUSTRALIA 1  
AUSTRALIA 2  
AUSTRALIA 3  
AUSTRALIA 4  
AUSTRALIA 5  
AUSTRALIA 6

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

CANADA 1  
[ 25¢ door ]  
CANADA 2  
[ dollar door ]

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

CROATIA

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

DENMARK 1  
DENMARK 2

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

JAPAN 1  
JAPAN 2

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

LITHUANIA

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

MIDDLE EAST

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

NEW ZEALAND 1  
NEW ZEALAND 2

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

NORWAY 1  
NORWAY 2  
NORWAY 3  
NORWAY 4  
NORWAY 5  
NORWAY 6  
NORWAY 7  
NORWAY

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

RUSSIA

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

SO. AFRICA 1  
SO. AFRICA 2

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

SWEDEN 1  
SWEDEN 2

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

SWITZERLAND 1  
SWITZERLAND 2

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

TAIWAN

| Pos. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|---|---|---|---|---|---|---|---|
| ON   | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| OFF  | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ |

Default Highlighted

UK 1  
UK 2  
UK 3  
UK 4  
UK 5  
UK 6

ATTENTION: UK 5TH  
COIN SLOT TIED TO 6TH  
CHANNEL ON ELEC.  
COIN MECH

**COIN MECHANISMS (SWITCHES)  
COIN THRU ... SLOT**

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 0.25 | 1.00   | 0.25  |     |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 0.20 | 1.00   | 2.00  |     |

| LEFT | CENTER | RIGHT | 4TH  |
|------|--------|-------|------|
| 0.25 | 0.25   | 1.00  | 2.00 |
| 1.00 |        | 2.00  |      |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 1    | 2      | 5     |     |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 1    | 5      | 10    | 20  |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 100  |        | 100   |     |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 1    | 2      | 5     |     |

| LEFT  | CENTER | RIGHT | 4TH |
|-------|--------|-------|-----|
| token |        | token |     |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 1    |        | 2     |     |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 10   | 5      | 20    |     |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 10   |        | 10    |     |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 10   | 5      | 1     |     |

| LEFT | CENTER | RIGHT | 4TH  |
|------|--------|-------|------|
| 0.50 | 1.00   | 2.00  | 5.00 |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 1    | 5      | 10    |     |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 1    | 2      | 5     |     |

| LEFT | CENTER | RIGHT | 4TH |
|------|--------|-------|-----|
| 10   |        | 10    |     |

| LEFT | CENTER | RIGHT | 4TH  | 5TH |
|------|--------|-------|------|-----|
| 0.10 | 0.50   | 1.00  | 0.20 | 2£  |

▲ Coin Only

**PRICING SCHEME  
Number of Plays (Credits) for Price Amount Shown  
See "Appendix J" for Coin Cards Examples & Info**

| USD // UNITED STATES DOLLAR // [ \$ ] |        |        |               |
|---------------------------------------|--------|--------|---------------|
| 1/0.25                                |        |        | 755-5400-01-Y |
| 1/0.50                                | 2/0.75 | 3/1.00 | 755-5400-09-Y |
| 1/0.50                                |        |        | 755-5400-02-Y |
| 1/0.50                                |        |        | 755-5400-02-Y |
| 1/0.50                                | 2/1.00 | 3/1.50 | 755-5400-08-Y |
| 1/0.50                                | 2/1.00 | 3/1.50 | 755-5400-08-Y |
| 1/0.50                                | 2/1.00 | 4/1.50 | 755-5400-00-Y |
| 1/0.50                                | 3/1.00 |        | 755-5400-07-Y |
| 1/1.00                                |        |        | 755-5400-11-Y |
| 1/0.75                                | 2/1.50 | 3/2.00 |               |
| 1/1.00                                | 3/2.00 |        |               |

For USA 6 and USA 7 use: 755-5400-02-Y  
USA 6 Note: If player uses X4 25¢ quarters = 2 plays. However, \$1 bill = 3 plays!

Used to promote the Bill Validator.

| AUD // AUSTRALIAN DOLLARS // [ \$AUS ] |        |  |               |
|--|--------|--|---------------|
| 1/1.00                                 | 3/2.00 |  | 755-5406-00-Y |
| 1/1.00                                 |        |  | (1 Side)      |

| CAD // CANADIAN DOLLARS // [ \$CAN ] |        |        |         |
|--------------------------------------|--------|--------|---------|
| 1/2.00                               | 2/4.00 | 3/5.00 |         |
| 1/2.00                               | 2/5.00 | 3/8.00 | 5/10.00 |
| 1/2.00                               | 2/3.00 |        |         |

| HRK // CROATIAN KUNA // [ kuna ] |        |        |                |
|----------------------------------|--------|--------|----------------|
| 1/0.50                           | 2/0.75 | 3/1.00 | 755-5400-00-Y  |
| 1/1.00                           | 3/2.00 |        | -01-Y or -02-Y |
|                                  |        |        | 755-5400-10-Y  |

| DKK // DANISH KRONER // [ Kr ] |     |     |               |
|--------------------------------|-----|-----|---------------|
| 1/3                            | 2/5 |     | 755-5402-00-Y |
| 1/2                            | 2/4 | 3/5 | 4/7           |
|                                |     | 5/9 | 7/10          |

| JPY // JAPANESE YEN // [ ¥ ] |       |  |               |
|------------------------------|-------|--|---------------|
| 1/100                        |       |  | 755-5408-01-Y |
| 1/100                        | 3/200 |  | (2-Sided)     |

| LTL // LITHUANIA LITAI // [ Lt ] |  |  |               |
|----------------------------------|--|--|---------------|
| 1/2                              |  |  | 755-5416-00-Y |
|                                  |  |  | (1 Side)      |

| TOKEN // Middle East currency used to buy token // [ TOKEN ] |  |  |               |
|--|--|--|---------------|
| 1/1  |  |  | 755-5416-00-Y |
|  |  |  | (use Side 1)  |

| NZD // NEW ZEALAND DOLLAR // [ \$NZD ] |     |  |               |
|--|-----|--|---------------|
| 1/1                                    |     |  | 755-5406-00-Y |
| 1/1                                    | 3/2 |  | (Side 2)      |

| NOK // NORWEGIAN KRONE // [ Kr ] |      |  |                   |
|----------------------------------|------|--|-------------------|
| 1/10                             |      |  | 755-5403-01-Y or  |
| 1/10                             | 3/20 |  | -02-Y / (2-Sided) |
| 1/20                             |      |  | 755-5403-03-Y     |
| 1/20                             | 3/40 |  | (2-Sided)         |

| RUB // RUSSIAN RUBLE // [ Ruble ] |  |  |               |
|-----------------------------------|--|--|---------------|
| 1/5                               |  |  | 755-5411-00-Y |
|                                   |  |  | (2-Sided)     |

| ZAR // SOUTH AFRICAN RAND // [ R ] |        |  |               |
|------------------------------------|--------|--|---------------|
| 1/2.00                             |        |  | 755-5409-01-Y |
| 1/3.00                             | 2/5.00 |  | (2-Sided)     |

| SEK // SWEDISH KRONOR // [ Kr ] |      |      |               |
|---------------------------------|------|------|---------------|
| 1/10                            | 2/15 | 3/20 | 755-5404-00-Y |
| 1/5                             |      |      | (2-Sided)     |

| CHF // SWISS FRANCS // [ Sfr ] |     |     |     |
|--------------------------------|-----|-----|-----|
| 1/1                            | 2/2 | 3/3 | 4/4 |
| 1/1                            | 3/2 | 5/3 | 7/4 |
|                                |     | 9/5 |     |

| TWD // TAIWANESE DOLLAR // [ TWD ] |  |  |               |
|------------------------------------|--|--|---------------|
| 1/10                               |  |  | 755-5412-00-Y |
|                                    |  |  | (use Side 1)  |

| GBP // UNITED KINGDOM POUNDS // [ £ ] |        |        |                                 |
|---------------------------------------|--------|--------|---------------------------------|
| 3/1.00                                | 7/2.00 |        | 755-5407-00-Y                   |
| 4/1.00                                |        |        | 755-5407-01-Y*                  |
| 1/0.50                                | 2/1.00 | 3/1.50 | 755-5407-01                     |
| 1/0.30                                | 2/0.60 | 3/0.90 | 755-5407-01-Y*                  |
| 1/1.00                                | 3/2.00 |        | 755-5407-01                     |
| 3/2.00                                |        |        | * use blank side 755-5407-01-Y* |

Adjustments





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

| CPU/SOUND PCB<br>DIP SWITCH SW1<br>SETTING                     |                 | COUNTRY<br>SETTING<br>OPTION(S) | COIN MECHANISMS (SWITCHES)<br>COINS THRU ... SLOT: |        |       |                         | PRICING SCHEME<br>Number of Plays (Credits) for Price Amount Shown<br>See "Appendix J" for Coin Cards Examples & Info! | Requires SPI<br>Coin Card(s)<br>Part Number |
|--|-----------------|---------------------------------|--|--------|-------|-------------------------|--|---|
| Pos.   | 1 2 3 4 5 6 7 8 | Default Highlighted             | LEFT   | CENTER | RIGHT | 4TH                     |  |   |
| ON   | S E E B E L O W | Euro 1                          | 0.50   | 1.00   | 2.00  | 0.20<br><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   | 755-5401-02-Y                               |
| Euro 1-12 are alternate settings for countries using the Euro. |                 | Euro 3                          |  |        |       |                         | 1/0.50 2/1.00 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.

|             |      |                 |                     |                                     |      |      |      |                                      |   |
|-------------|------|-----------------|---------------------|-------------------------------------|------|------|------|--------------------------------------|---|
| Adjustments | Pos. | 1 2 3 4 5 6 7 8 | Default Highlighted | AUSTRIA<br>Euro 9                   | 0.50 | 1.00 | 2.00 | EUR // EUROPEAN UNION EUROS // [ € ] | 755-5401-09-Y                                   |
|             | ON   | ▲               |                     |                                     |      |      |      | 1/1.00 2/1.50 3/2.00                 |   |
|             | OFF  | ▼               | ▼                   | ▼                                   | ▼    | ▼    | ▼    |                                      |   |
|             | Pos. | 1 2 3 4 5 6 7 8 | Default Highlighted | BELGIUM<br>Euro 1                   | 0.50 | 1.00 | 2.00 | 1/0.50                               | 755-5401-01-Y                                   |
|             | ON   | ▲               |                     |                                     |      |      |      |                                      |   |
|             | OFF  | ▼               | ▼                   | ▼                                   | ▼    | ▼    | ▼    |                                      |   |
|             | Pos. | 1 2 3 4 5 6 7 8 | Default Highlighted | FINLAND<br>Euro 8                   | 0.50 | 1.00 | 2.00 | 1/1.00 3/2.00                        | 755-5401-08-Y                                   |
|             | ON   | ▲               | ▲                   |                                     |      |      |      |                                      |   |
|             | OFF  | ▼               | ▼                   | ▼                                   | ▼    | ▼    | ▼    |                                      |   |
|             | Pos. | 1 2 3 4 5 6 7 8 | Default Highlighted | FRANCE<br>Euro 10                   | 0.50 | 1.00 | 2.00 | 1/1.00 3/2.00 7/3.00                 | 755-5401-10-Y                                   |
|             | ON   | ▲               | ▲                   | ▲                                   |      |      |      |                                      |   |
|             | OFF  | ▼               | ▼                   | ▼                                   | ▼    | ▼    | ▼    |                                      |   |
|             | Pos. | 1 2 3 4 5 6 7 8 | Default Highlighted | GERMANY 1<br>GERMANY 2<br>GERMANY 3 | 0.50 | 1.00 | 2.00 | 1/0.50 2/1.00 3/1.50 5/2.00 6/2.00   | 755-5401-01-Y<br>755-5401-02-Y<br>755-5401-04-Y |
|             | ON   | ▲               | ▲                   | ▲                                   |      |      |      |                                      |   |
|             | OFF  | ▼               | ▼                   | ▼                                   | ▼    | ▼    | ▼    |                                      |   |
|             | Pos. | 1 2 3 4 5 6 7 8 | Default Highlighted | GREECE<br>Euro 8                    | 0.50 | 1.00 | 2.00 | 1/1.00 3/2.00                        | 755-5401-08-Y                                   |
|             | ON   | ▲               | ▲                   | ▲                                   |      |      |      |                                      |   |
|             | OFF  | ▼               | ▼                   | ▼                                   | ▼    | ▼    | ▼    |                                      |   |
|             | Pos. | 1 2 3 4 5 6 7 8 | Default Highlighted | ITALY 1<br>ITALY 2                  | 0.50 |      | 0.50 | 1/0.50 1/1.00 3/2.00                 | 755-5401-01-Y<br>755-5401-08-Y                  |
|             | ON   | ▲               |                     | ▲                                   |      |      |      |                                      |   |
|             | OFF  | ▼               | ▼                   | ▼                                   | ▼    | ▼    | ▼    |                                      |   |
|             | Pos. | 1 2 3 4 5 6 7 8 | Default Highlighted | NETHERLANDS<br>Euro 3               | 0.50 | 1.00 | 2.00 | 1/0.50 3/1.00                        | 755-5401-03-Y                                   |
|             | ON   | ▲               | ▲                   |                                     |      |      |      |                                      |   |
|             | OFF  | ▼               | ▼                   | ▼                                   | ▼    | ▼    | ▼    |                                      |   |
|             | Pos. | 1 2 3 4 5 6 7 8 | Default Highlighted | PORTUGAL<br>Euro 1                  | 0.50 |      | 0.50 | 1/0.50                               | 755-5401-01-Y                                   |
|             | ON   | ▲               |                     | ▲                                   |      |      |      |                                      |   |
|             | OFF  | ▼               | ▼                   | ▼                                   | ▼    | ▼    | ▼    |                                      |   |
|             | Pos. | 1 2 3 4 5 6 7 8 | Default Highlighted | SPAIN<br>Euro 8                     | 0.50 | 1.00 | 2.00 | 1/1.00 3/2.00                        | 755-5401-08-Y                                   |
|             | ON   | ▲               | ▲                   | ▲                                   |      |      |      |                                      |   |
|             | OFF  | ▼               | ▼                   | ▼                                   | ▼    | ▼    | ▼    |                                      |   |

**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.





- #22 **TILT WARNINGS:** Set between **0 – 3**. Factory Default = **2**. Set the number of Plumb Bob Tilt Switch closures before the ball in play is tilted. *Each closure generates an audible alert and/or display alert.*
- #23 **CREDIT LIMIT:** Set between **4 – 50**. Factory Default = **30**. Set the maximum credits allowed.
- #24 **ALLOW HIGH SCORES:** Set to **YES** or **NO**. Factory Default = **YES**. When set to **YES**, if a player exceeds the Default Grand Champion or 1-4 High Scores, the player may receive a **High Score Award** (Standard Adjustment 25) and enter their **3 Initials** or **10-Letter Name** (Standard Adjustment 36). Set to **NO** to disable this feature. *The following Standard Adjustments 25-37 are not shown if **NO** is installed.*
- #25 **HIGH SCORE AWARD:** Set to **CREDIT**, **TICKET\*** or **TOKEN\***. Factory Default = **CREDIT**. Set the type of award to be given to the player when the appropriate **Grand Champion Score** or **High Score #1 – #4** threshold or level is achieved. If awarding a **CREDIT**, **TICKET** or **TOKEN** is prohibited in your area, install **NO** in **Allow High Scores** (Standard Adjustment 24). *This adjustment is not shown if **NO** is installed in **Allow High Scores** (Standard Adjustment 24).*
- \*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.*
- #26 **GRAND CHAMPION AWARDS:** Set between **0 – 5**. Factory Default = **1**. Set the number of **High Score Award(s)** (Std. Adj. 25), awarded for exceeding the Grand Champion Score (Standard Adjustment 31). *This adjustment is not shown if **NO** is installed in **Allow High Scores** (Standard Adjustment 24).*
- #27 **HIGH SCORE #1 AWARDS:** Set between **0 – 3**. Factory Default = **1**. Set the number of **High Score Award(s)** (Std. Adj. 25), awarded for exceeding the High Score #1 (Standard Adjustment 32). *This adjustment is not shown if **NO** is installed in **Allow High Scores** (Standard Adjustment 24).*
- #28 **HIGH SCORE #2 AWARDS:** Set between **0 – 2**. Factory Default = **0**. Set the number of **High Score Award(s)** (Std. Adj. 25), awarded for exceeding the High Score #2 (Standard Adjustment 33). *This adjustment is not shown if **NO** is installed in **Allow High Scores** (Standard Adjustment 24).*
- #29 **HIGH SCORE #3 AWARDS:** Set between **0 – 1**. Factory Default = **0**. Set the number of **High Score Award(s)** (Std. Adj. 25), awarded for exceeding the High Score #3 (Standard Adjustment 34). *This adjustment is not shown if **NO** is installed in **Allow High Scores** (Standard Adjustment 24).*
- #30 **HIGH SCORE #4 AWARDS:** Set between **0 – 1**. Factory Default = **0**. Set the number of **High Score Award(s)** (Std. Adj. 25), awarded for exceeding the High Score #4 (Standard Adjustment 35). *This adjustment is not shown if **NO** is installed in **Allow High Scores** (Standard Adjustment 24).*
- #31 **GRAND CHAMPION SCORE:** Set between **1,000,000 – 1,000,000,000** (increments of 1,000,000). Factory Default = **\_\_\_,000,000**. Set the desired **Grand Champion Score** level a player needs to exceed to earn the **High Score Award** (Standard Adjustment 25). A score higher than the default, cannot be reset by Standard Adjustment 37, **HSTD Reset Count**. *The Grand Champion Score will revert to the Factory Default Score **ONLY** if a **Reset Grand Champion** is performed in the **RESET MENU** (via the **UTILITIES MENU**) or if the game is without power for more than 12 hours after the CPU/Sound PCB Coin Cell Battery is expired or removed. This adjustment is not shown if **NO** is installed in **Allow High Scores** (Standard Adjustment 24).*
- #32 **HIGH SCORE #1:** Set between **1,000,000 – 1,000,000,000**. Factory Default = **\_\_\_,000,000**. Set the desired **High Score #1** level a player needs to exceed to earn the **High Score Award** (Standard Adjustment 25). A score higher than the default, will be reset by Standard Adjustment 37, **HSTD Reset Count**. *The High Score will revert to the Factory Default Score **ONLY** if a **Reset High Scores** is performed in the **RESET MENU** (via the **UTILITIES MENU**) or if the game is without power for more than 12 hours after the CPU/Sound PCB Coin Cell Battery is expired or removed. This adjustment is not shown if **NO** is installed in **Allow High Scores** (Standard Adjustment 24).*
- #33 **HIGH SCORE #2:** Set between **1,000,000 – 1,000,000,000**. Factory Default = **\_\_\_,000,000**. Set the desired **High Score #2** level a player needs to exceed ... (continued in Standard Adjustment 32 definition above).
- #34 **HIGH SCORE #3:** Set between **1,000,000 – 1,000,000,000**. Factory Default = **\_\_\_,000,000**. Set the desired **High Score #3** level a player needs to exceed ... (continued in Standard Adjustment 32 definition above).
- #35 **HIGH SCORE #4:** Set between **1,000,000 – 1,000,000,000**. Factory Default = **\_\_\_,000,000**. Set the desired **High Score #4** level a player needs to exceed ... (continued in Standard Adjustment 32 definition above).
- #36 **HSTD (HIGH SCORE TO DATE) INITIALS:** Set to **3 INITIALS** or **10 LETTER NAME**. Factory Default = **3 INITIALS**. When set to **3 INITIALS**, the player is allowed only 3 initials to input. When set to **10 LETTER NAME**, the player is allowed to enter 10 initials to input. *This adjustment is not shown if **NO** is installed in **Allow High Scores** (Standard Adjustment 24).*

Standard Adjustments 37-50 continued on the next page.





- #37 **HSTD (HIGH SCORE TO DATE) RESET COUNT:** Set between **100 – 9900** or **OFF** (increments of 100). Factory Default = **2000**. Set the number of games between "automatic resets" of High Scores back to the Factory Defaults for **ONLY** Standard Adj. **32 – 35, High Score #1 – #4**. The High Score will revert to the Factory Default Scores when the number of games stated is reached. **Reset High Scores** can be performed in the **RESET MENU** (via the **UTILITIES MENU**) anytime or if the game is without power for more than 12 hours after the CPU/Sound PCB Coin Cell Battery is expired or removed. This adjustment is not shown if **NO** is installed in **Allow High Scores** (Standard Adj. 24).
- #38 **FREE PLAY:** Set to **YES** or **NO**. Factory Default = **NO**. When set to **YES**, no coins are required for Game Play.
- #39 **LANGUAGE:** Set to **ENGLISH, GERMAN, FRENCH, SPANISH** or **ITALIAN**. Factory Default = **ENGLISH**. Set the language for the game. Language of game is also shown in the Dot Display (along with the Game Title and code version) at the start-up routine which follows a game reset or power-up.
- #40 **PLAYER LANGUAGE SELECT:** Set to **YES** or **NO**. Factory Default = **YES**. When set to **YES**, after the player presses the **Start Button** (to start a game with adequate credit), the player has the option to choose a language by pressing either **Flipper Button** before game start (options of languages installed are shown on the Dot Display). **Note:** If set to **NO** or if only one language is installed and the setting is set to **YES**, the game will start immediately after the **Start Button** press. Language(s) available are dependent on game destination from the factory. Other languages may be available on-line for download and installed on your game. With the proper dip switch installed, the language option(s) can be changed. For more information or help, call Technical Support at 800-542-5377 (708-345-7700).
- #41 **CUSTOM MESSAGE:** Set to **ON, CHANGE** or **OFF**. Factory Default = **ON**. Shortcut: **Enter Custom Message** and instructions, review the Utilities Section, **Enter Custom Message**.
- #42 **FLASH LAMP POWER:** Set to **NORMAL, OFF** or **DIM**. Factory Default = **NORMAL**. When set to **DIM**, the Flash Lamps impulse power is reduced by 25% and when set to **OFF** the Flash Lamps will not flash. For Flash Lamps used in this game, **Go To Flash Lamps Menu** via the **DIAGNOSTICS MENU** (see the Diagnostics Section).
- #43 **COIL PULSE POWER:** Set to **NORMAL, HARD** or **SOFT**. Factory Default = **NORMAL**. When set to **HARD**, the coil pulse power is **increased** by 12.5% of the normal pulse rate. When set to **SOFT** the coil pulse power is **decreased** by 12.5% of the normal pulse rate. This adjustment is provided to compensate for Low Line or High Line voltage conditions where the solenoids (coils) appear to kicking too weak or too hard. Adjust as required.
- #44 **KNOCKER VOLUME:** Set to **NORMAL, OFF** or **LOW**. Factory Default = **NORMAL**. When set to **LOW**, the volume is decreased 50%. When set to **OFF**, no sound is heard when the "knocker" is sounded. Test the knocker sound in the **Fire Knocker** Test via the **DIAGNOSTICS MENU** (see Section 3, Chapter 2, **GO TO DIAGNOSTICS MENU**, Page 19).
- #45 **GAME RESTART:** Set to **YES** or **NO**. Factory Default = **YES**. When set to **YES**, a new game may be started during any ball after the first ball is completed (if credits allow). Pressing the Start Button during the first ball will add additional players (up to 4, if credits allow). When set to **NO**, the game disables the Start Button after the first ball until the final ball is in play.
- #46 **BILL VALIDATOR:** Set to **YES** or **NO**. Factory Default = **NO**. When set to **YES**, in **Game Attract Mode** an "Insert Bill Animation" is shown in the display (or just the absence of the Coin Animation). When set to **NO**, an "Insert Coin Animation" is shown. (This adjustment will appear when implemented).
- #47 **MUSIC VOLUME:** Set between **1 – 15**. Factory Default = **1**. After volume is set via Service Buttons this adjustment can be utilized to adjust the background music (1 all the way on, 15 all the way off) while keeping the Special Sound Effects at the same level.
- #48 **BALL SAVE TIME:** Set between **0:01 – 0:15, AUTO** or **NO BALL SAVES**. Factory Default = **0:05**. When set to **NO BALL SAVES** this feature is unavailable. Set between **0:01** through **0:15** (single increments) for the ball to be sent back into play if the time set is not met (per ball). Set to **AUTO** to automatically adjust the Ball Save Timer based on the average ball time.
- #49 **TIMED PLUNGER:** Set to **OFF** or **0:01 – 1:00**. Factory Default = **OFF**. The plunger will "Autoplunge" the ball (at the time set) when the ball is at the beginning of play, waiting for the player.
- #50 **FLIPPER BALL LAUNCH:** Set to **OFF, LEFT FLIPPER, RIGHT FLIPPER, EITHER FLIPPER** or **BOTH FLIPPERS**. Default is **OFF**. This feature allows the player to operate the Auto Ball Launch with the Flipper Button(s) depending on which setting is chosen.





- #51 **COINDOOR BALL SAVER:** Set to **YES** or **NO**. Factory Default = **NO**. When set to **NO**, this feature is not available. When set to **YES**, this feature allows the Coin Door to be opened during game play; the ball will drain but the game will be placed "on hold". When the Coin Door is closed, the pinball will return to the Shooter Lane, and the game will resume. *Useful at locations where technicians change the cash box regularly at exact times of the day where players can be on the game.*
- #52 **COMPETITION MODE:** Set to **YES** or **NO**. Factory Default = **NO**. When set to **NO**, this feature is not available. Set to **YES**, this feature will equalize random game features and global score values during multi-player games by predetermined competition rules set by programming. If an **Install Competition** was made via the **INSTALLS MENU** (which automatically changes this setting to **YES**), and this setting was changed back to **NO**, the **Competition Mode** will be turned **OFF** (cancelled).
- #53 **CONSOLATION BALL:** Set to **YES** or **NO**. Factory Default = **YES**. When set to **YES**, the **EXTRA BALL** (lamp insert, location varies) will be lit on the last ball in play, if certain programming criteria is met.
- #54 **FAST BOOT:** Set to **YES** or **NO**. Factory Default = **YES**. When set to **NO** or if you hold both **Flipper Buttons** during Power-Up, this feature is not available and will display all normal Power-Up screens. When set to **YES**, the game will not display the normal informative Power-Up screens, specifically the CPU Version screen and the Location/Game ID screen. Regardless of the setting, normal Power-Up safety checks are still performed. *(This adjustment will appear when implemented).*
- #55 **Q24 OPTION:** Set to **COIN METER**, **TOKEN DISPENSER** or **KNOCKER**. Factory Default = **COIN METER**. This Coil (Solenoid) Location is left "open" at the Factory to allow for these optional Mechanisms to be added to the game. If selecting **TOKEN DISPENSER**, Standard Adjustments 3, 14, 20 & 25 should be changed to **TOKEN**. *Call Tech. Support at 1-800-542-5377 if more information is required on this option.*
- #56 **TICKET DISPENSER:** Set to **YES** or **NO**. Factory Default = **NO**. *This adjustment is required only for games which have an optional Deltronics (DL-1275-2 PCB Style, SPI Part Nr. 515-7275-00) Ticket Dispenser installed. Unique CPU Sound Bd. Dip Switch Setting required, changes the Default to YES.*
- #57 **PLAYER COMPETITION:** Set to **YES** or **NO**. Factory Default = **YES**. **Competition Mode** unrandomizes feature events, and standardizes game play and rule sets (varies from game to game) for fair competitions. With at least one credit posted, or with the game set for 'FREE PLAY', during the game-over Attract Mode, press the **Left Flipper Button** and hold it in for approximately one second. The following message will appear on the display for approximately 10 seconds: '**COMPETITION MODE READY ... PRESS START NOW**'. If a game is started (either by pressing the 'START' button for a regular game, or by pressing the 'TOURNAMENT START' button for a tournament game) while this message appears on the display, then competition mode will be enabled for all players during the game. General rules are covered in the Instruction Card. Other *Hints and/or Rules* can be made known on this game either visually (the Dot Display or Flashing Light Inserts) or can be audible.
- #58 **TEAM SCORES:** Set to **YES** or **NO**. Factory Default = **NO**. Set to **YES**, then Team Play will be made available. **Team Play only works in a 4-Player Game**. The totals for Players 1 / 3 (Team 1) & Players 2 / 4 (Team 2) are then displayed individually **as well as** the combined score for **BOTH TEAMS** to enable **Team Play (Doubles)**. *(This adjustment will appear when implemented).*
- #59 **LOCATION ID:** Set between **0** to **9999**. Factory Default = **0**. This adjustment allows the operator to assign a location identification number to the audit print-out sheet. *(Will not be affected by a Factory Reset.)*
- #60 **GAME ID:** Set between **0** to **9999**. Factory Default = **0**. This adjustment allows the operator to assign a game identification number to the audit print-out sheet. *(Will not be affected by a Factory Reset.)*
- #61 **TIME FORMAT:** Set to **12-HOUR** or **24-HOUR**. Factory Default = **12-HOUR**. This adjustments determines how the time is displayed. *Time used for Tournament and Data Dumps where a time stamp is required.*
- #62 **COIN INPUT DELAY:** Set between **30** to **60** or **OFF**. Factory Default = **30**. This adjustment creates a short time delay between the moment the coin is inserted into the **Coin Slot** to the moment the CPU/Sound PCB registers the coin (30 = approximately 1/2 second).
- #63 **LOST BALL RECOVERY:** Set to **YES** or **NO**. Factory Default = **NO**. Set to **YES**, at the start of the 5th consecutive ball search (with no scoring between searches), the game will consider any balls in play to be permanently lost and will attempt to recover from this situation by serving a new ball into play from the ball trough. Set to **NO** (to suppress this adjustment behavior) for the game to perform the "ball search" indefinitely until the lost balls are found or replaced.



| Nr. | STANDARD<br>ADJUSTMENT NAME | USA<br>DEFAULT | YOUR<br>SETTING | Nr. | STANDARD<br>ADJUSTMENT NAME | USA<br>DEFAULT | YOUR<br>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.

Adjustments

## Feature Adjustments [ #1 – #+ ]

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.





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.*





### 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:).

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 :

**REMINDER**  
In these menus:

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

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

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

```

CUSTOM PRICING
0 CREDITS AT:          $0.25
USE -/ + TO CHANGE CREDITS
    
```

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

```

CUSTOM PRICING
1 CREDIT AT:          $0.50
1/0.50
USE -/ + TO 'INSTALL'
    
```

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

```

CUSTOM PRICING
2 CREDITS AT:          $1.00
1/0.50 3/1.00
USE -/ + TO CHANGE CREDITS
    
```

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

```

CUSTOM PRICING
4 CREDITS AT:          $2.00
1/0.50 3/1.00 7/2.00
USE -/ + TO CHANGE CREDITS
    
```

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

```

CUSTOM PRICING
0 CREDITS AT:          $2.25
1/0.50 3/1.00 7/2.00
USE -/ + TO 'INSTALL'
    
```

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

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

```

CUSTOM PRICING
INSTALL
1/0.50 3/1.00 7/2.00
PRESS 'SELECT' TO INSTALL
    
```

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

```

CUSTOM PRICING
INSTALLED
PRESS 'SELECT' TO CONTINUE
    
```

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.

## 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.*



## CUSTOM START Continued.

The following option is available only if **CASH** was selected as the **AWARD TYPE**.

- Select the option to **SHOW PLAYER CASH** (YES or NO). Select **YES** for the display to represent the  
>>> **previous** <<< Tournament Winners & Cash amount (or Points, Prizes, etc.) will show in the **Attract Mode**.
- Select the kind of **TOURNAMENT** desired (BUMP 'N' WIN or HIGH SCORE).

The following options are available only if **BUMP 'N' WIN** was selected as the **TOURNAMENT TYPE**.

- Select or confirm the **BASE POINT AMOUNT** (00 or 1,000,000 – 4,294,967,295 increments of 1,000,000).
- Select or confirm the **RANGE AMOUNT** (00 or 1,000,000 – 4,294,967,295 increments of 1,000,000).
- Select the **BALLS** per game (1 – 10).



## STOP TOURNAMENT

To initiate, from the **TOURNAMENT MENU**, select the "STOP" Icon. The **STOP TOURNAMENT MENU** allows the operator to stop a tournament. **Note:** This Icon only appears if a Tournament was set-up and is running (in place of the Start Icon).

### STOP TOURNAMENT ARE YOU SURE?

- Use the **BLACK Button** to [ **SELECT** ] to confirm. Press the **BLACK Button** again to continue.

The **STOP TOURNAMENT MENU** is exited and returns to the **TOURNAMENT MENU**.



## VIEW TOURNAMENT DATA

To initiate, from the **TOURNAMENT MENU**, select the "DATA" Icon. If no data is available, the display will indicate NO PREVIOUS DATA. Press the **GREEN Button** to escape [ **BACK** ] to the **TOURNAMENT MENU**.



## TOURNAMENT AUDITS [ #1 – #14 ]

To initiate, from the **TOURNAMENT MENU**, select the "AUD" Icon. The Dot Matrix Display will indicate the *audit number (in this group)*, *audit name* and the *audit total or value*. The current audit will remain on the display until the next audit is viewed or when this sub-menu is exited.

|    |  |
|----|--|
| 01 | <b>TOTAL PLAYS :</b> Total number of <i>Regular</i> and <i>Tournament Games</i> played while a <i>Tournament</i> is in progress. This total is derived by adding the below Tournament Audit 02 with <b>Regular Plays</b> . |
| 02 | <b>TOURNAMENT PLAYS :</b> Total number of <i>Tournament Games</i> played while a <i>Tournament</i> is in progress.   |
| 03 | <b>TOTAL QUALIFYING PLAYS :</b> Total number of times a player qualified ( <i>invited to enter name</i> ).   |
| 04 | <b>TOTAL GAME EARNINGS :</b> Total Gross Earnings <i>accepted</i> , while a <i>Tournament</i> is active ( <i>in progress</i> ).  |
| 05 | <b>TOTAL TOUR. EARNINGS :</b> Earnings ( <i>Audit 04 less Reg. Game Earnings</i> ) while a <i>Tournament</i> is in progress.   |
| 06 | <b>PRIZE POOL TOTAL :</b> Total Prize Pool ( <i>Jackpot</i> ) Amount to be paid out while a <i>Tournament</i> is in progress.  |
| 07 | <b>NET EARNINGS :</b> Provides the total Net Earnings ( <i>Gross Earnings less Prize Pool</i> ) while a <i>Tournament</i> is active.   |
| 08 | <b>ACCUM. TOTAL PLAYS :</b> Accumulative total amount of <i>Regular &amp; Tournament Games</i> played since the first <i>Tournament</i> was played.  |
| 09 | <b>ACCUM. TOUR. PLAYS :</b> Accumulative total amount of <i>Tourn. Games</i> played since 1st <i>Tournament</i> was played.  |
| 10 | <b>ACCUM. QUALIFYING PLAYS :</b> Accumulative total number of times a player qualified ( <i>invited to enter name</i> ).   |
| 11 | <b>ACCUM. EARNINGS :</b> Total Gross Earnings <i>accepted</i> , since the first <i>Tournament</i> was played.  |
| 12 | <b>ACCUM. TOUR EARNINGS :</b> Accumulative total <i>Tournament Game Earnings</i> since the first <i>Tournament</i> was played.   |
| 13 | <b>ACCUM. JACKPOT :</b> Accumulative total of Prize Pool Amounts paid out since the first <i>Tournament</i> was played.  |
| 14 | <b># TOURNAMENTS :</b> Number of <i>Tournaments (not individual Games)</i> since the first <i>Tournament</i> was played.   |



## SIGN MESSAGES A-B

To initiate, from the **TOURNAMENT MENU**, select the "A-B TEXT" Icon. At time of print, menu non-functional. If made available in future code updates, this menu will allow the operator to display "Location" and "Prize" Messages. 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'.



| 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                |
| Big Buck Hunter                   | 520-5246-00 | 520-5249-00          | V3.1                |
| Iron Man                          | 520-5246-00 | 520-5249-00          | V3.1                |
| The Rolling Stones                | 520-5246-00 | 520-5249-00          | V3.1                |
| Tron                              | 520-5246-00 | 520-5249-00          | V3.1                |
| 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)          |
| 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                |



### Backbox Wiring

- ▶ Coils Detailed Chart Table
- ▶ Backbox I/O Power Driver Board Detailed Wiring Diagram
- ▶ Backbox Board Layout Wiring Diagram
  - ▷ 128 X 32 Dot Matrix Display PCB (USA)..... 520-5052-15
  - ▷ 128 X 32 Dot Matrix CES-LED // EURO ONLY RoHS //..... 520-5052-15

### Playfield Wiring

- ▶ General Illumination Circuit Detailed Wiring Diagram
- ▶ Playfield Switch Wiring Diagram
- ▶ Playfield Lamp Wiring Diagram
- ▶ Playfield Terminal Strips, Fuses & Misc. Wiring Descriptions & Locations
- ▶ #-Flipper Circuit Wiring Diagram

### Cabinet and Coin Door Wiring

- ▶ Transformer Power Wiring Diagram
- ▶ Cabinet Wiring Diagram
- ▶ Coin Door Wiring Diagram
- ▶ Cabinet Universal Voltage Jumper Plugs (for use with Universal AC Cable, 036-5530-00 ONLY)



## 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               | ▲<br>I / O Power Driver<br>▼ | 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                         | MAGNET                      | Q3               |                              | VIO-YEL                 | J10-P8                | 50VDC         | BRN-ORG                             | J8-P4                     | 22-850 511-5065-ND        |
| #4                         | CENTER DROP TARGET UP       | Q4               |                              | YEL-VIO                 | J10-P8                | 50VDC         | BRN-YEL                             | J8-P5                     | 25-1240 090-5034-ND       |
| #5                         | CENTER DROP TARGET DOWN     | Q5               |                              | YEL-VIO                 | J10-P9/10             | 50VDC         | BRN-GRN                             | J8-P6                     | 32-1800 090-5031-00       |
| #6                         | LEFT EJECT                  | Q6               |                              | YEL-VIO                 | J10-P9/10             | 50VDC         | BRN-BLU                             | J8-P7                     | 27-1500 090-5004-ND       |
| #7                         | VENGEANCE KICK BACK         | Q7               |                              | YEL-VIO                 | J10-P9/10             | 50VDC         | BRN-VIO                             | J8-P8                     | 23-800 090-5001-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               | ▲<br>I / O Power Driver<br>▼ | 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                        | BOTTOM POP BUMPER           | Q11              |                              | YEL-VIO                 | J10-P9/10             | 50VDC         | BLU-ORG                             | J8-P4                     | 28-1200 090-5044-ND       |
| #12                        | UPPER RIGHT FLIPPER         | Q12              |                              | GRY                     | J10-P9/10             | 50VDC         | BLU-YEL                             | J8-P5                     | 22-1080 090-5032-ND       |
| #13                        | LEFT SLINGSHOT              | Q13              |                              | YEL-VIO                 | J10-P9/10             | 50VDC         | BLU-GRN                             | J8-P6                     | 26-1200 090-5044-ND       |
| #14                        | RIGHT SLINGSHOT             | Q14              |                              | YEL-VIO                 | J10-P9/10             | 50VDC         | BLU-BLU                             | J8-P7                     | 26-1200 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                        | FLASH: ASTEROID (LEFT)      | Q17              | ▲<br>I / O Power Driver<br>▼ | ORG                     | J6-P10                | 20VDC         | VIO-BRN                             | J7-P2                     | LED 113-5034-08           |
| #18                        | FLASH: ASTEROID (RIGHT)     | Q18              |                              | ORG                     | J6-P10                | 20VDC         | VIO-RED                             | J7-P3                     | LED 113-5034-08           |
| #19                        | FLASH: LEFT RAMP (TOP)      | Q19              |                              | ORG                     | J6-P10                | 20VDC         | VIO-ORG                             | J7-P4                     | LED 113-5034-08           |
| #20                        | FLASH: RIGHT RAMP (TOP)     | Q20              |                              | ORG                     | J6-P10                | 20VDC         | VIO-YEL                             | J7-P6                     | LED 113-5034-08           |
| #21                        | FLASH: KICK BACK            | Q21              |                              | ORG                     | J6-P10                | 20VDC         | VIO-GRN                             | J7-P7                     | LED 113-5034-08           |
| #22                        | LASER MOTOR                 | Q22              |                              | BRN                     | J7-P1                 | 20VDC         | VIO-BLU                             | J7-P8                     | MOTOR 041-5111-00         |
| #23                        | FLASH: RAMP (LEFT)          | Q23              |                              | ORG                     | J6-P10                | 20VDC         | VIO-BLK                             | J7-P9                     | LED 113-5034-08           |
| #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              | ▲<br>I / O Power Driver<br>▼ | ORG                     | J6-P10                | 20VDC         | BLK-BRN                             | J6-P1                     | LED 113-5034-08           |
| #26                        | FLASH: WARP RAMP ENTRANCE   | Q26              |                              | ORG                     | J6-P10                | 20VDC         | BLK-RED                             | J6-P2                     | LED 113-5034-08           |
| #27                        | FLASH: CENTER THREE BANK    | Q27              |                              | ORG                     | J6-P10                | 20VDC         | BLK-ORG                             | J6-P3                     | LED 113-5034-08           |
| #28                        | FLASH: RAMP (RIGHT)         | Q28              |                              | ORG                     | J6-P10                | 20VDC         | BLK-YEL                             | J6-P4                     | LED 113-5034-08           |
| #29                        | FLASH: LEFT LOOP            | Q29              |                              | ORG                     | J6-P10                | 20VDC         | BLK-GRN                             | J6-P5                     | LED 113-5034-05           |
| #30                        | FLASH: UPPER RIGHT FLIPPER  | Q30              |                              | ORG                     | J6-P10                | 20VDC         | BLK-BLU                             | J6-P6                     | LED 113-5034-08           |
| #31                        | FLASH: VENGEANCE SHIP       | Q31              |                              | ORG                     | J6-P10                | 20VDC         | BLK-VIO                             | J6-P7                     | LED 112-5044-08           |
| #32                        | FLASH: BOTTOM SPOT (LEFT)   | Q32              |                              | ORG                     | J6-P10                | 20VDC         | BLK-GRY                             | J6-P8                     | LED 112-5041-08           |



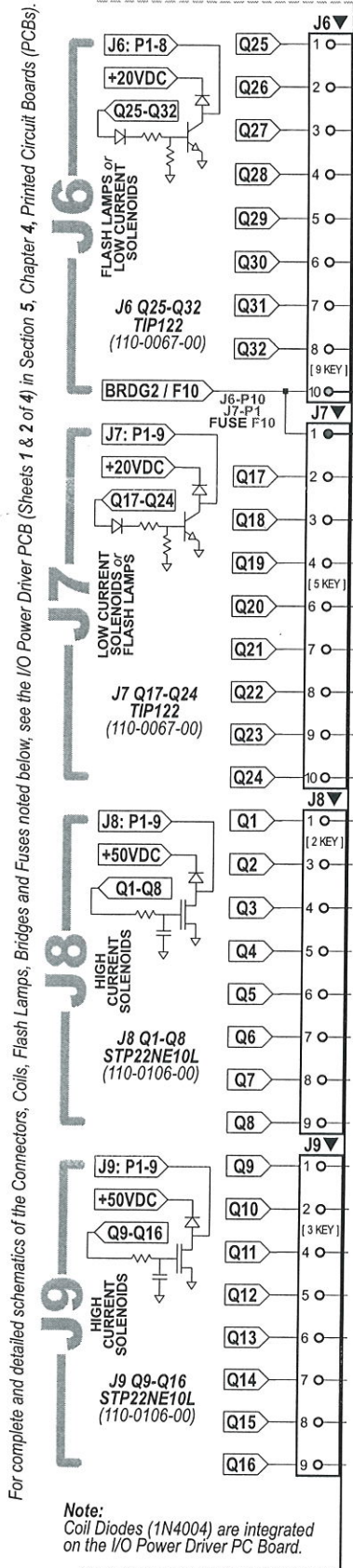
## Backbox I/O Power Driver Board

(Coils Q1-Q32)

### Detailed Wiring Diagram

Partial View (520-5249-00)

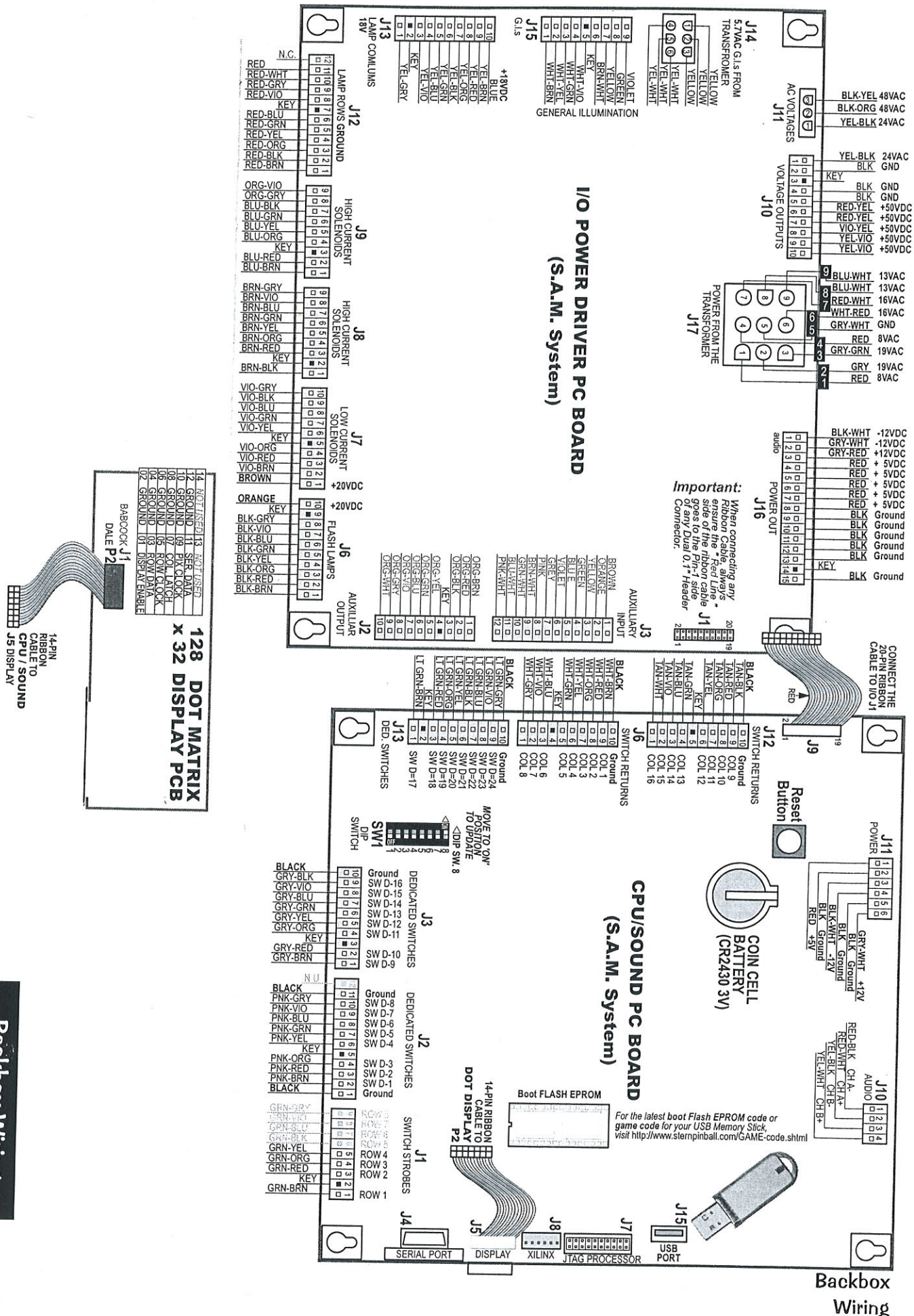
ALL FUSES RATED 250V SLO-BLO  
I/O FUSE CHART INFO IN BACKBOX & PAGE DR. 1



Backbox  
Wiring

Backbox Wiring

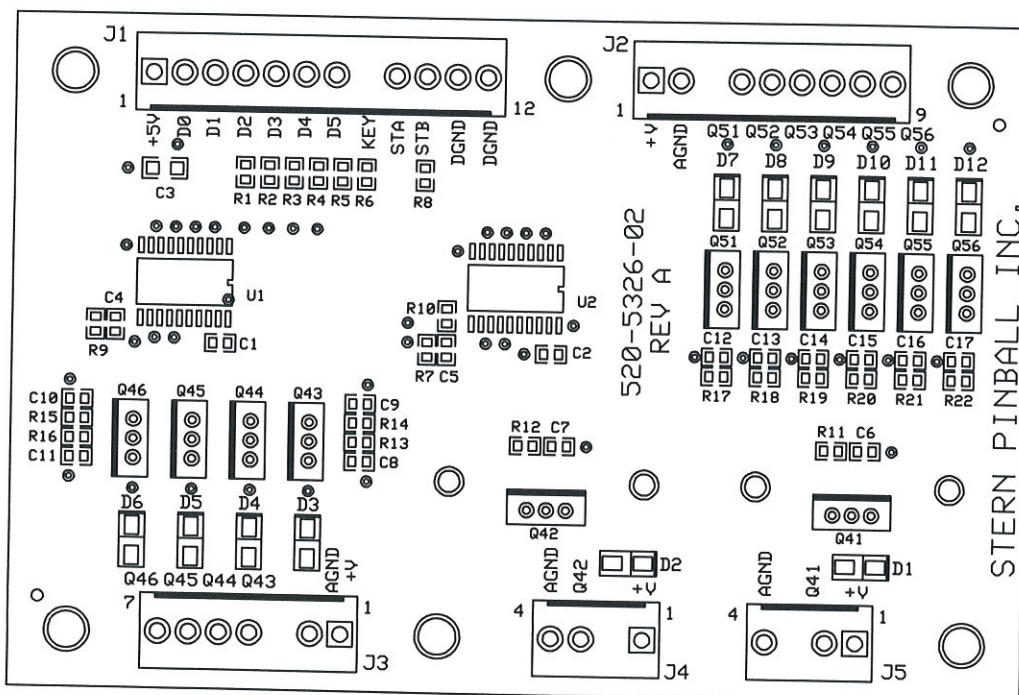
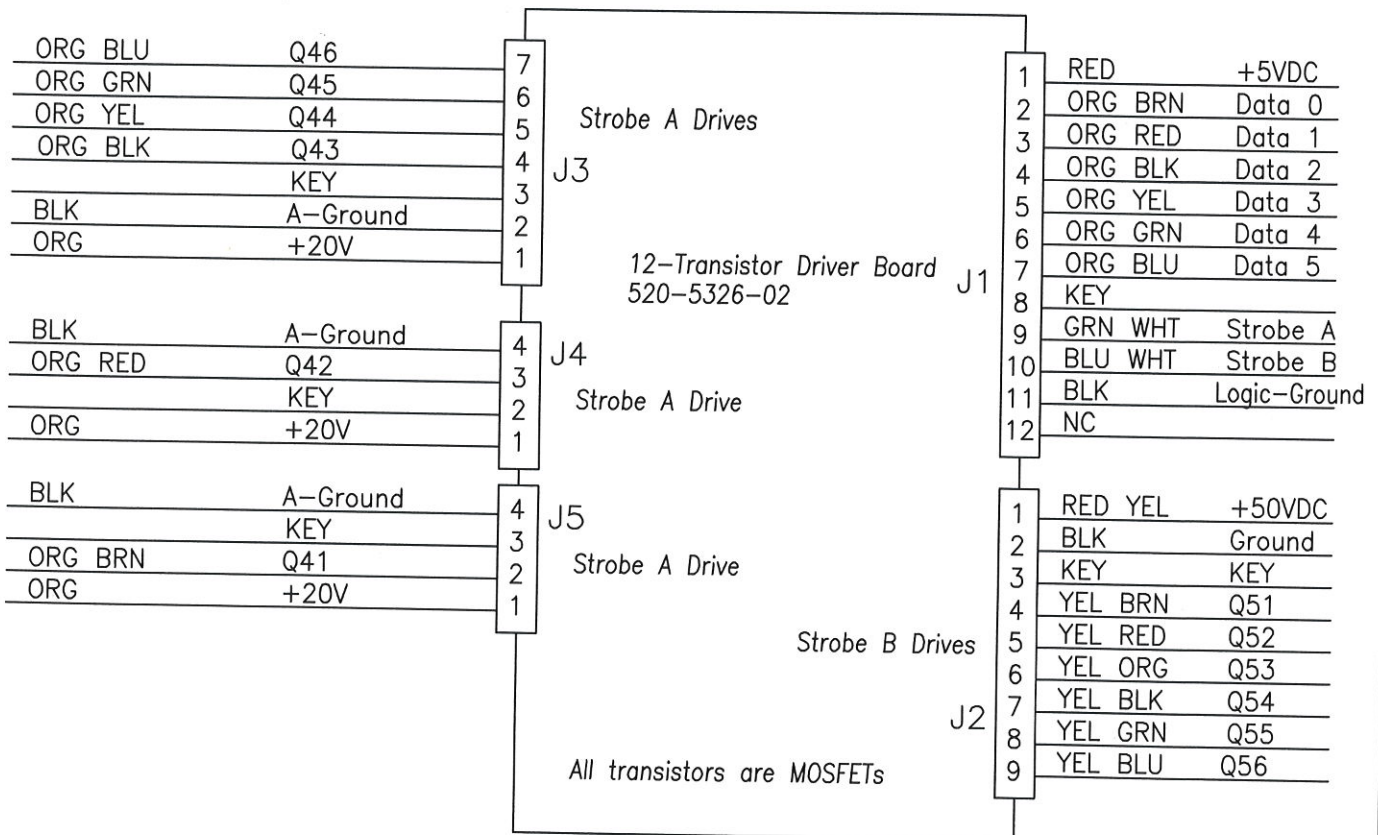






# STAR TREK L.E GAMES

## Wiring for the 12-Transistor driver board, 520-5326-02



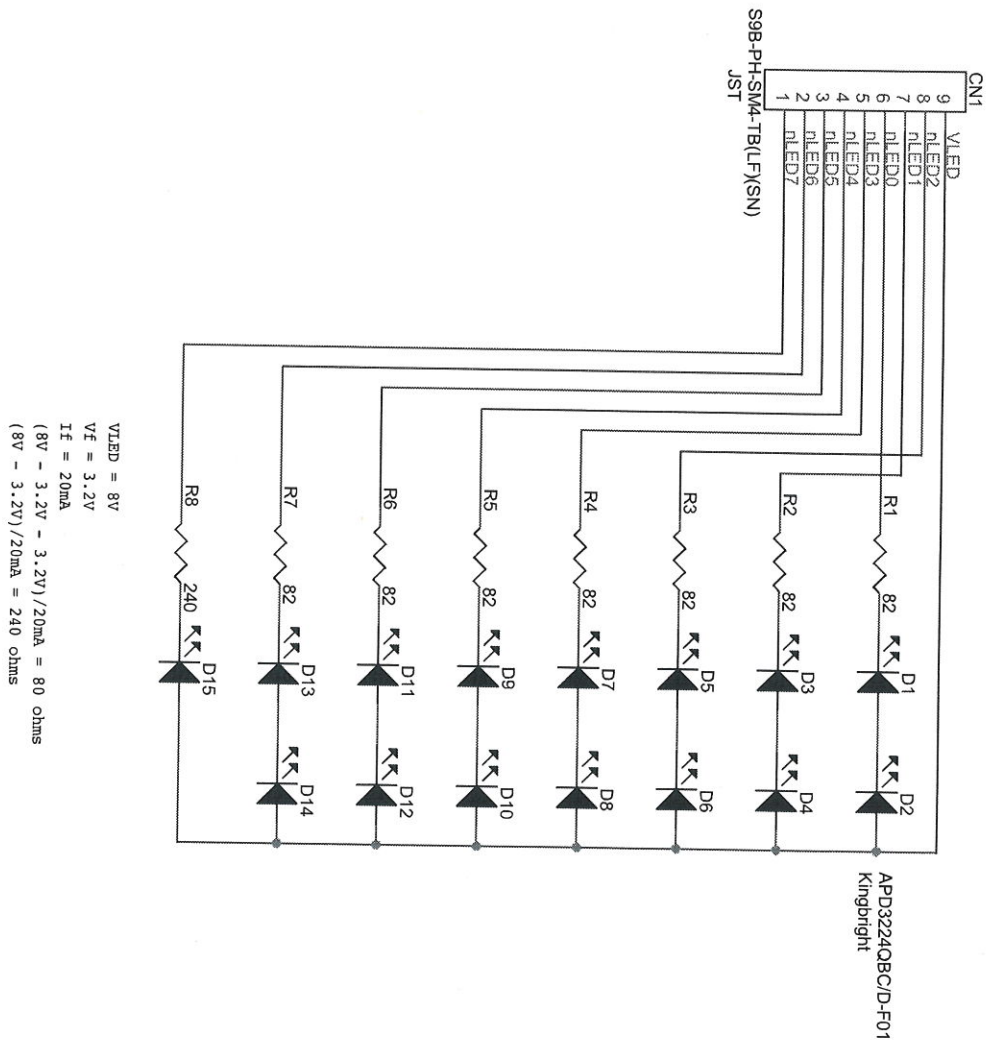




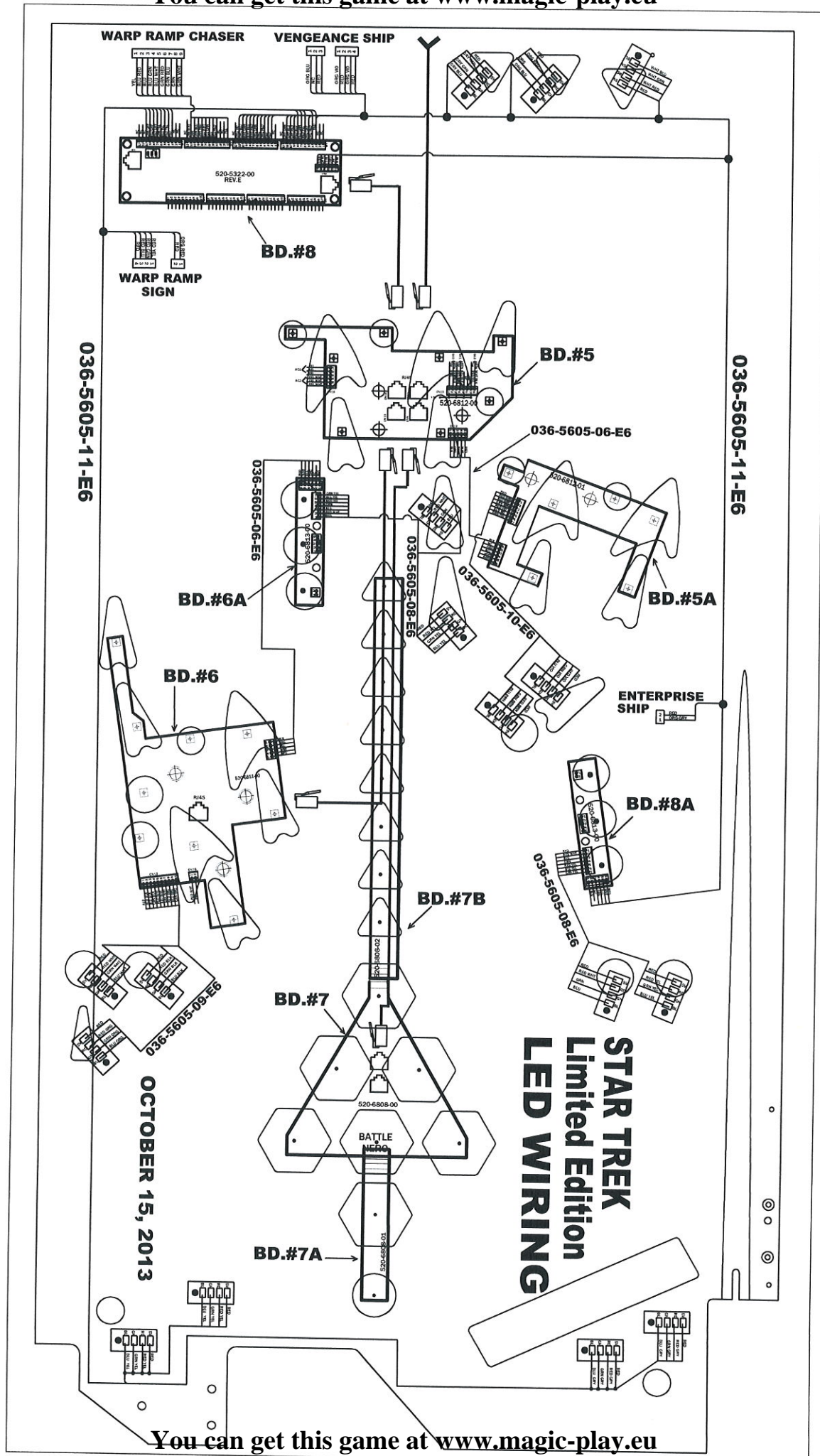




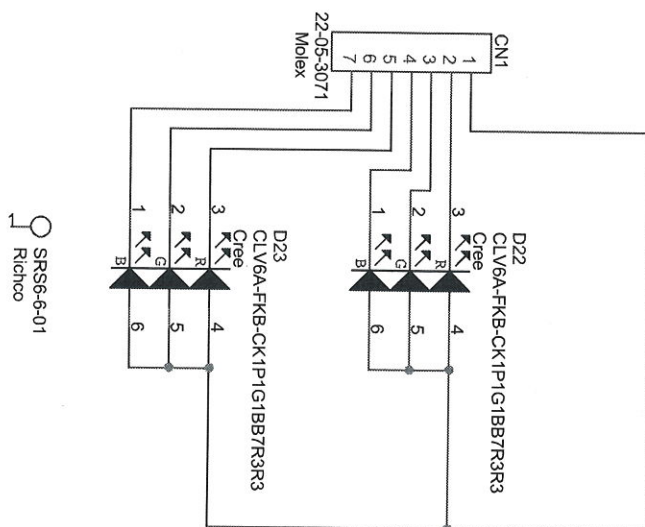




|                   |                               |
|-------------------|-------------------------------|
| Title             |                               |
| Bill LE Warp Ramp |                               |
| Size              | Document Number               |
| A                 | 520-6815-00                   |
| Date:             | Wednesday, September 18, 2013 |
| D                 | Sheet 1 of 1                  |
| Rev               |                               |
| 0                 |                               |



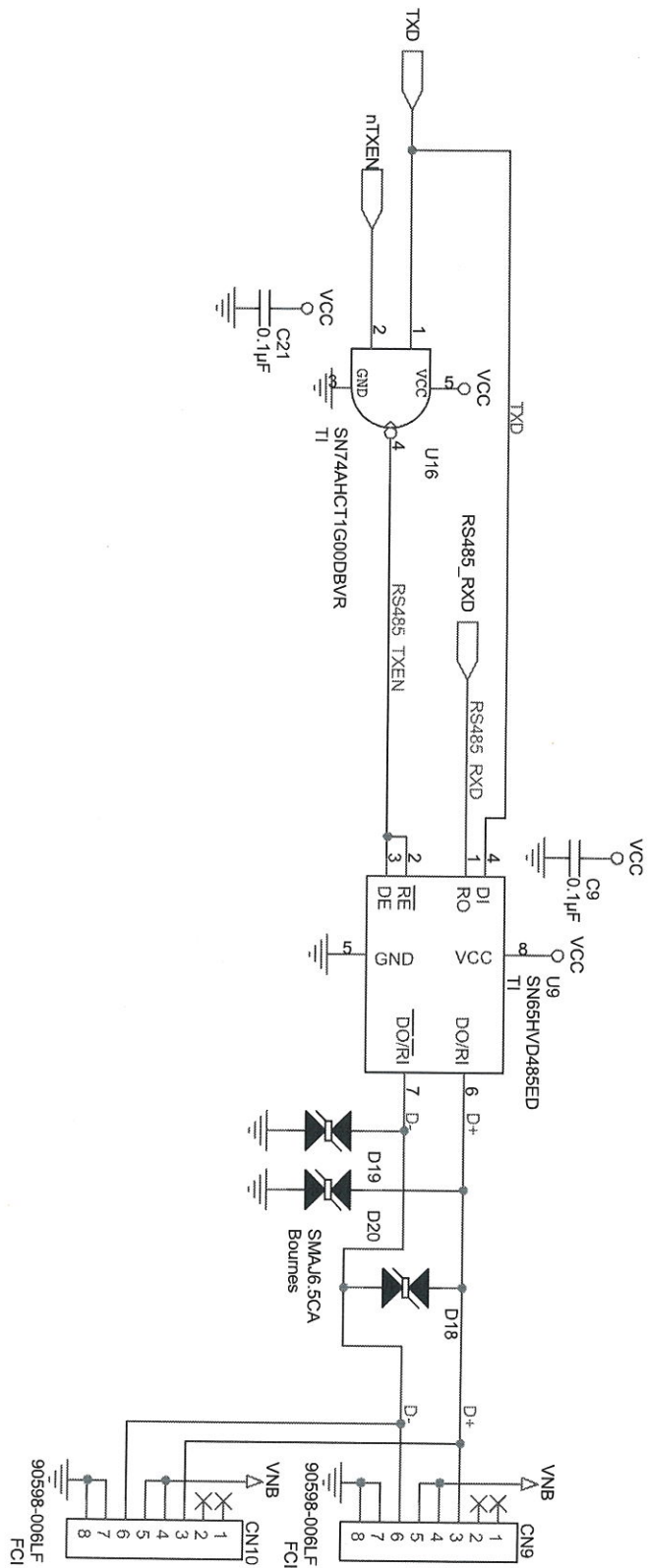




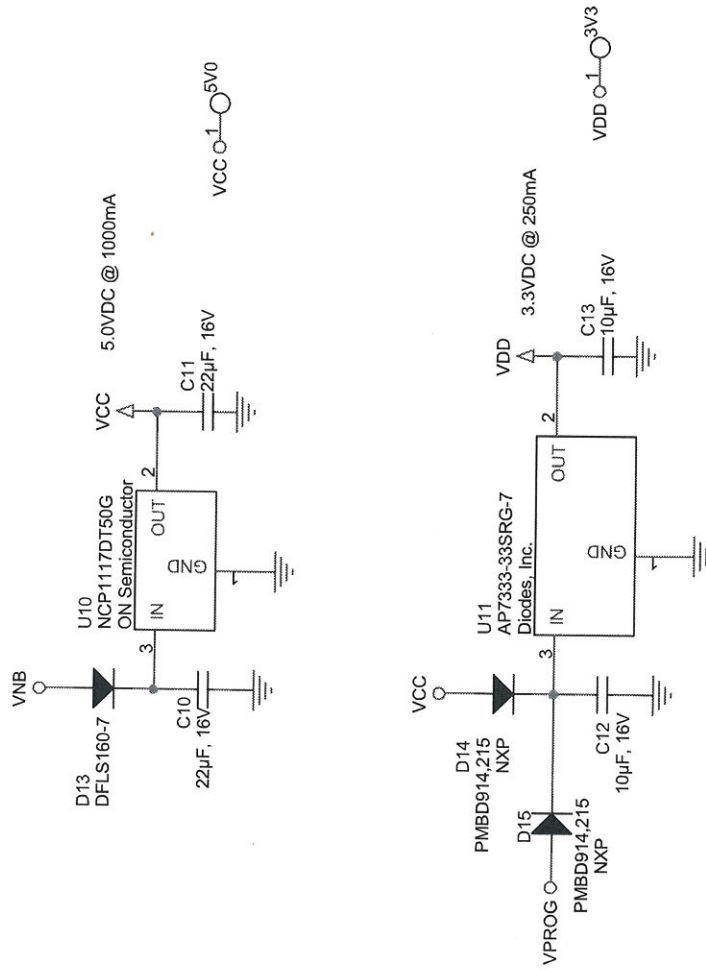
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|-------|-------------------------|--------------------------|-------------|---------|--------|
| Title |                         | BILL LE Lower Center LED |             | Bd. 71A |        |
| Size  | A                       | Document Number          | 520-6808-01 | Rev     | 0      |
| Date: | Thursday, July 25, 2013 |                          |             | Sheet   | 1 of 1 |







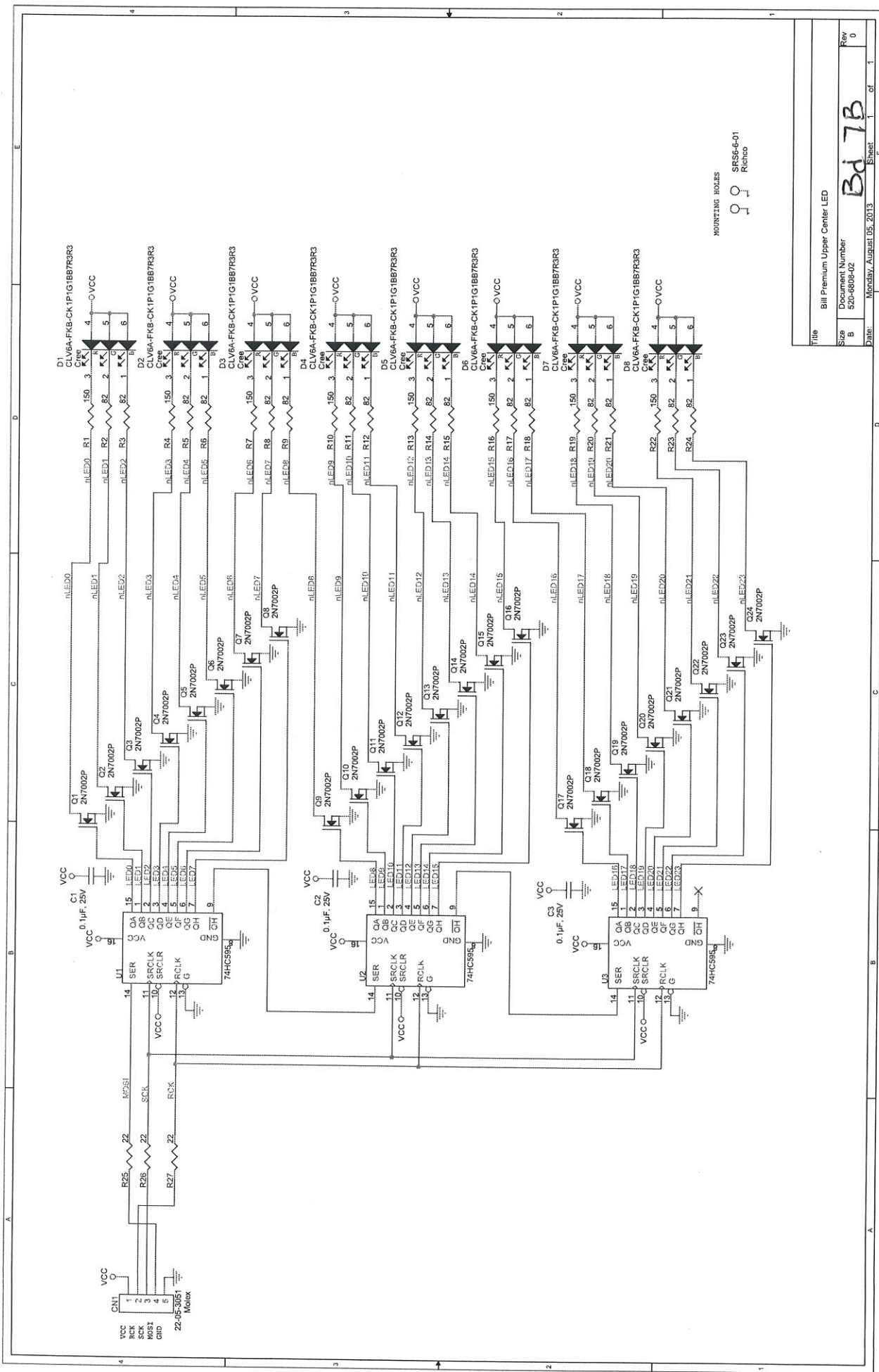
|       |                              |   |        |
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| Title |                              | Bill Premium/LE Center -- communication |        |
| Size  | Document Number              |   |        |
| A     | 520-6808-00                  |   |        |
| Date: | Thursday, September 19, 2013 | Sheet                                   | 2 of 4 |
|       |                              | Rev                                     | A      |



|                                       |                              |       |        |
|---------------------------------------|------------------------------|-------|--------|
| Title                                 |                              |       |        |
| Bill Premium/LE Center - power supply |                              |       |        |
| Size                                  | Document Number              | Rev   |        |
| A                                     | 520-6808-00                  | A     |        |
| Date:                                 | Thursday, September 19, 2013 | Sheet | 3 of 4 |





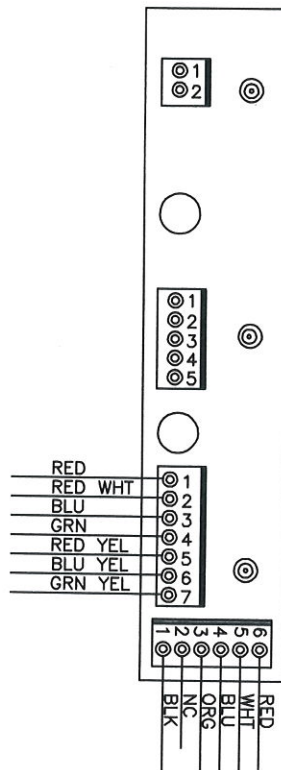


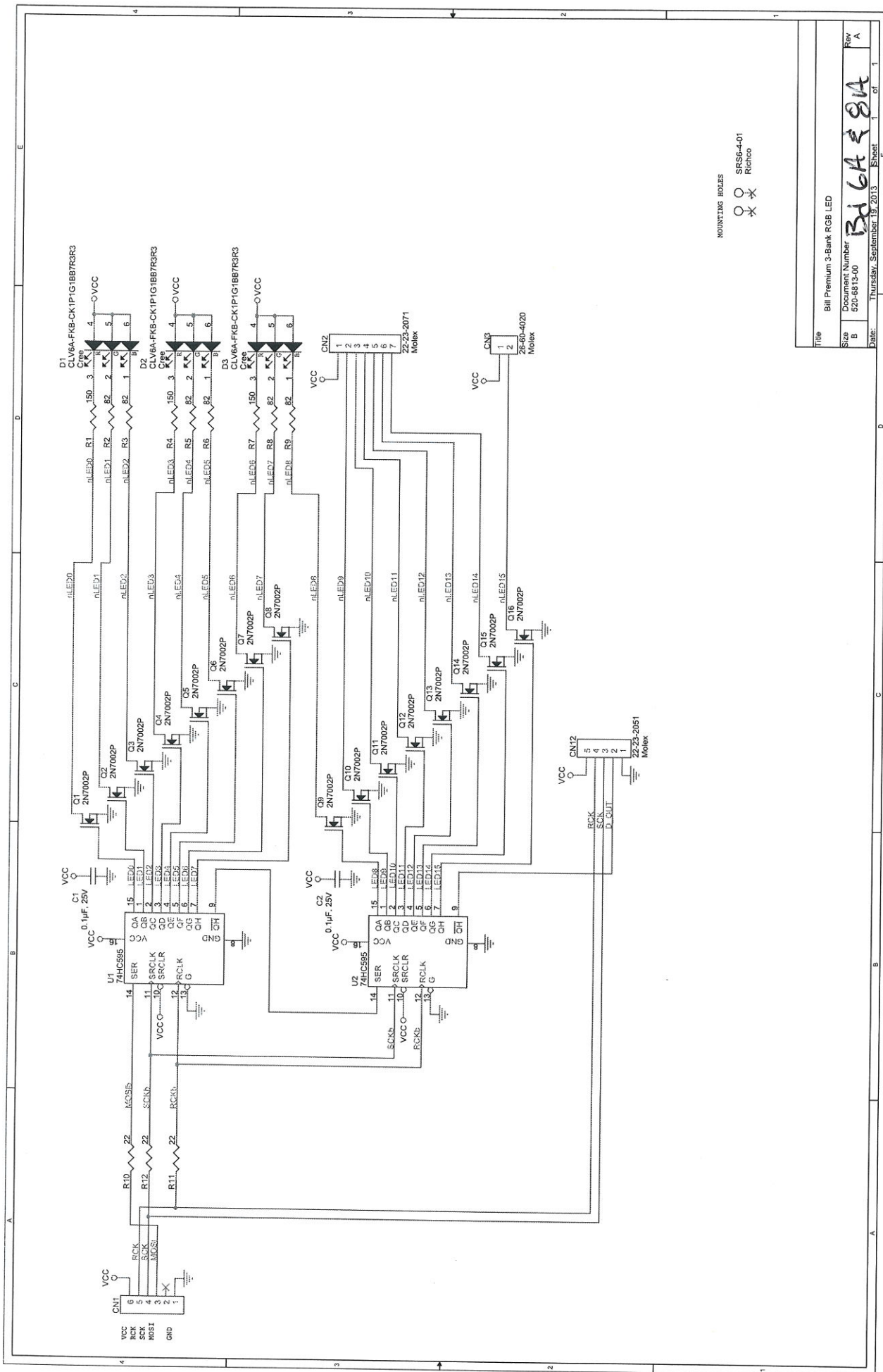


# STAR TREK L.E.

## LED Board 520-6813-00 Detail

# X2

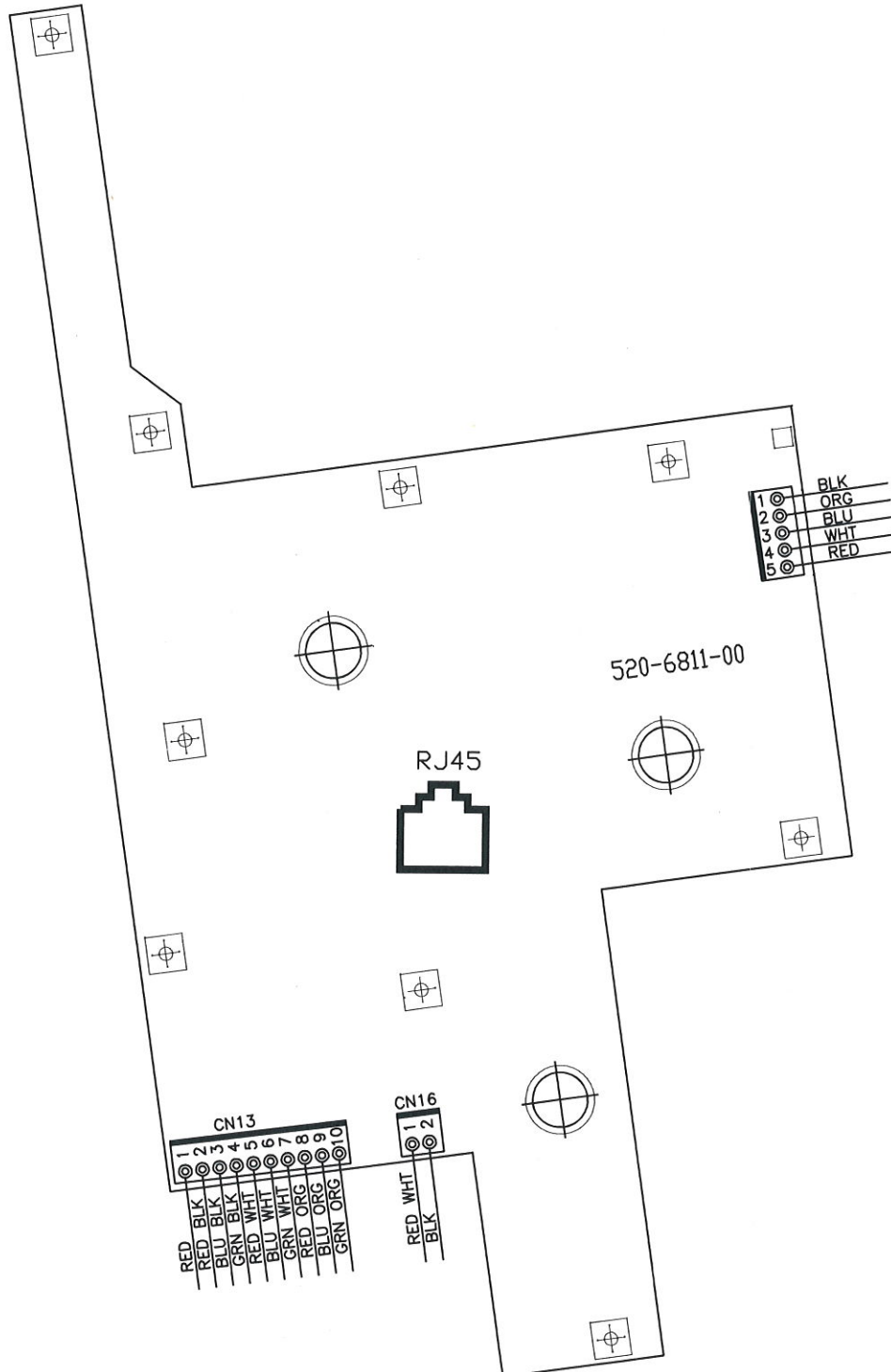






# STAR TREK L.E.

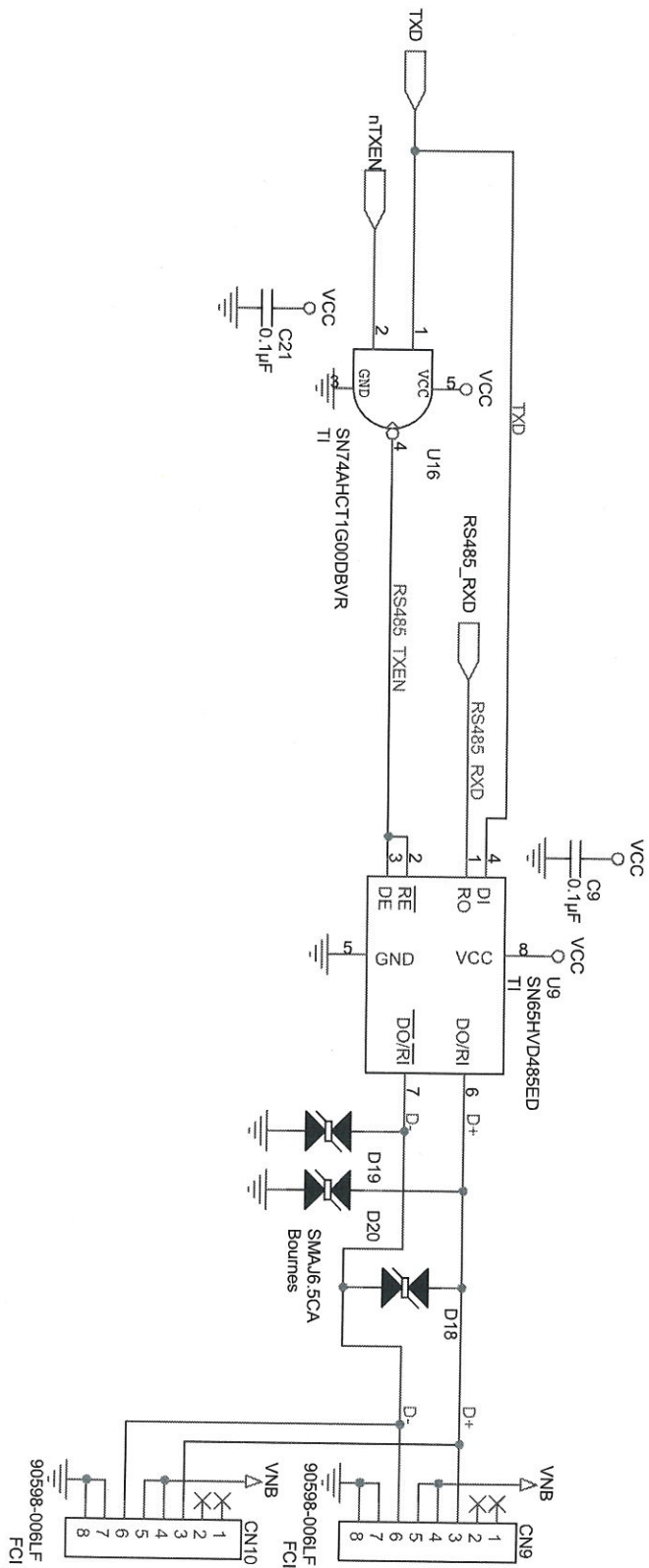
## LED Board 520-6811-00



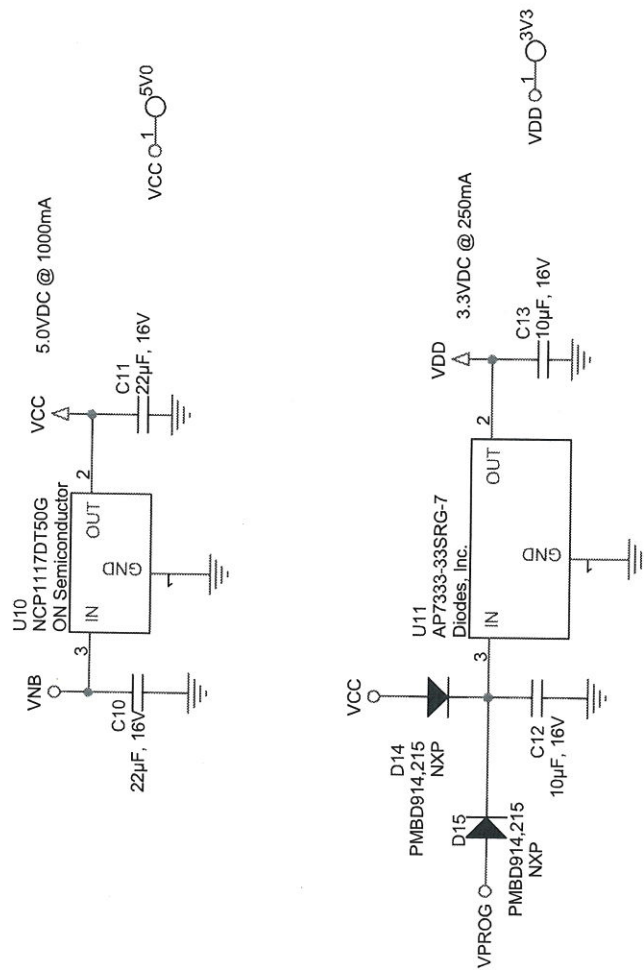
y18







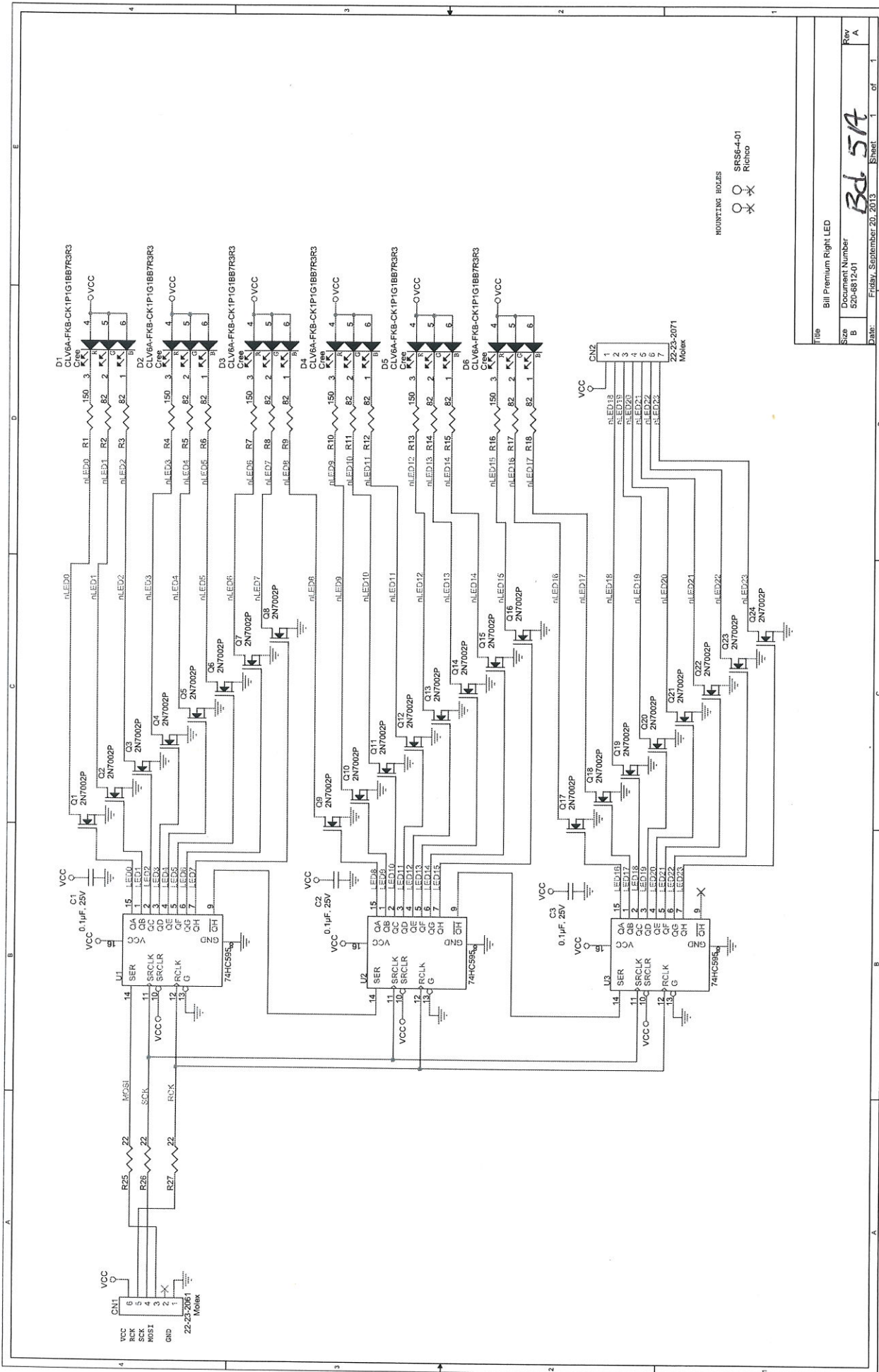
|       |                 |                                     |              |
|-------|-----------------|-------------------------------------|--------------|
| Title |                 | Bill Premium/LE Left- communication |              |
| Size  | Document Number |                                     |              |
| A     | 520-6811-00     |                                     |              |
| Date: |                 | Thursday, September 19, 2013        | Sheet 2 of 4 |
|       |                 |                                     | Rev A        |



|       |                              |                                     |             |
|-------|------------------------------|-------------------------------------|-------------|
| Title |                              | Bill Premium/LE Left-- power supply |             |
| Size  | A                            | Document Number                     | 520-6811-00 |
| Rev   | A                            |                                     |             |
| Date: | Thursday, September 19, 2013 | Sheet                               | 3 of 4      |



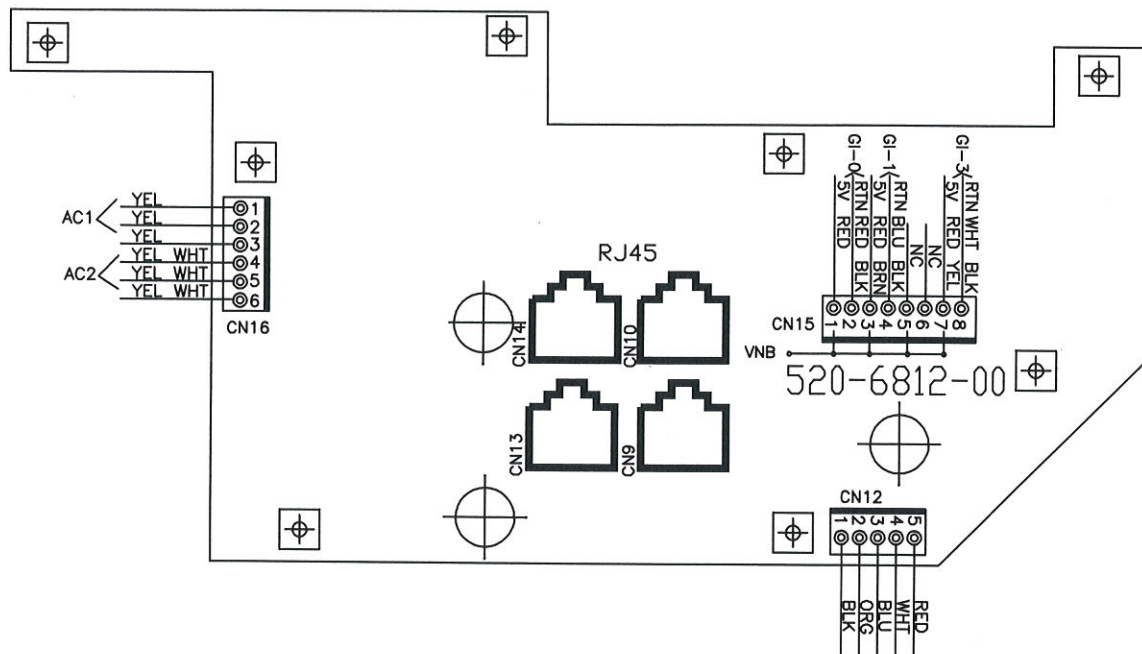




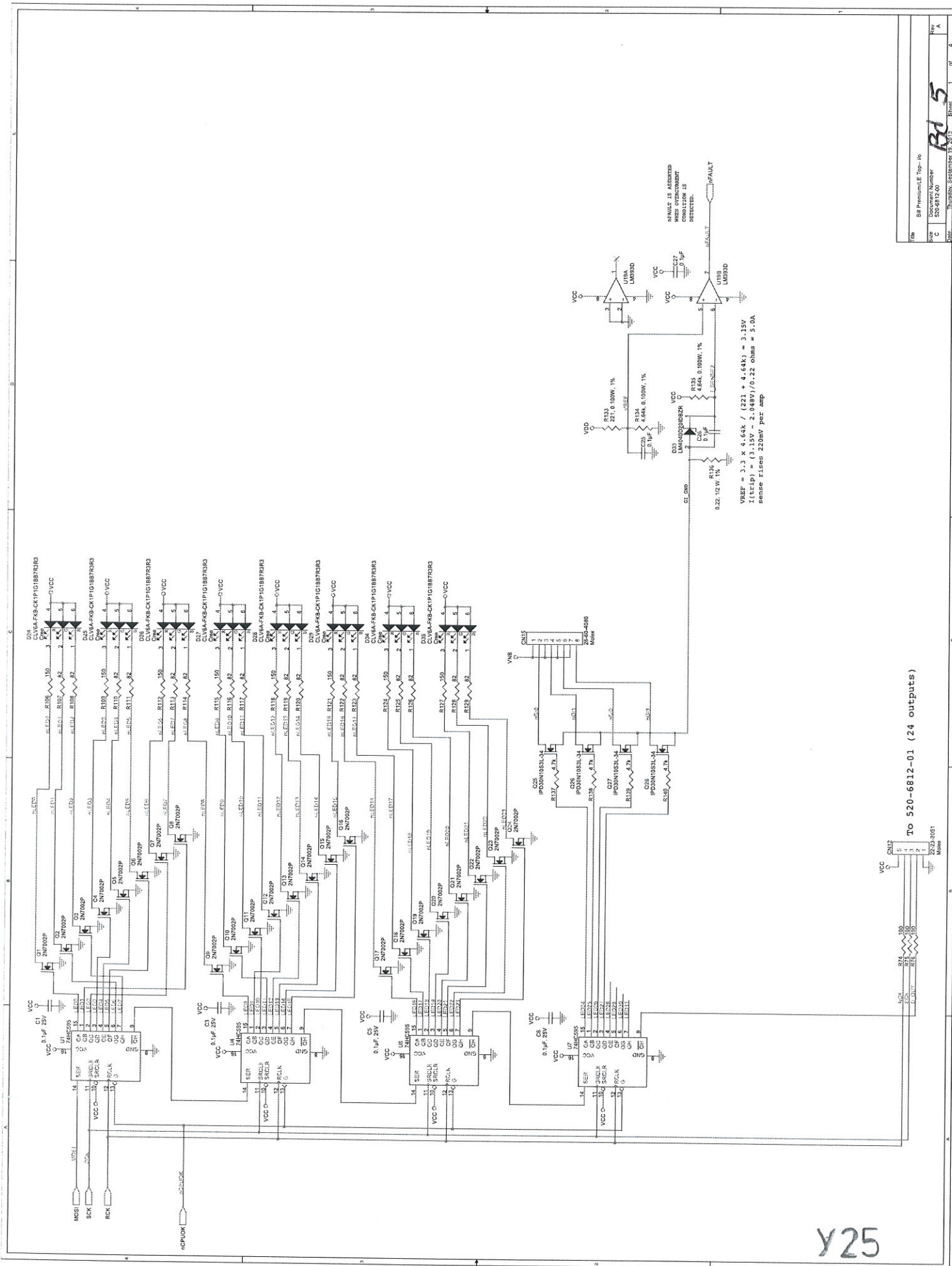


# STAR TREK L.E

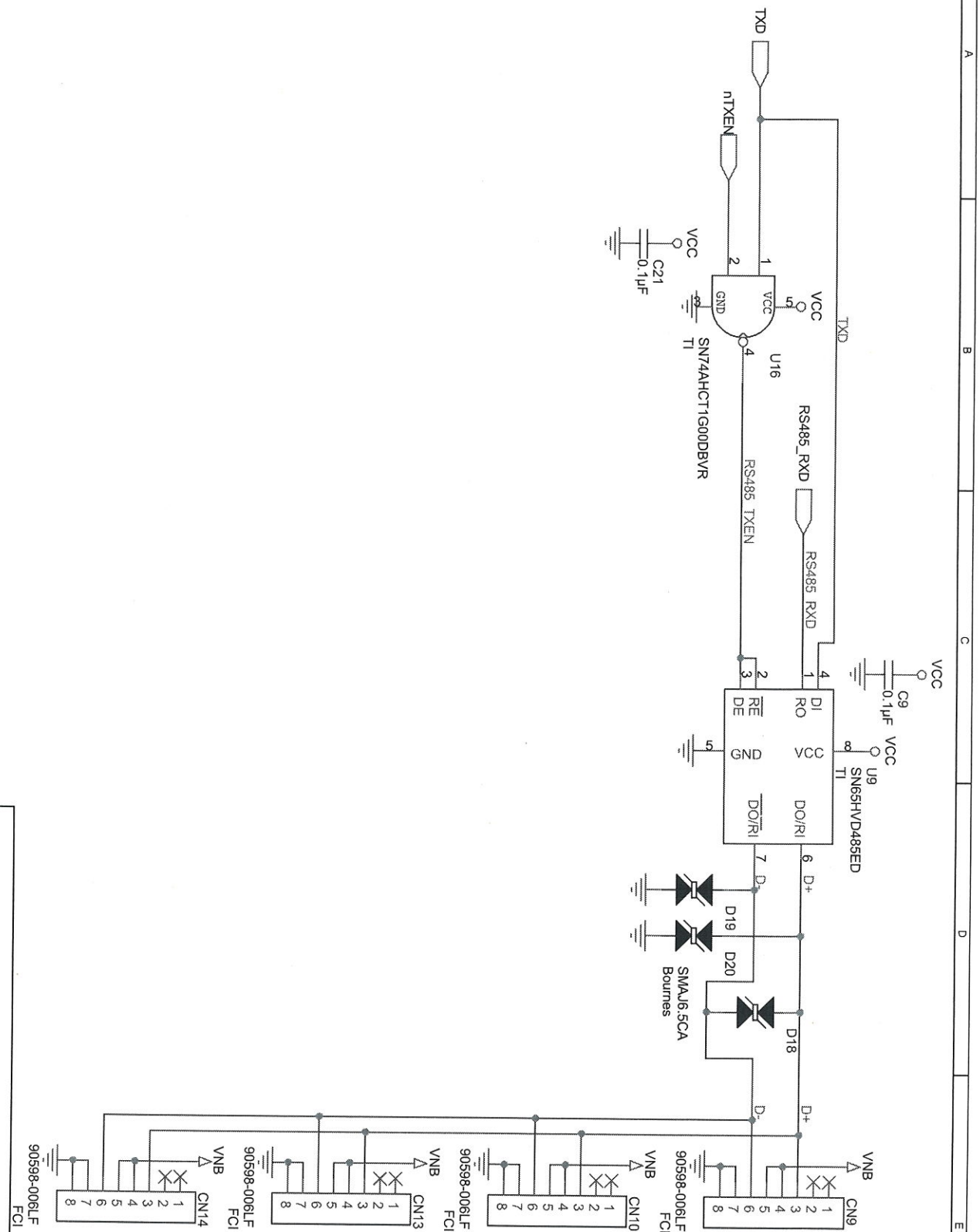
## LED Board 520-6812-00



Y 24







|       |                              |                                     |        |
|-------|------------------------------|-------------------------------------|--------|
| Title |                              | Bill Premium/LE Top-- communication |        |
| Size  | Document Number              |                                     |        |
| A     | 520-6812-00                  |                                     |        |
| Date: | Thursday, September 19, 2013 | Sheet                               | 2 of 4 |
|       |                              | Rev                                 | A      |

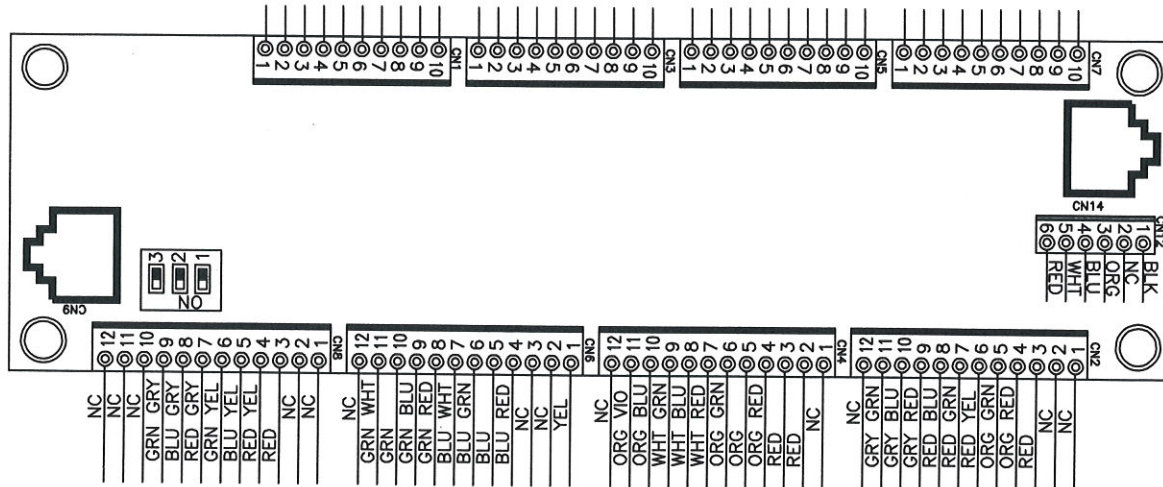






# STAR TREK L.E

## LED Board 520-5322-00

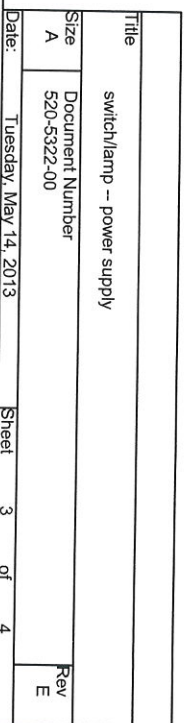








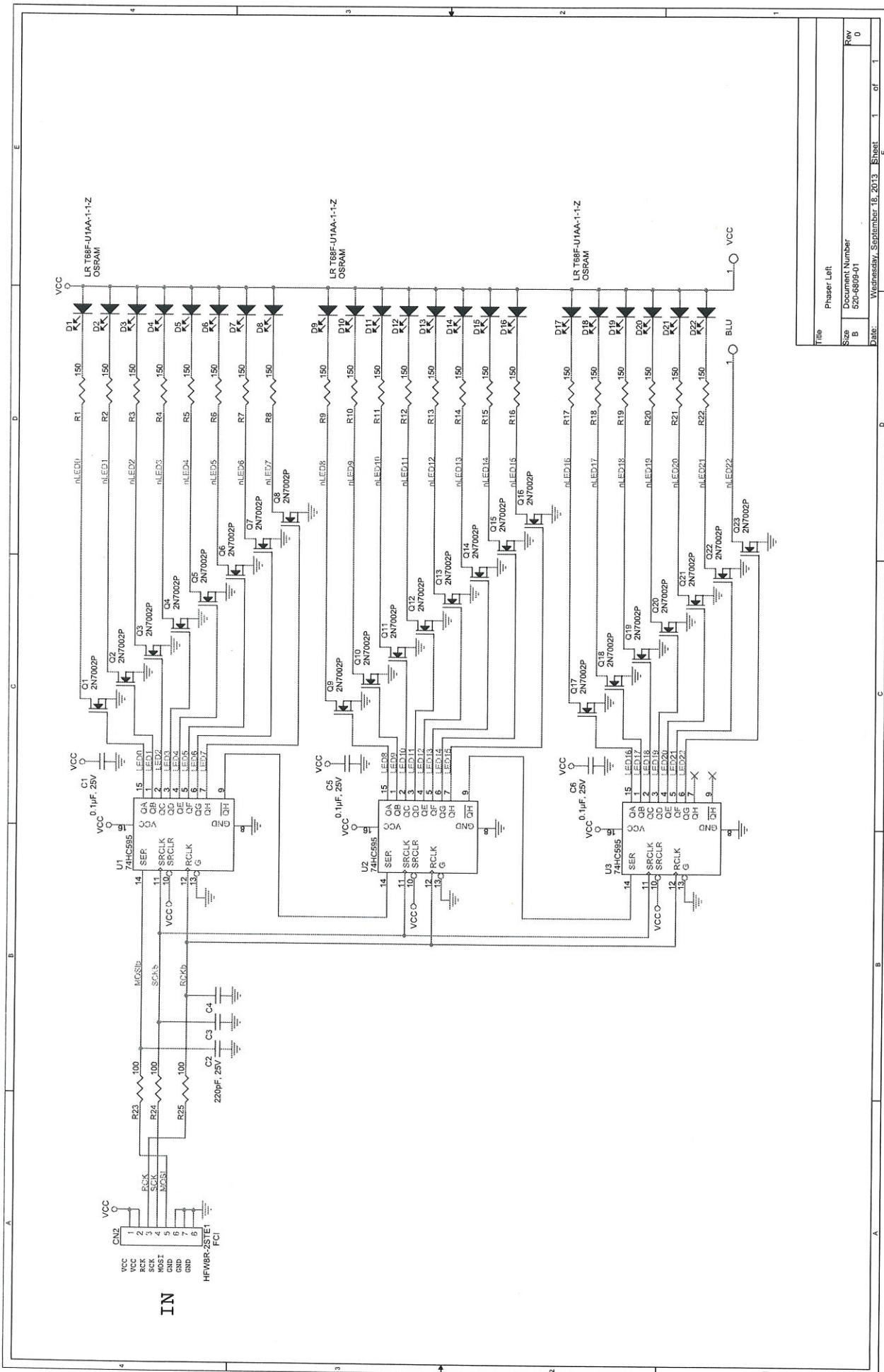




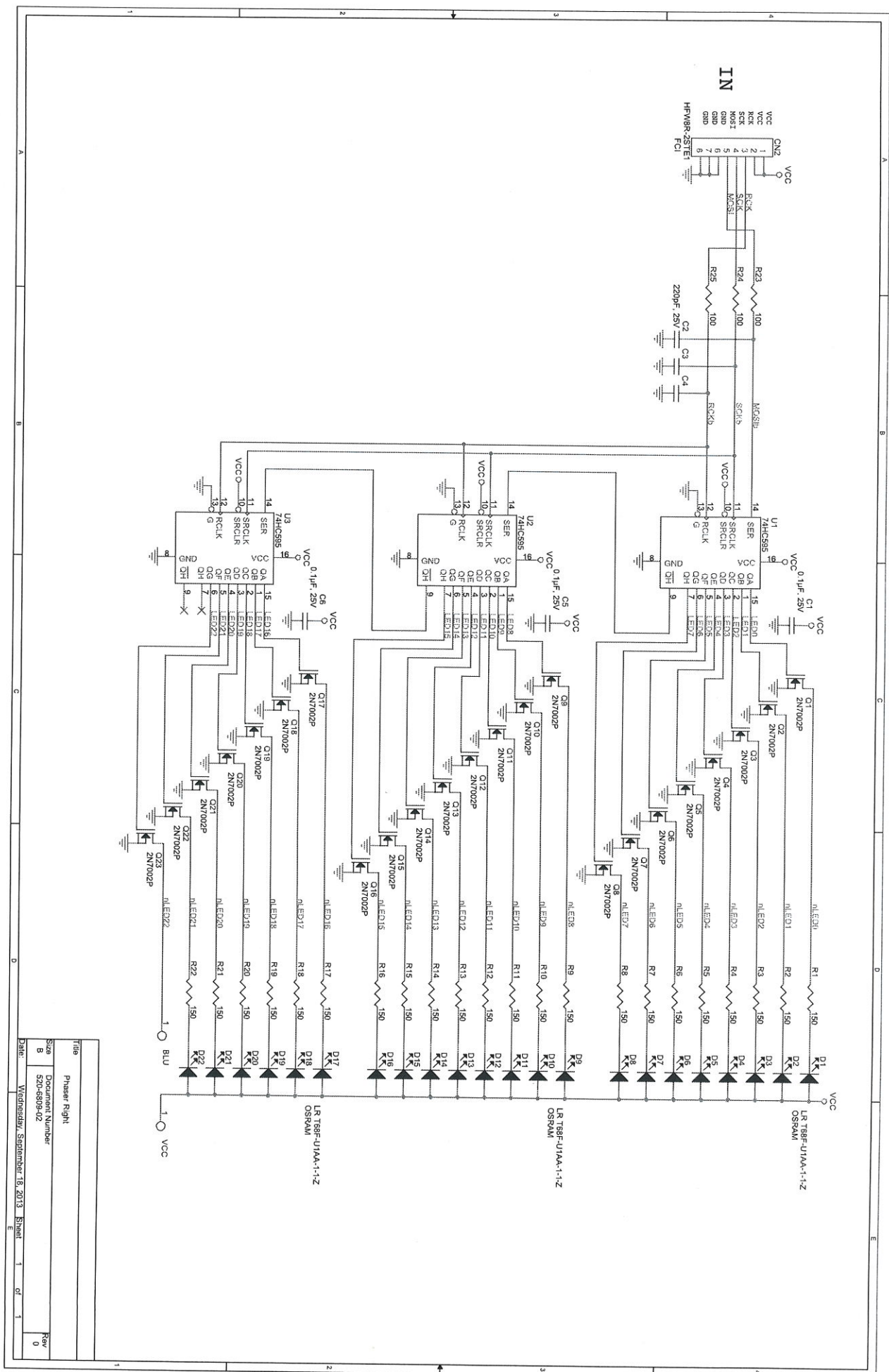


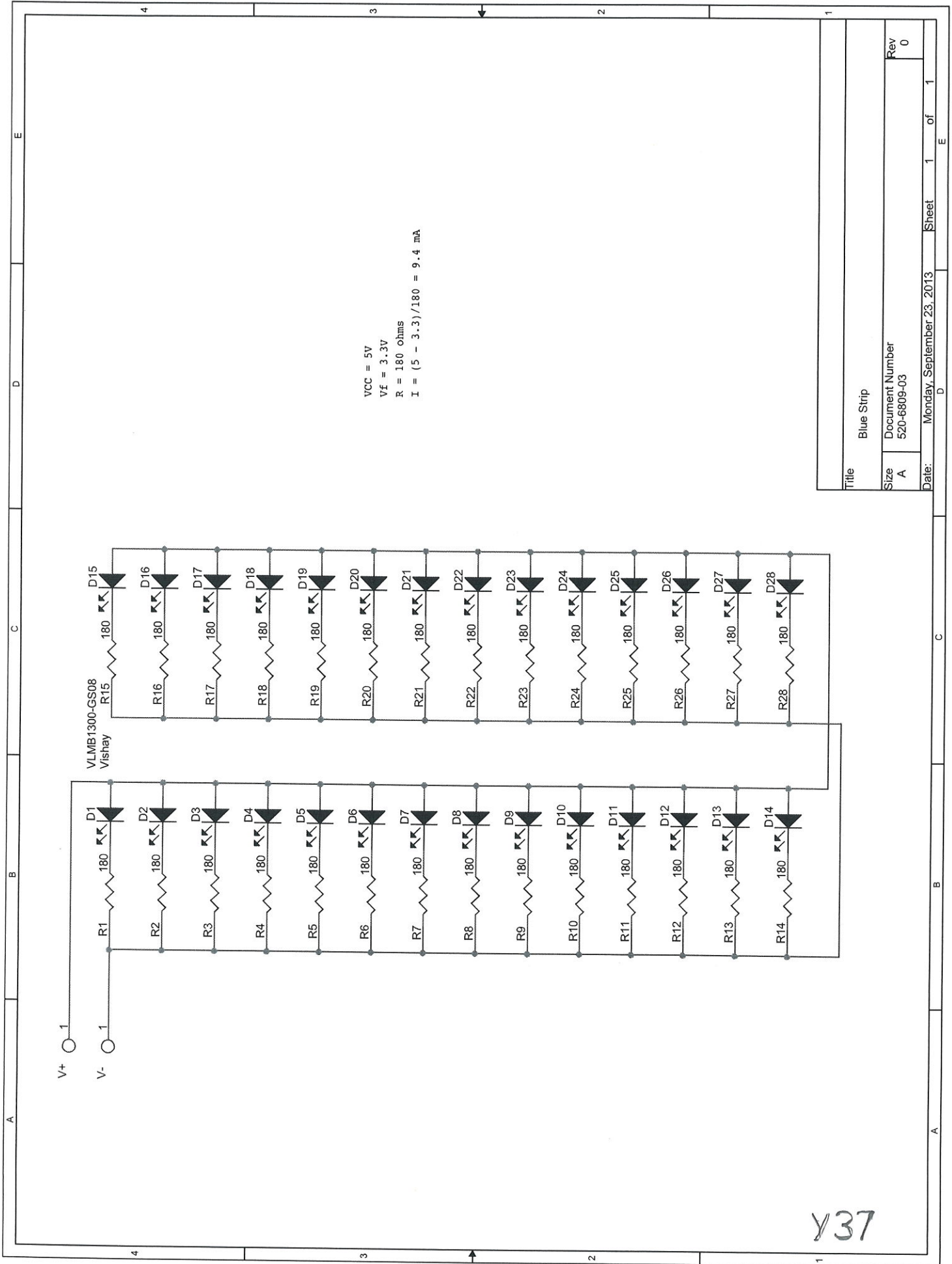












Y37

|       |                            |                 |             |
|-------|----------------------------|-----------------|-------------|
| Title |                            | Blue Strip      |             |
| Size  | A                          | Document Number | 520-6809-03 |
| Rev   | 0                          | Sheet           | 1 of 1      |
| Date: | Monday, September 23, 2013 |                 |             |

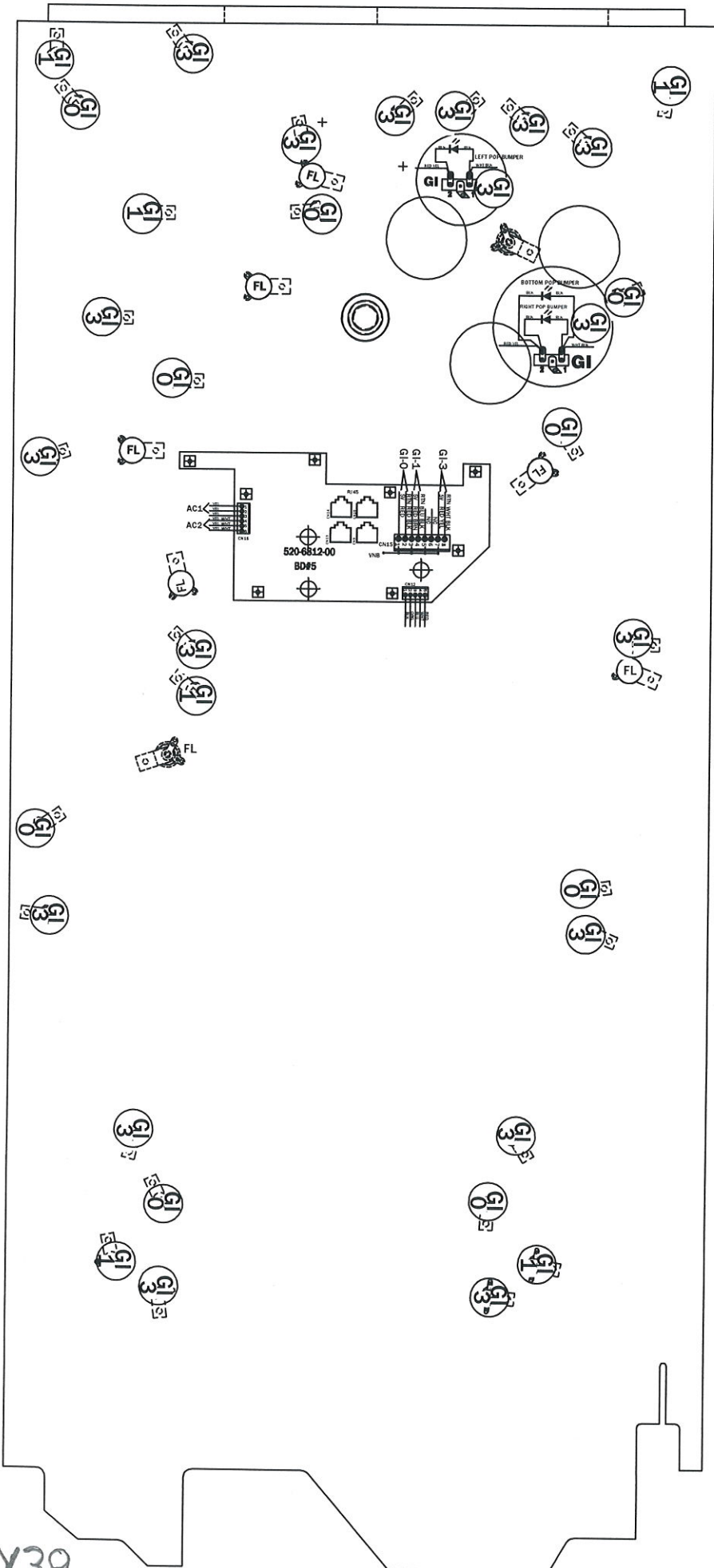
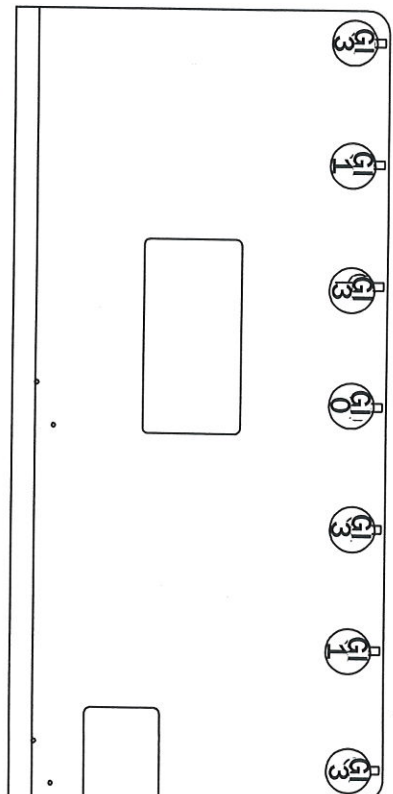


# GI STAR TREK L.E

3 POP BUMPER 112-5024-08

27 WEDGE BASE 112-5033-08  
4 BAYONET 112-5034-08

4 BAYONET 112-5034-08 LED(WHT)  
2 BAYONET 112-5034-05 LED(BLU)  
1 BAYONET 112-5034-02 LED(RED)



# STAR TREK PRO/LE

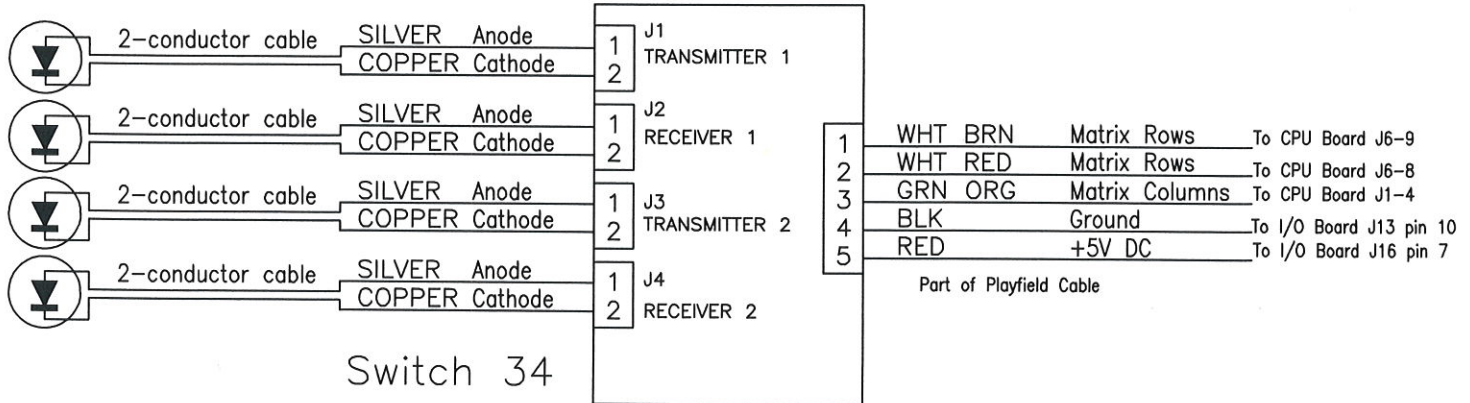
## Opto Amplifier Board 1 and 2

### Wiring Configuration

Transceiver Boards  
500-6775-01

Switch 33

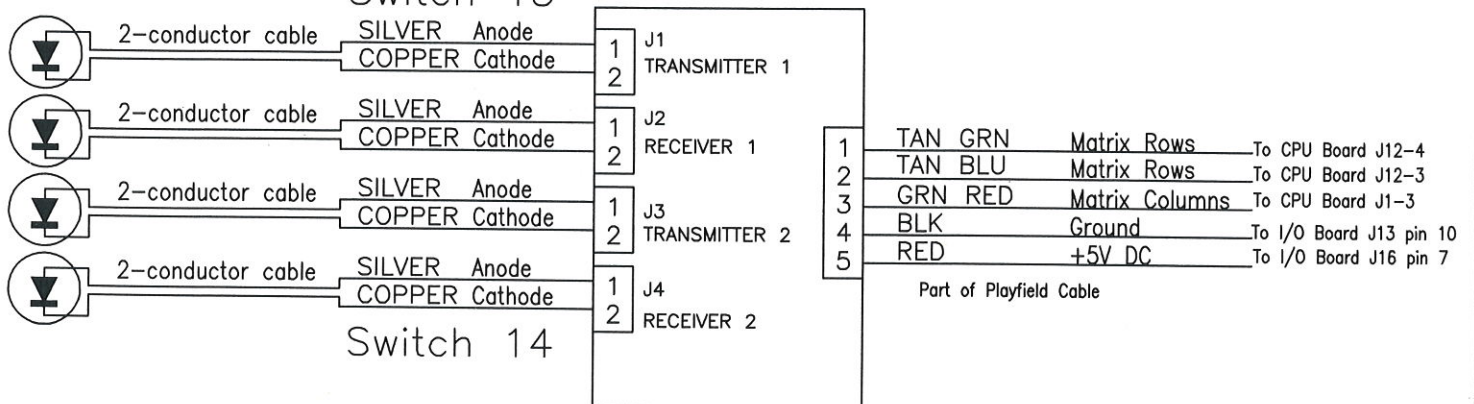
Amplifier Board # 1  
520-5239-01



Transceiver Boards  
500-6775-01

Switch 13

Amplifier Board # 2  
520-5239-01



|                          |                  |  |
|--------------------------|------------------|--|
| Date:<br><b>06-25-13</b> | TITLE            |  |
| Scale:<br><b>N/S</b>     | Rev:<br><b>-</b> | <b>Opto Amplifier Board 1 &amp; 2 Wiring</b> |
| <b>STERN</b>             |                  | DWN. <b>REYNA</b>                            |
| 1st USE                  |                  | <b>STAR TREK</b>                             |

y39



# STAR TREK PRO/L.E

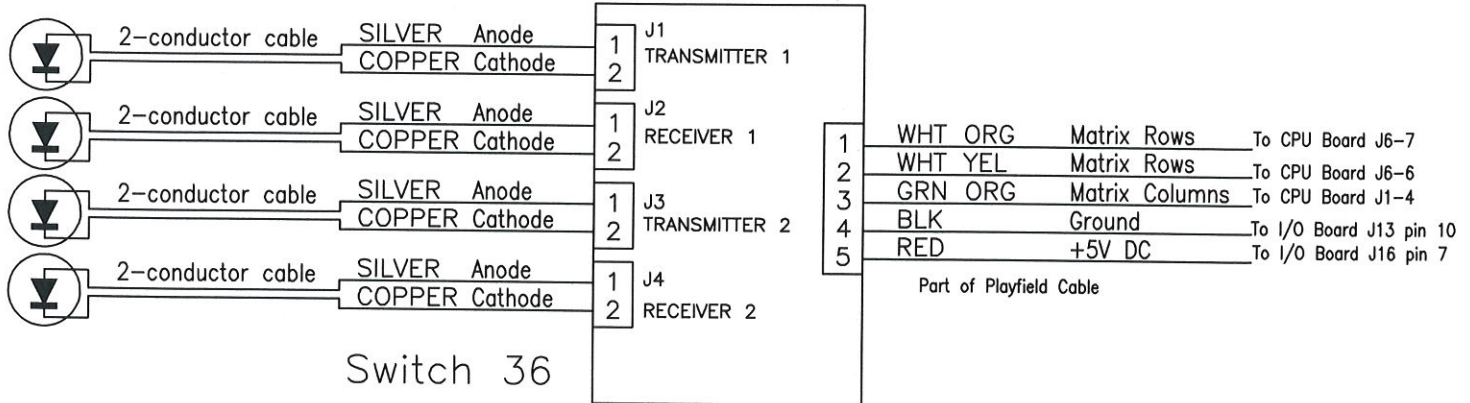
## Opto Amplifier Board 3 & 4

### Wiring Configuration

Transceiver Boards  
500-6775-01

Switch 35

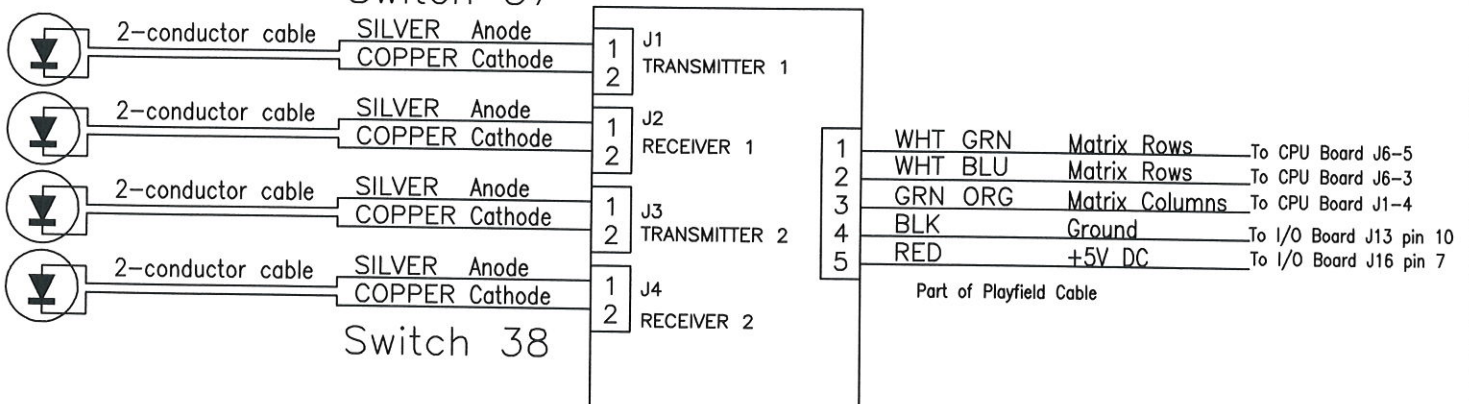
Amplifier Board # 3  
520-5239-01



Transceiver Boards  
500-6775-01

Switch 37

Amplifier Board # 4  
520-5239-01



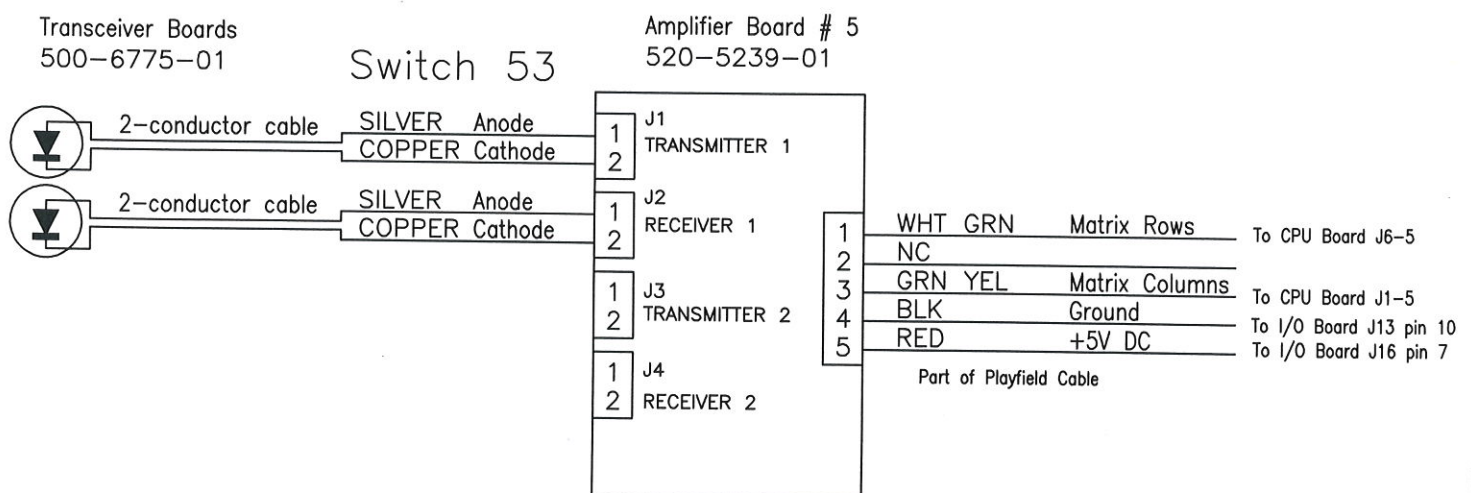
Y40

|                       |               |  |          |
|-----------------------|---------------|--|----------|
| Date: <b>06-25-13</b> |               | TITLE  |          |
| Scale: <b>N/S</b>     | Rev: <b>-</b> | <b>Opto Amplifier Board 3 &amp; 4 Wiring</b> |          |
| <b>STERN</b>          |               | DWN. <b>REYNA</b>                            | PART NO. |
|                       |               | 1st USE <b>STAR TREK</b>                     |          |

# STAR TREK L.E

## Opto Amplifier Board 5

### Wiring Configuration

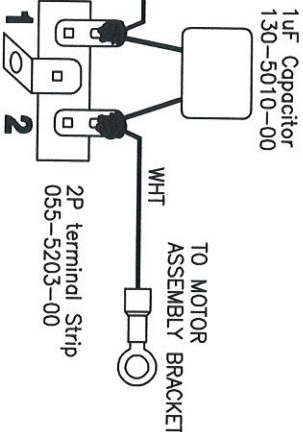


|                       |  |                                      |  |
|-----------------------|--|--------------------------------------|--|
| Date: <b>09-30-13</b> |  | TITLE                                |  |
| Scale: <b>N/S</b>     |  | Rev: <b>-</b>                        |  |
| <b>STERN</b>          |  | <b>Opto Amplifier Board 5 Wiring</b> |  |
| DWN. <b>REYNA</b>     |  | 1st USE                              |  |
| DATE: 09-30-13        |  | STAR TREK L.E                        |  |

Y41

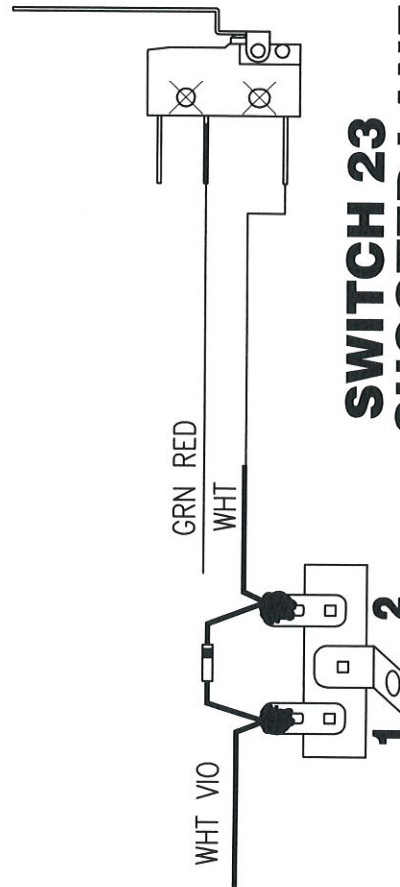
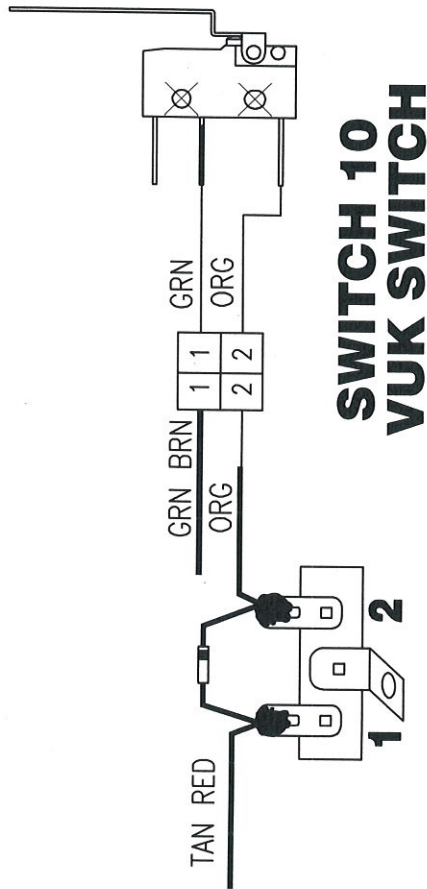


# MOTOR



|                    |                  |          |                       |
|--------------------|------------------|----------|-----------------------|
| DWN.               | DATE<br>10-22-13 |          | TITLE<br><br>DTS Assy |
| 1st USE<br>BILL LE | SCALE<br>-       | REV<br>A |                       |

PART NO.  
511-7528-00



|   |               |                         |
|---|---------------|-------------------------|
| DWN. REYNA                                | DATE 06-25-13 | TITLE DTS Configuration |
| 1st USE                                   | SCALE 1:1     | STAR TREK (PRO/L.E)     |
| Stern Pinball, Inc                        |               | PART NO.                |
| 2020 JANICE AVE., MELROSE PARK, IL. 60160 |               | DTS-MAP                 |

Y43

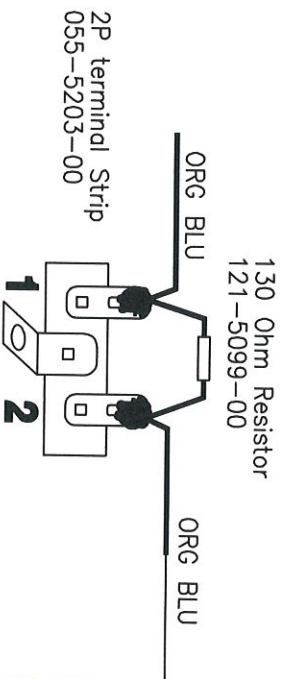
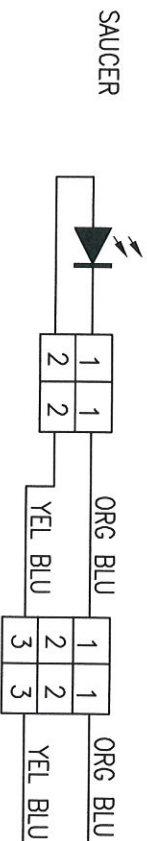
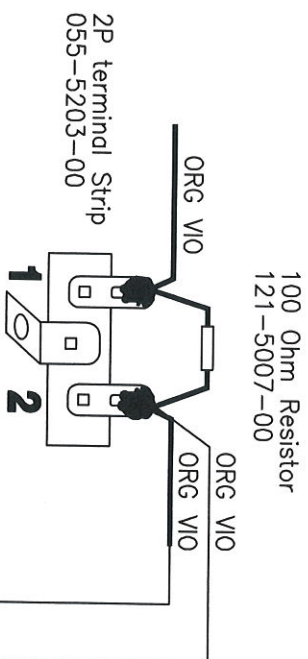
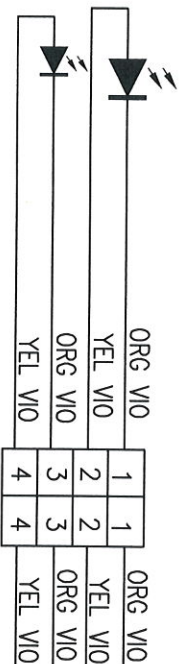


# DTS Assembly STAR TREK L.E VENGEANCE SHIP



605-5002-00-Cover W/Shrink Tubing 1/8"

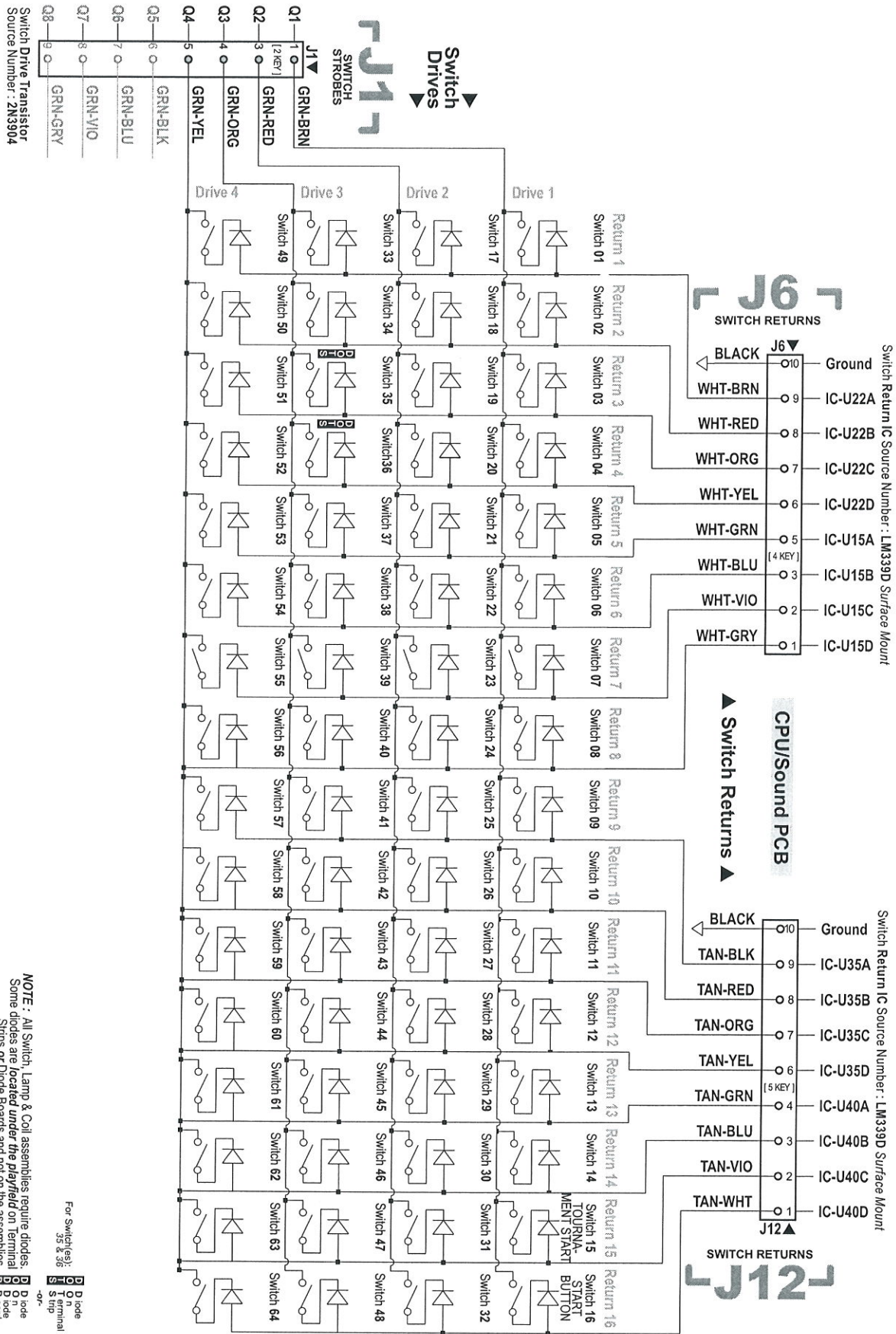
NACELLE  
(X2)



| DWN.     | DATE     | TITLE    |
|----------|----------|----------|
| 1st USE  | 07-15-13 | DTS Assy |
| Bill L.E | SCALE    | REV      |
|          | A        |          |

**Stern Pinball, Inc**  
2020 JANICE AVE., MELROSE PARK, IL. 60160  
PART NO. X

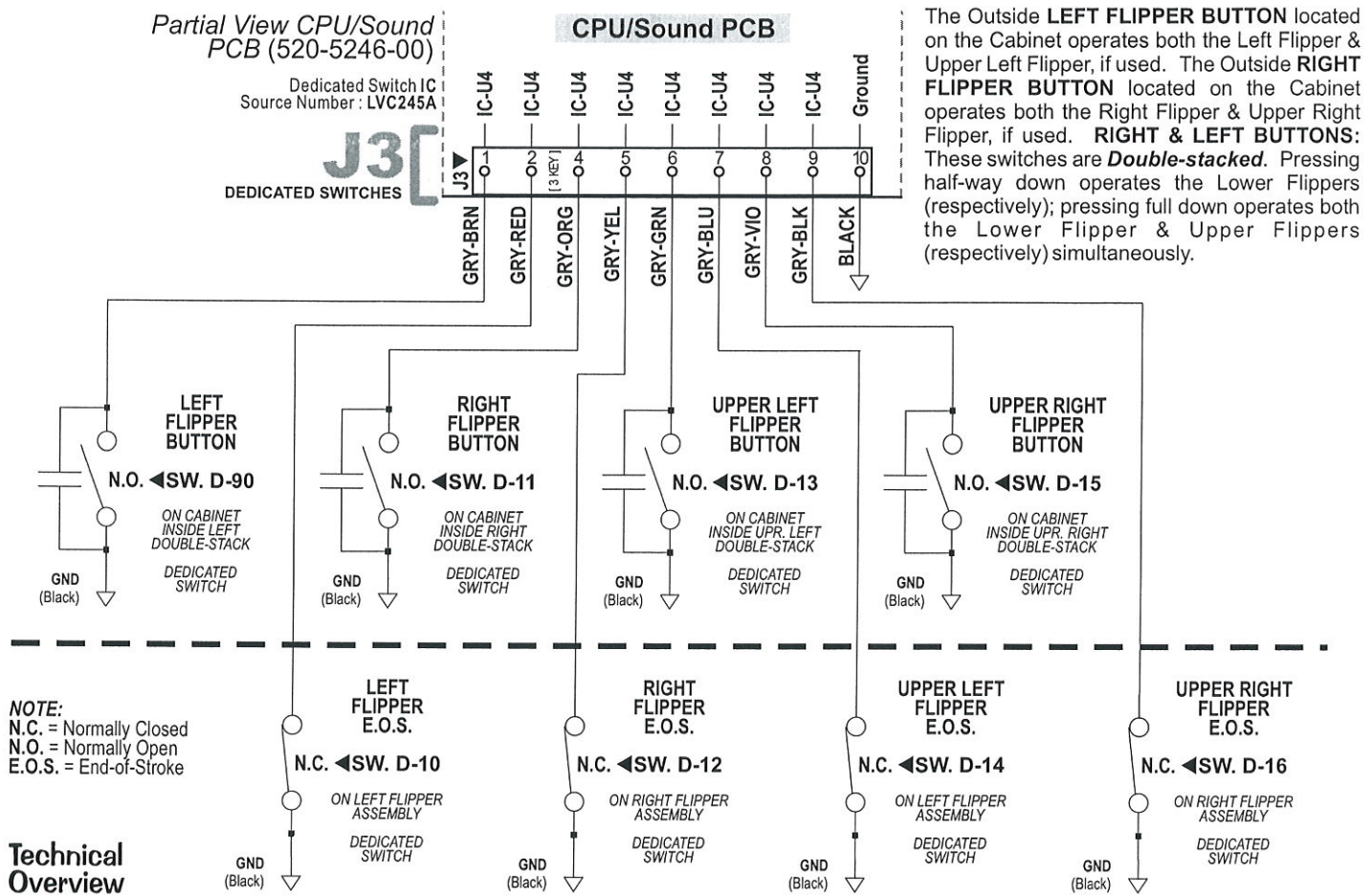
## Playfield Switch Wiring Diagram



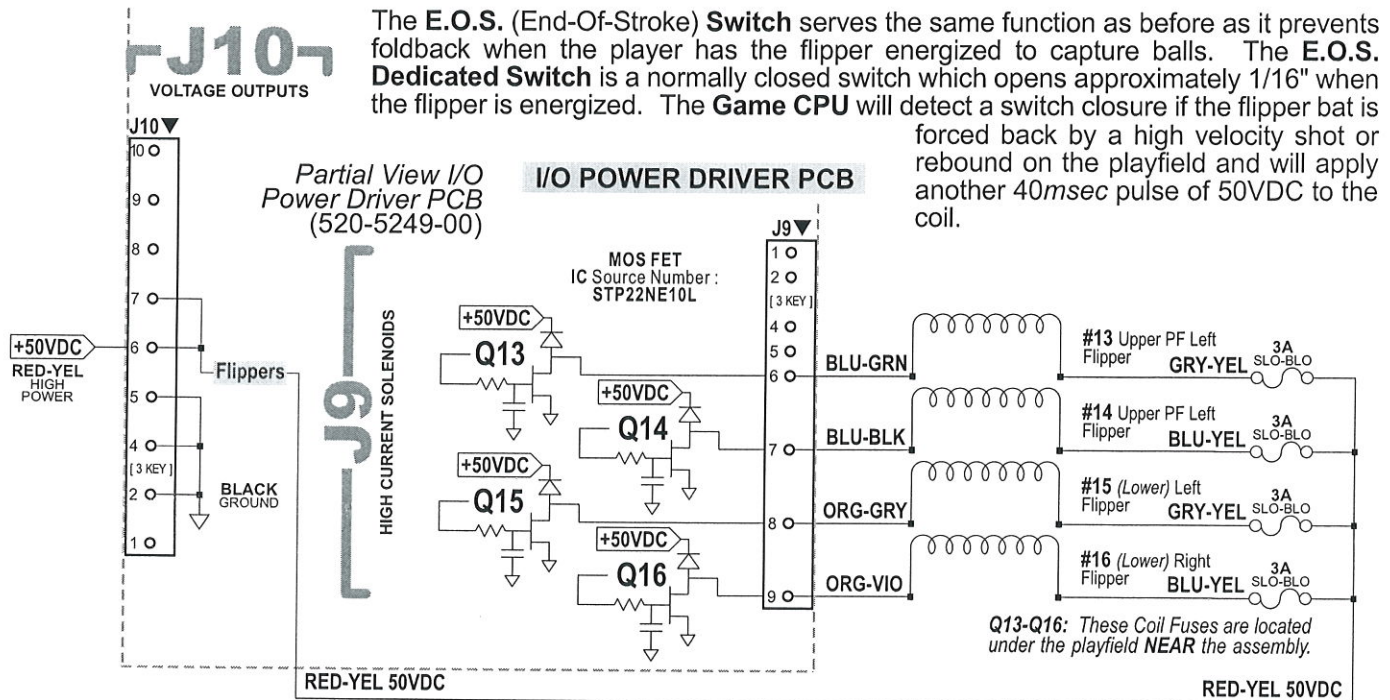
Please NOTE: Switch & Lamp Descriptions may differ slightly than that of the Dot Display due to space restraints.

Playfield  
Wiring





Our **Flipper System** uses one supply voltage (+50VDC) for both **kick & hold**. Once the **Game CPU** detects a Flipper Cabinet Switch closure (*during game play*) it applies a 40msec pulse to the gate of the Flipper Drive Transistor (STP22NE10L). If it continues to detect a Flipper Cabinet Switch closure (*the player holding the button in*) it will continue to pulse the flipper drive transistor 1msec every 12msecs for the duration of the hold cycle.



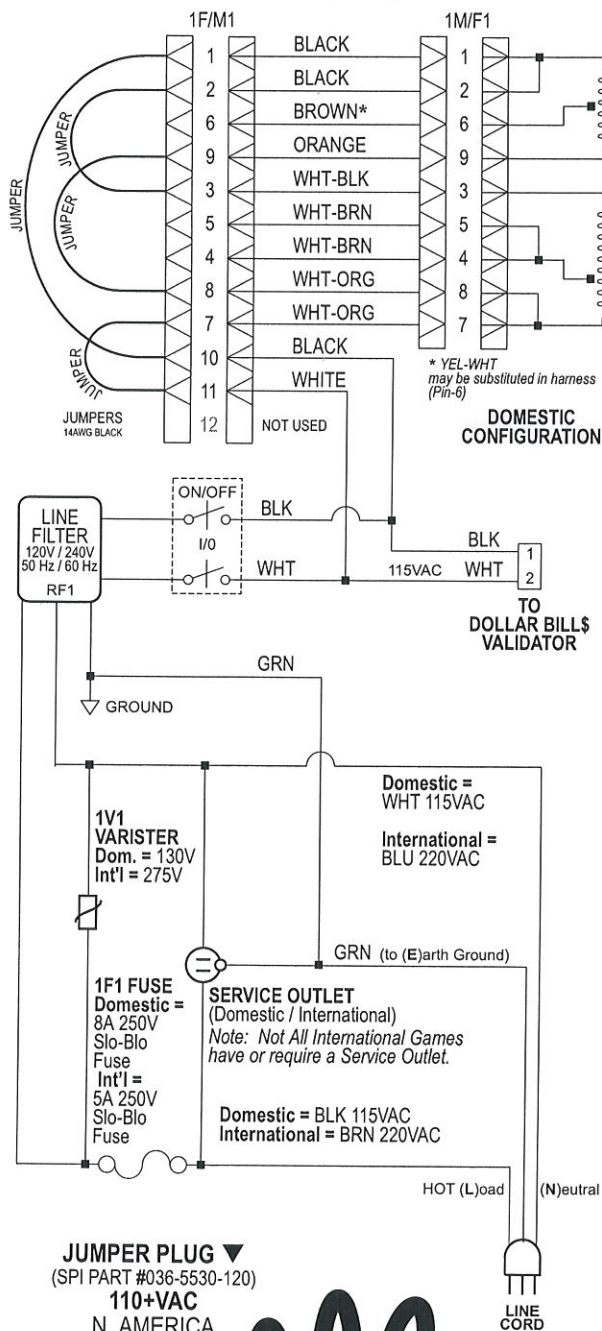
Typical Under-Playfield Fuses are rated:  
**3A 250v Slo-Blo**  
Do Not Over-Fuse

**Playfield Wiring**

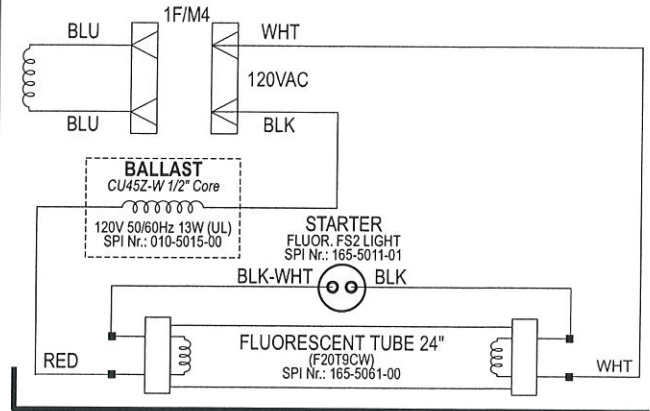
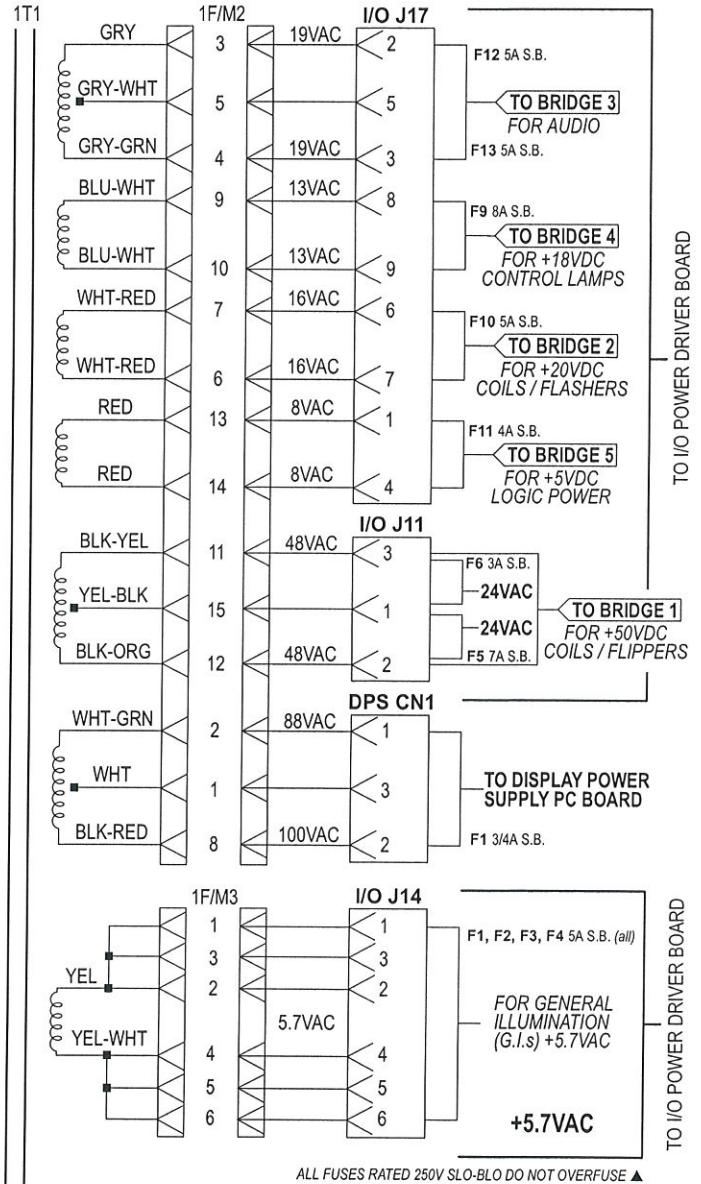
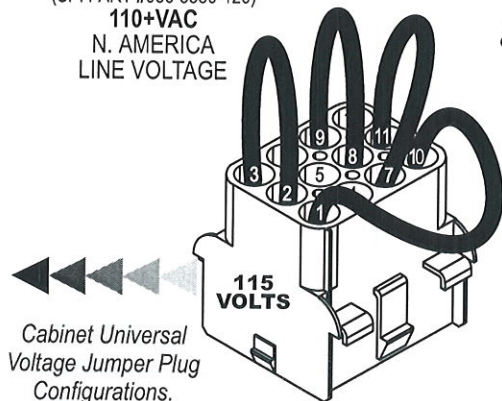
# Cabinet & Coin Door Wiring

# The Yellow Pages

## Transformer Power Wiring Diagram



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

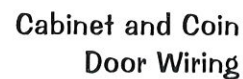


**FLUORESCENT TUBE, STARTER & BALLAST  
LOCATED IN THE BACKBOX**

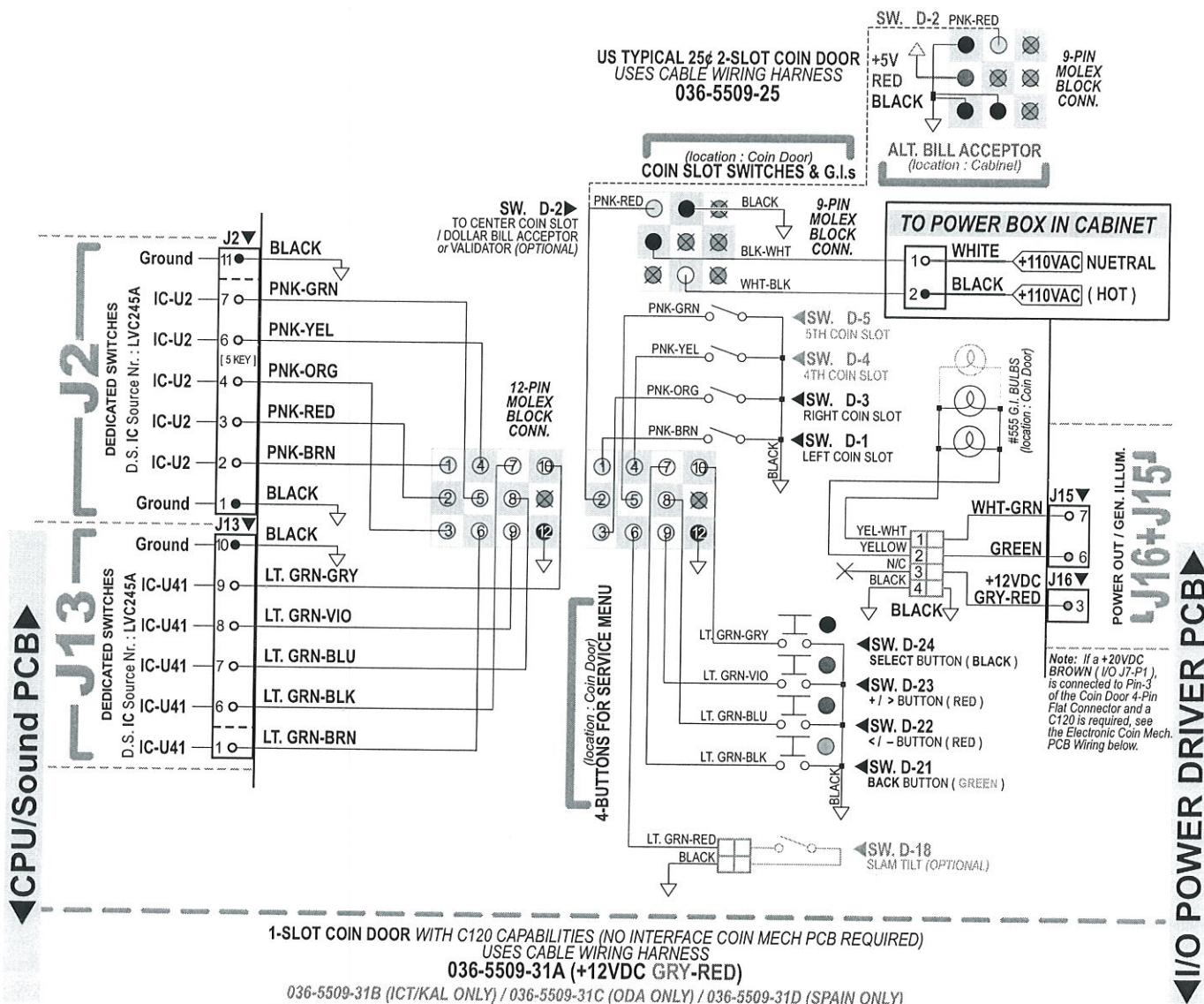
**Cabinet and Coin  
Door Wiring**



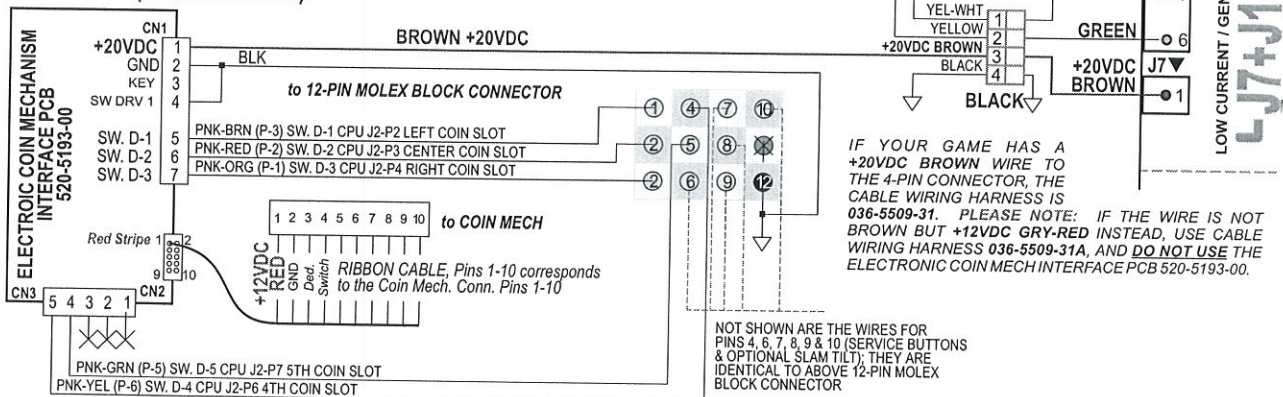
▶CPU/Sound PCB▶



## Coin Door Wiring Diagram



**IF YOUR GAME HAS AN ELECTRONIC COIN MECH. INTERFACE PC BOARD ( 520-5193-00 ) :**  
**1-SLOT COIN DOOR USE WITH C120 CAPABILITIES REQUIRING PCB 520-5193-00**  
USES CABLE WIRING HARNESS  
**036-5509-31 (S.A.M. SYSTEM)**

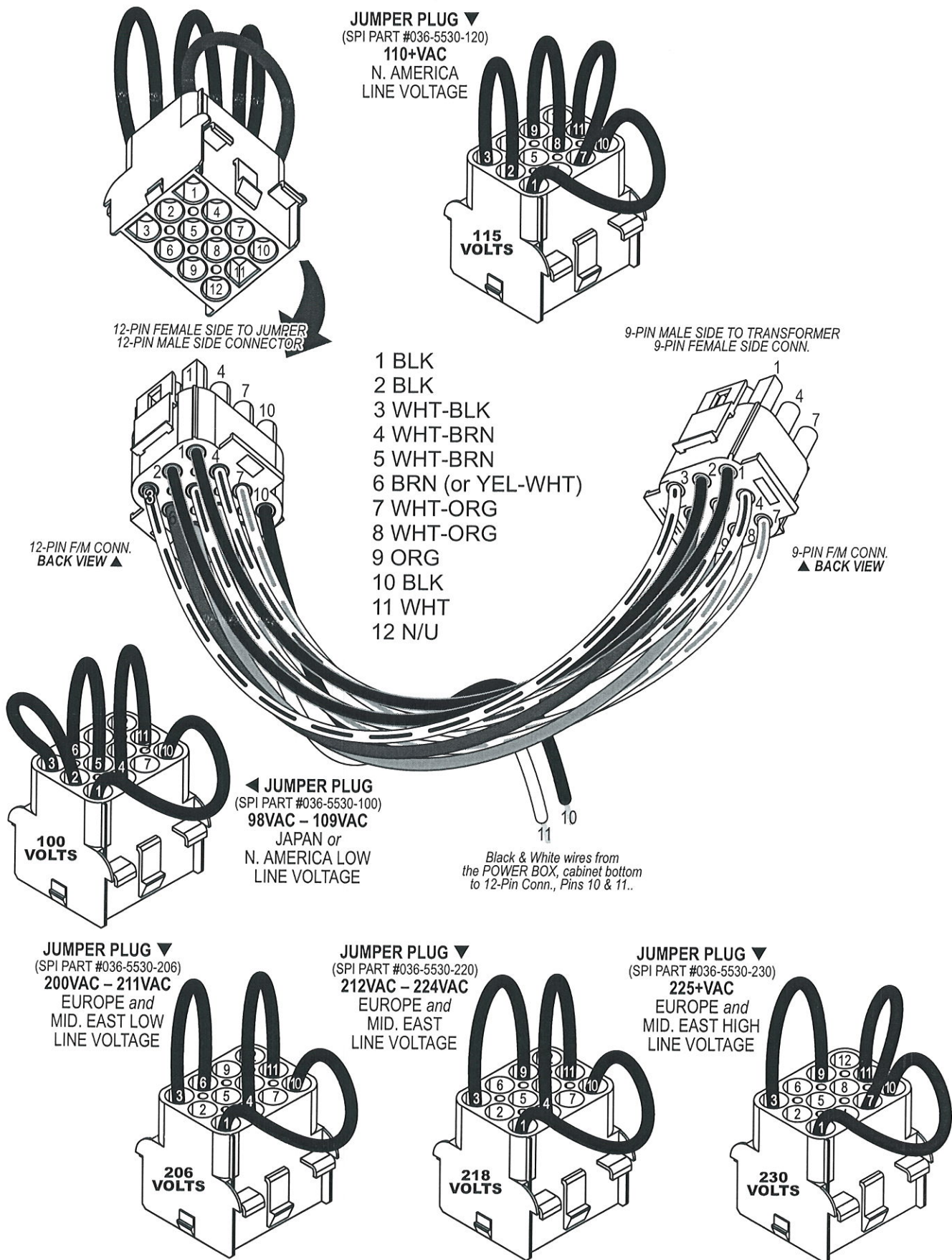


~ WIRING CONFIGURATION WILL VARY ACCORDING TO COUNTRY ~

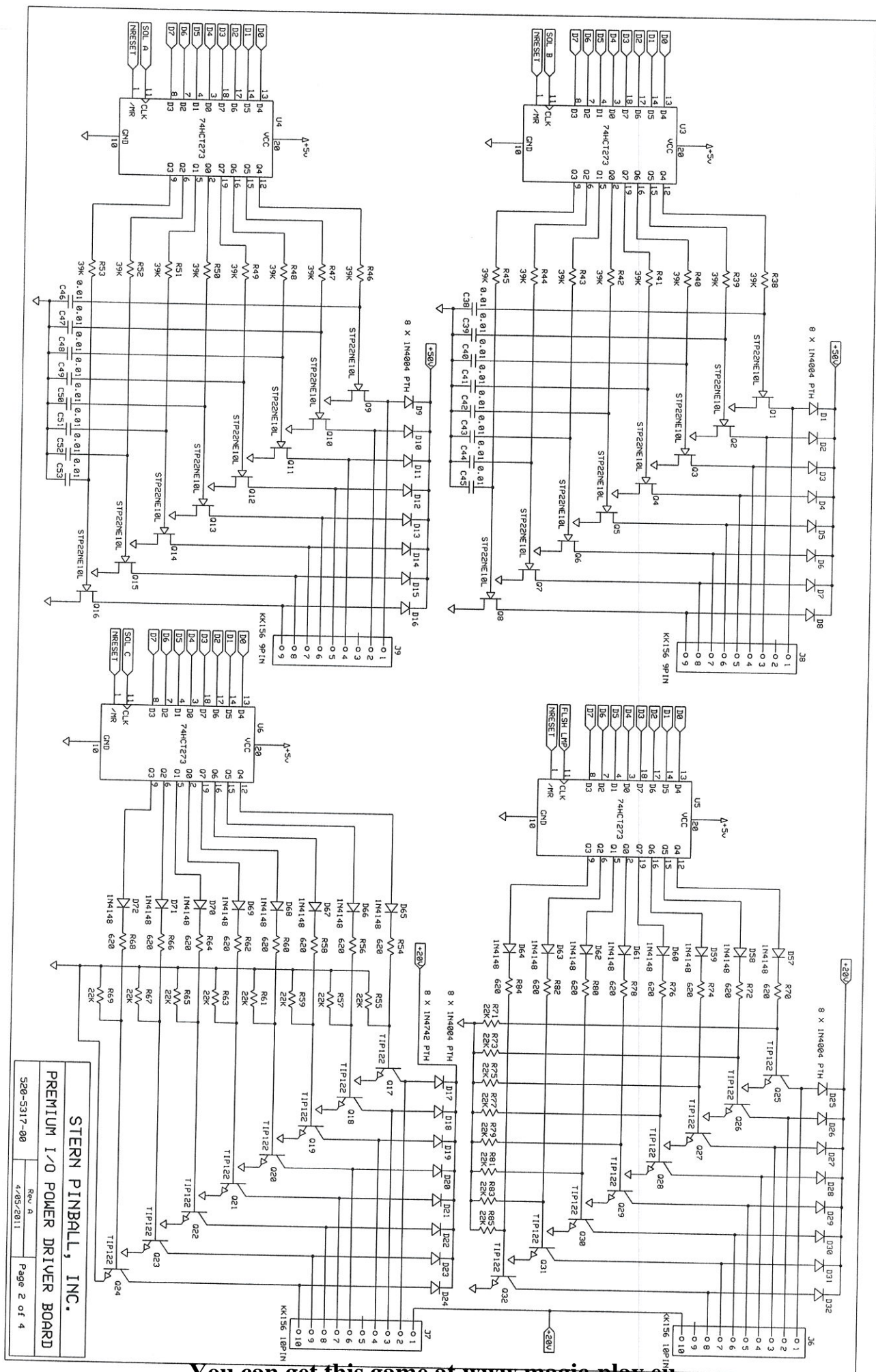
**Cabinet and Coin Door Wiring**



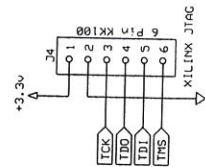
Cabinet Universal Voltage Jumper Plugs (for use with Universal AC Cable, 036-5530-00 ONLY)



Cabinet and Coin  
Door Wiring

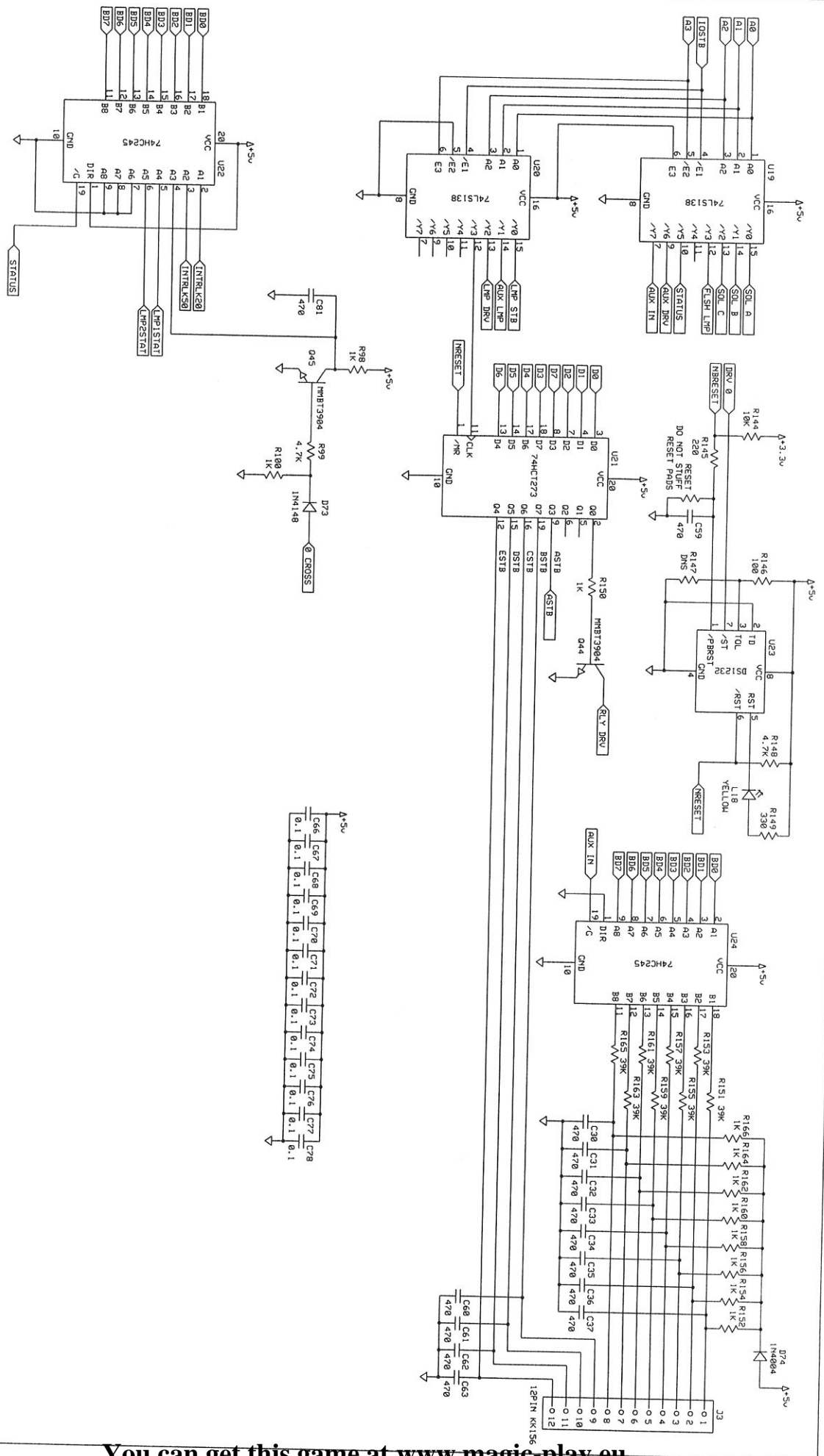






## PREMIUM I/O POWER DRIVER BOARD

Rev A  
4/05/2011



STERN PINBALL, INC.

PREMIUM I/O POWER DRIVER BOARD

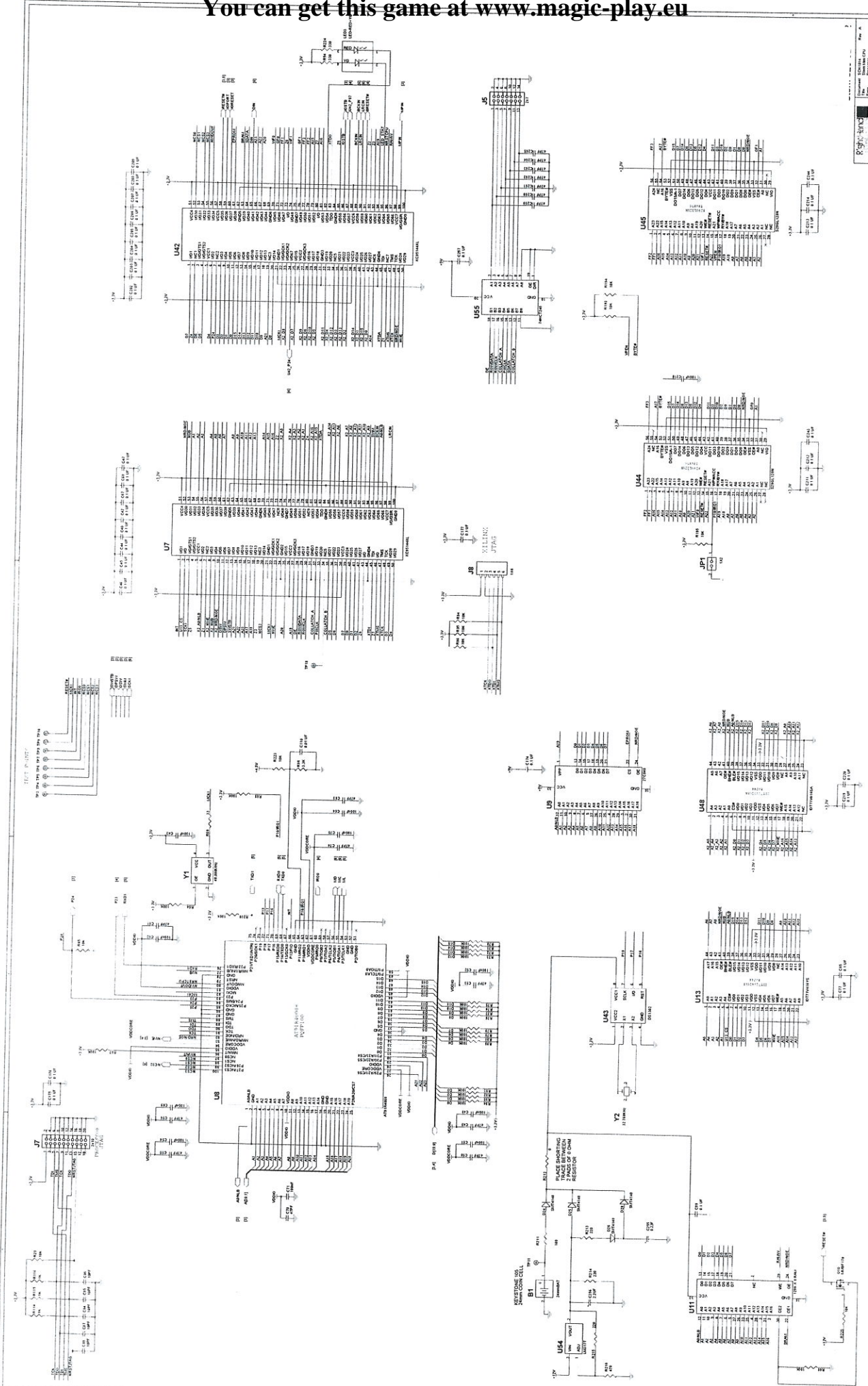
520-5317-00

Rev A

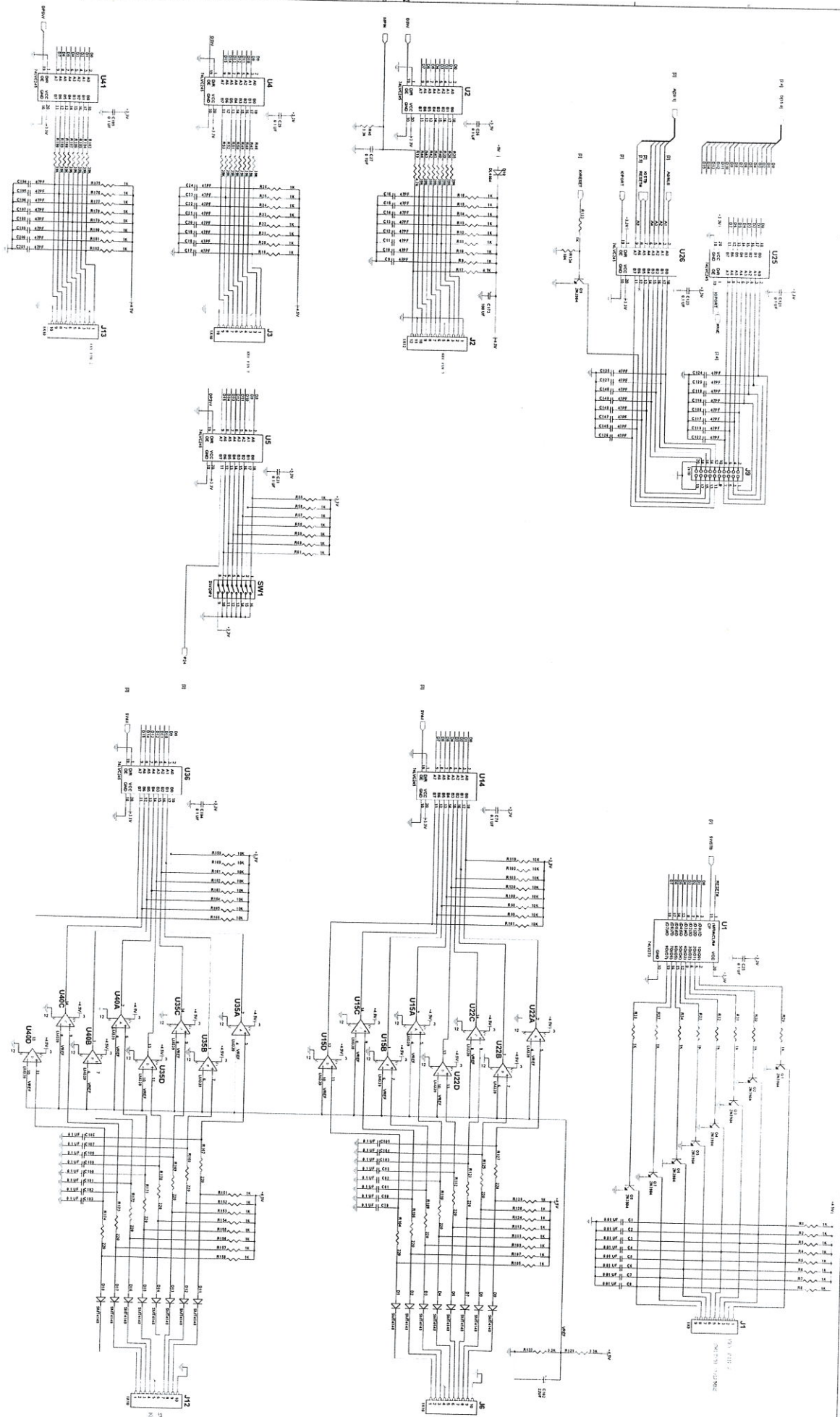
Page 4 of 4

574



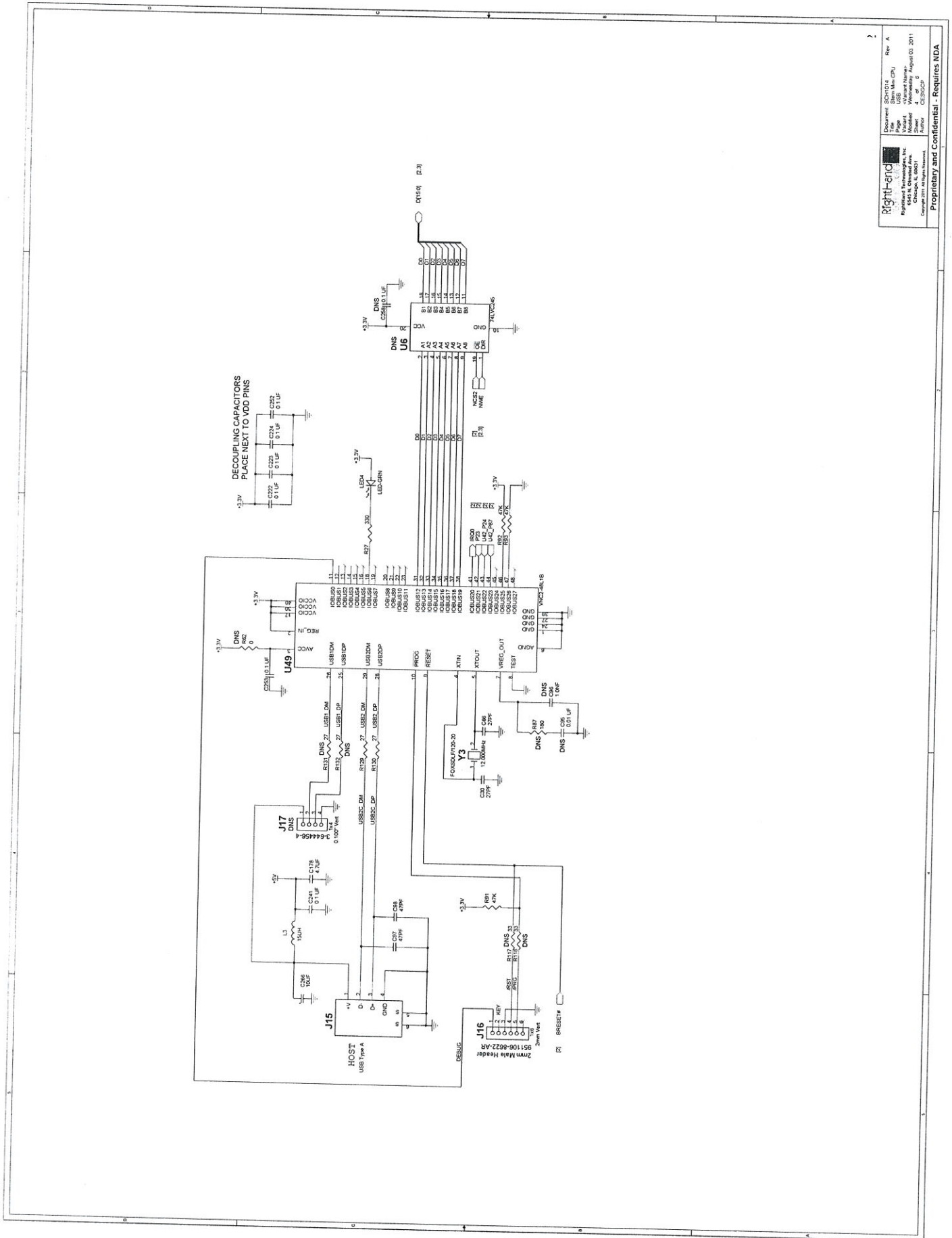


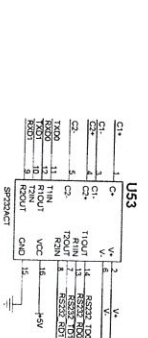
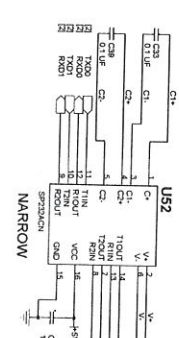
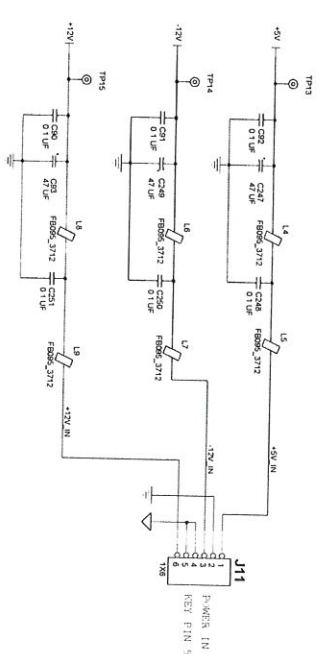
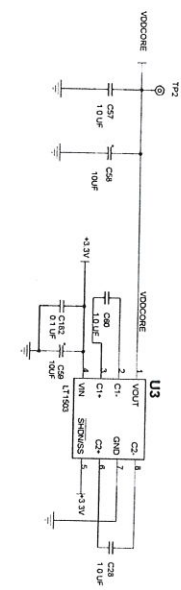
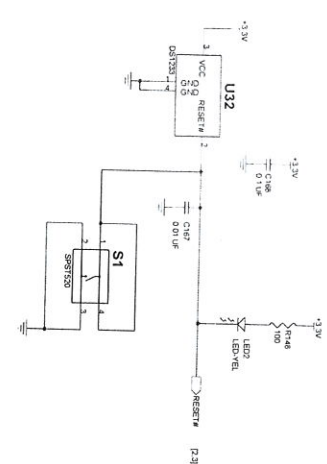
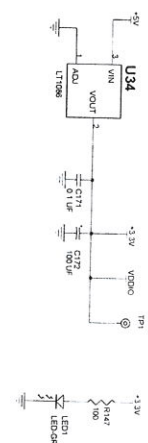
Property and Confidential - Register NDA



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 This document contains confidential information and is intended for internal use only. It is not to be distributed outside the company without prior approval of the management.



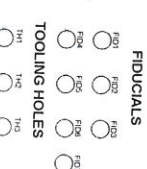
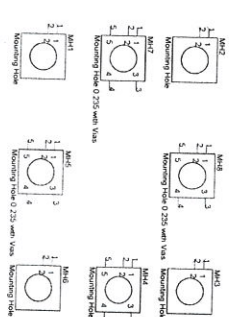




WIDE  
ALTERNATE FOOTPRINT

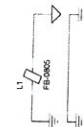
MOUNTING HOLES

GROUND POSTS



Right-Hand  
Proprietary and Confidential - Requires NDA





Copyright 2011 All Rights Reserved      A7909      CE SSGCP

**Proprietary and Confidential - Requires NDA**

# LASER SUPPLEMENTAL INFORMATION

The laser lamp in assembly 511-7512-00 has no serviceable components.

**NOTE:** The laser emits radiation in accordance with Class 2M. With the playfield glass in place, the laser emits radiation consistent with a Class 1 laser. The laser should never be operated with the playfield glass removed from the machine. Proper safety and handling precautions should be followed at all times.

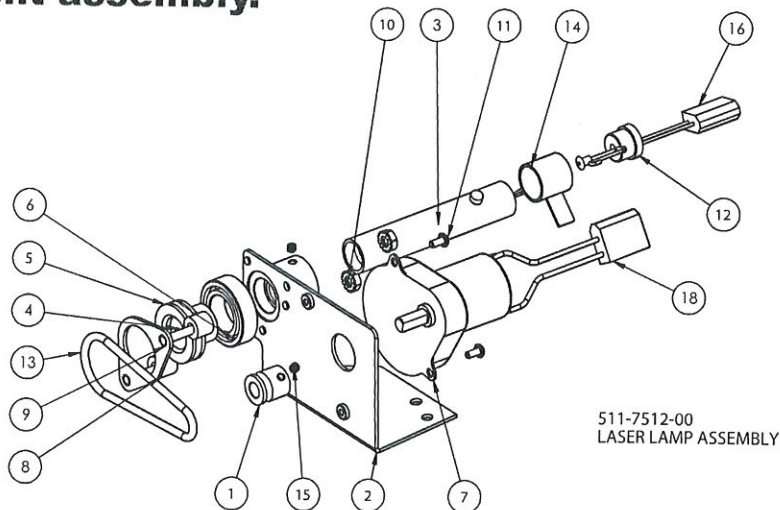
All laser radiation external to the game is in accordance with Laser Class 1.

**Laser class 1**

**Laser wavelength = 650nm**

**Laser power output = 390 $\mu$ W**

After the coin door has been opened and the glass has been removed, disconnect item 16 (laser power plug) before activating the service switch and performing any maintenance or repair to the game. Items 3, 4, 5, 6, 9, 10, 12 should never be removed from the assembly. If your laser lamp requires replacement, remove the entire assembly (511-7512-00) and return to Stern Pinball, Inc. for a replacement assembly.



**CAUTION:** Use of controls or adjustments or performance of procedures other than those specified herein may result in exposure to hazardous laser radiation.

CAUTION –  
CLASS 2M LASER RADIATION WHEN  
OPEN. DO NOT STARE INTO THE BEAM  
OR VIEW DIRECTLY WITH OPTICAL  
INSTRUMENTS.

820-8331-00

Complies with FDA performance  
standards for laser products  
except for deviations pursuant  
to Laser Notice No. 50, dated  
June 24, 2007

820-8330-00



## **S T E R N ® P I N B A L L , I N C . L I M I T E D W A R R A N T Y**

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**:

|  |                 |
|--|-----------------|
| <b>Printed Circuit Boards PCBs (game logic):</b> | <b>2 months</b> |
| <b>Dot Matrix Display PCB:</b>                   | <b>9 months</b> |

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.


## **C A U T I O N S , W A R N I N G S & N O T I C E S**

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**

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Customary  
Inch Ruler

You can get this game at [www.magic-play.eu](http://www.magic-play.eu)



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## Technical Support & Parts Sales

2002, 2003 (2-Disc Set) 2004 (2-Disc Set) & 2005 (2-Disc Set) & 2006 (3-Disc Set) CD-ROMs are now available! *Click year for more info!*

We at STERN Pinball continuously strive to provide our distributors, operators, and game owners with the best technical support possible. We, therefore, have provided you with the service options listed below. If your game requires parts and/or service, please contact your nearest STERN Pinball distributor (See our [Distribution List](#)). For any additional assistance, contact our technical service staff at 800-KICKERS (800-542-5377) or by e-mail ( [parts.service@sternpinball.com](mailto:parts.service@sternpinball.com) ).

If your STERN Pinball is in need of repair, please contact your nearest [STERN Distributor](#).

### Pinball Game Parts

- **2006+** 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*)

### Schematics, Theory of Operation and Troubleshooting Tips

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

### Service Bulletins

- Detailing Technical Information, Tips, FYIs, Notices and Updates

### NTE Semi-Conductor Cross Reference

### 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*)

### Coinage Cards

- Offering a range of Coinage Cards for download
- Country Setting, Pricing Scheme, Dip Switch Setting (*opens a pop-up window*)
- Custom Pricing Demonstration (*for S.A.M. System*)

### 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)

Track Your Order Via UPS Non-USA, specify your location  
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Visit our website [www.sternpinball.com](http://www.sternpinball.com) for Pinball & Redemption game information!

Click  to view, print or download all of the above!

**HELP US, HELP YOU!** If you have any suggestions, questions, need technical advice, find errors or have comments, contact us through our website or call!

This Game Service Manual and all other documents relating to this product, playfield components, features, rules, programming and operation are subject to change without notice (Service Bulletins, if applicable, available through our website).



Games shipped factory direct to Europe from Stern Pinball, Inc. are CE approved and will have an "E" prefix attached to the Serial Number.

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