

**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 Avatar Pinball) ..... 502-6002-B1

*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 Avatar Pinball) ..... 502-6003-B1

*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 Avatar Pinball) ..... 803-5000-B1

*Plastics Kit includes: Plastic Sets (830-6113-XX)*

Decals\*Kit (for Avatar Pinball) ..... 802-5000-B1

*Decals Kit includes: Decal Set (820-6567-XX)*

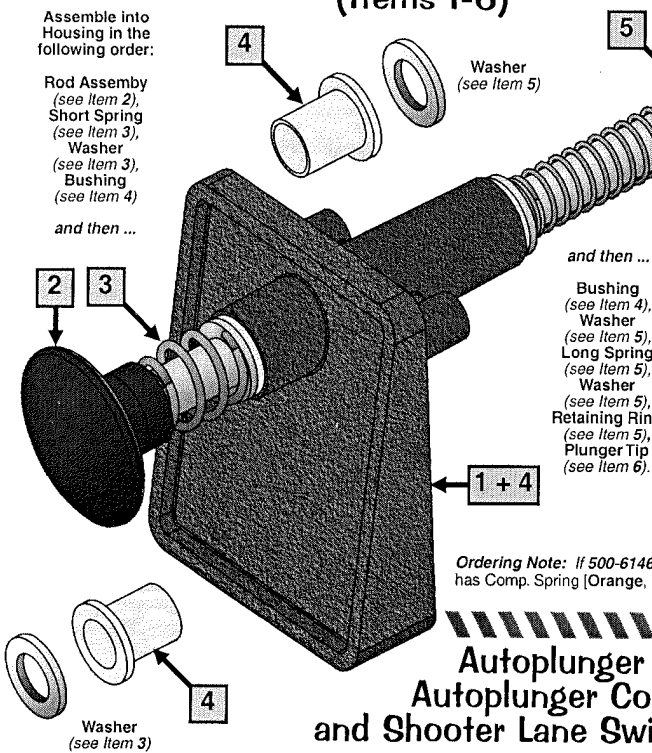
Mylar\*Kit (for Avatar Pinball) ..... 802-5001-B1

*Mylar Kit includes: Pop Bumper (820-6570-00)*

**\*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.

**Assemblies & Ramps**

# Ball Shooter (Plunger) Assembly, 500-6146-00-04 (Items 1-6)



Securing Hardware for Items 3 & 5 are also shown separated from the Ball Shooter (Plunger) Assembly for clarity.

Nr.	BALL SHOOTER PARTS	QTY.	SPI PART Nr.
1	Housing Asm. + Bushings (Item 4)	1	535-5067-02
Item 1 is secured to the Cabinet by: Support Plate [not included with Item 1 or Assembly] (535-5027-00), #10-32 X 1/2" PPH (Sems) Zinc TF (Qty. 3) (237-6033-00), #10 Split Lock Washer (Qty. 3) (244-5003-00) and #6 X 1/2" HWH AB (Zinc) Red (Qty. 2) (234-5001-02)			
2	Rod Assembly (with <b>Black Knob</b> )	1	515-6557-00
3	Comp. Spring (Short) ( <b>Knob Side</b> )	1	266-5010-00
Item 3 is sandwiched onto Item 2 (Front Side) between the knob and by: Washer, 3/8" I.D. X 5/8" O.D. X 1/16" (242-5014-00)			
4	Bushing, 3/8" I.D. (Oilite)	2	280-5010-00
Item 4 is included with Item 1, Housing, (1 @ the front; 1 @ the back) as shown.			
5	Comp. Spring (Long) [ <b>GREEN</b> , .035" $\phi$ ]	1	266-5001-04
Item 5 is sandwiched onto Item 2 (Rubber Tip Side) by: Washer, 3/8" I.D. X 5/8" O.D. X 1/16" (Qty. 1/per side) (242-5014-00) and Retaining Ring, 3/8" $\phi$ Shaft (270-5012-00)			
6	Rubber [Plunger] Tip (Black 50 Duro)	1	545-5276-00

Ordering Note: If 500-6146-00-04 is unavailable, order the individual part(s) actually required. ... Identical to 500-6146-00-07 has Comp. Spring [Orange, .038"  $\phi$ ] (266-5001-07) or 500-6146-00-05 has Comp. Spring [Blue, .031"  $\phi$ ] (266-5001-05).

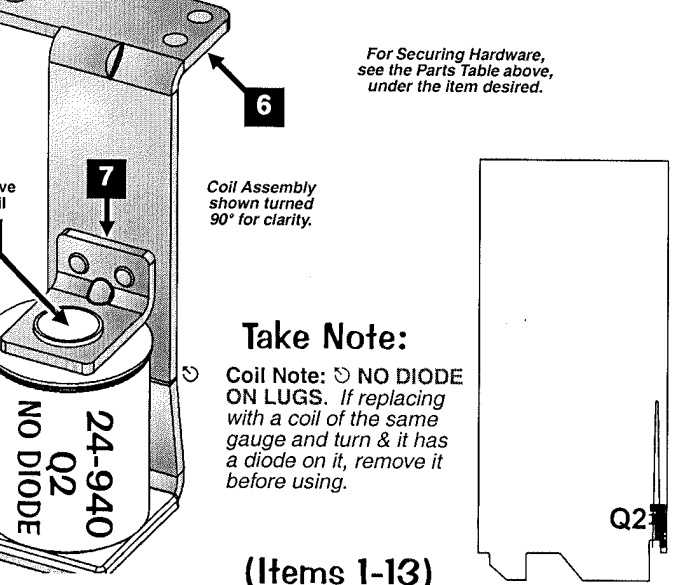
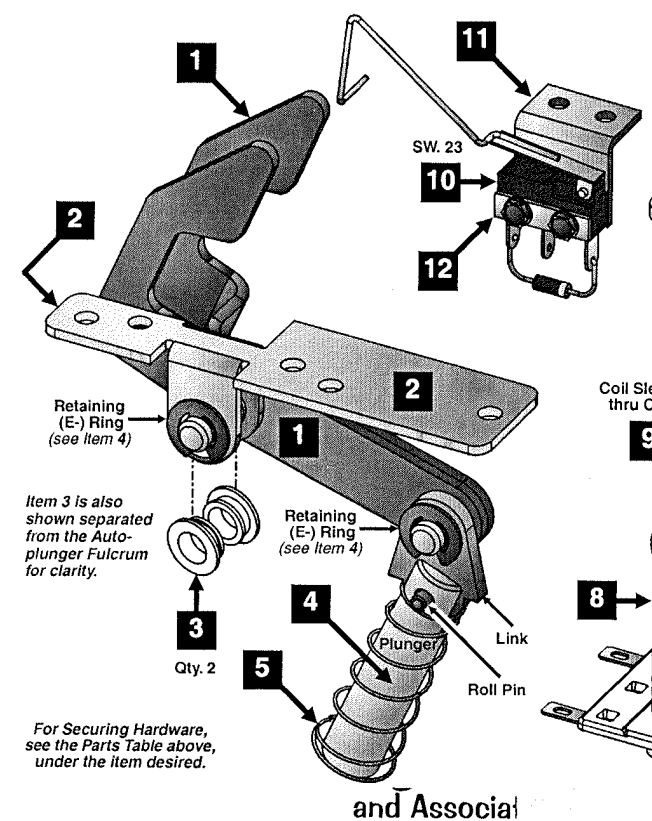
# Autoplunger Arm Weld Asm., 500-6091-00 (Items 1-5), Autoplunger Coil Assembly, 500-6092-02-ND (Items 6-9) and Shooter Lane Switch Assembly, 500-6096-00 (Items 10-12)

Nr.	AUTOPL. ARM WELD PARTS	QTY.	SPI PART Nr.
1	Arm Weld Assembly	1	515-6526-00
Item 1 is secured to Item 2 by: Retaining Ring, 1/4" $\phi$ Shaft (Qty. 1) (270-5002-00)			
2	Autoplunger Fulcrum	1	535-7697-00
3	Nyliner, 1/4" (Thomson #411-FF)	2	545-5423-00
4	Plunger & Link Assembly	0	511-5183-00
Item 4 is secured to Item 1 by: Retaining Ring, 1/4" $\phi$ Shaft (Qty. 1) (270-5002-00) For Individual Items use: Plunger 1.81" Lg. (530-5025-05), Plunger Link (545-5293-00) and Roll Pin 1/8" $\phi$ x 5/8" Lg. (251-5008-00)			
5	Compression (Return) Spring	1	266-5020-00
(ASM. REF. 500-6091-00, Items 1-5)			

Nr.	AUTOPLNGR. COIL PARTS	QTY.	SPI PART Nr.
6	Autoplunger Coil Bracket Assembly	1	515-6527-00
Items 1 & 6 are secured below the P/F by: #8 X 1/2" SHWH AB (Zc.) (Qty. 9) (234-5101-00)			
7	Coil Retainer Bracket	1	535-5203-03
Item 7 is secured to Item 6 by: #8-32 X 1/4" PPH MS (Sems) Zinc (Qty. 2) (232-5300-00)			
8	Coil, 24-940 [NO DIODE]	1	090-5036-ND
COIL DOES NOT REQUIRE A DIODE. SEE $\odot$ COIL NOTE BELOW FOR DETAILS.			
9	Coil Sleeve	1	545-5031-00
(ASM. REF. 500-6092-02-ND, Items 6-9)			

Nr.	SWITCH PARTS	QTY.	SPI PART Nr.
10	Switch (for Shooter Lane)	1	180-5157-00
Switch has a Diode (1N4004) (112-5003-00). Can be replaced with (1N4001) (112-5001-00).			
11	Switch Mounting Bracket	1	535-6173-00
Item 11 is secured to Playfield by: #6 X 1/2" SLT HWH AB (Zinc) (Qty. 2) (234-5001-02)			
12	Switch Body Protect Plate	14	535-6539-00
Item 12 is secured to Items 10-11 by: #2-56 X 1/2" Unslotted Ser. HWH #4 Head TR3 Black (Qty. 2) (237-5937-02) and #2-56 Hex Nut (Qty. 2) (240-5301-0)			
(ASM. REF. 500-6096-00, Items 10-12)			

Assemblies & Ramps



For Securing Hardware, see the Parts Table above, under the item desired.

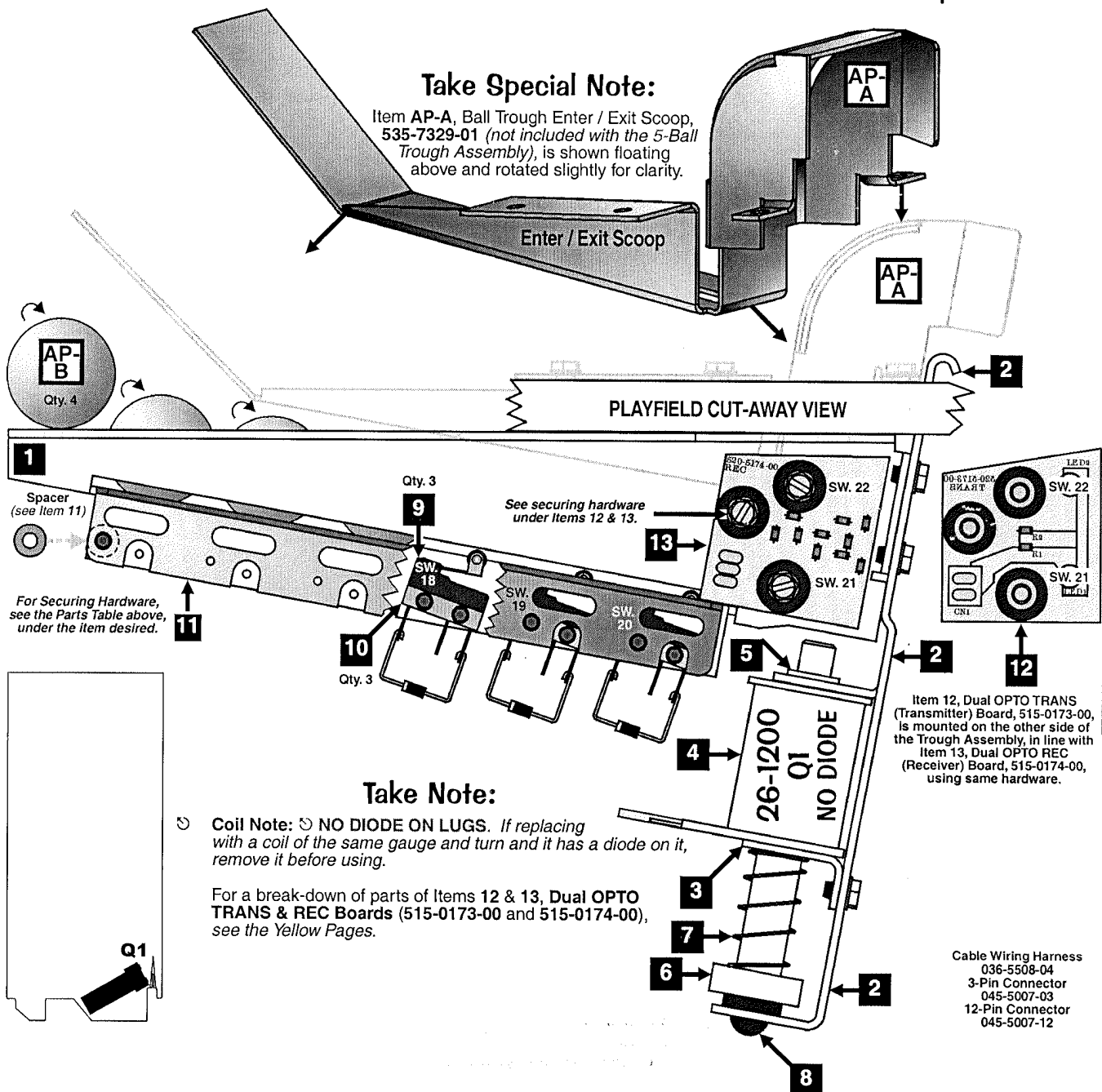
**Take Note:**  
Coil Note:  $\odot$  NO DIODE ON LUGS. If replacing with a coil of the same gauge and turn & it has a diode on it, remove it before using.

(Items 1-13) Table Below.

## 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).

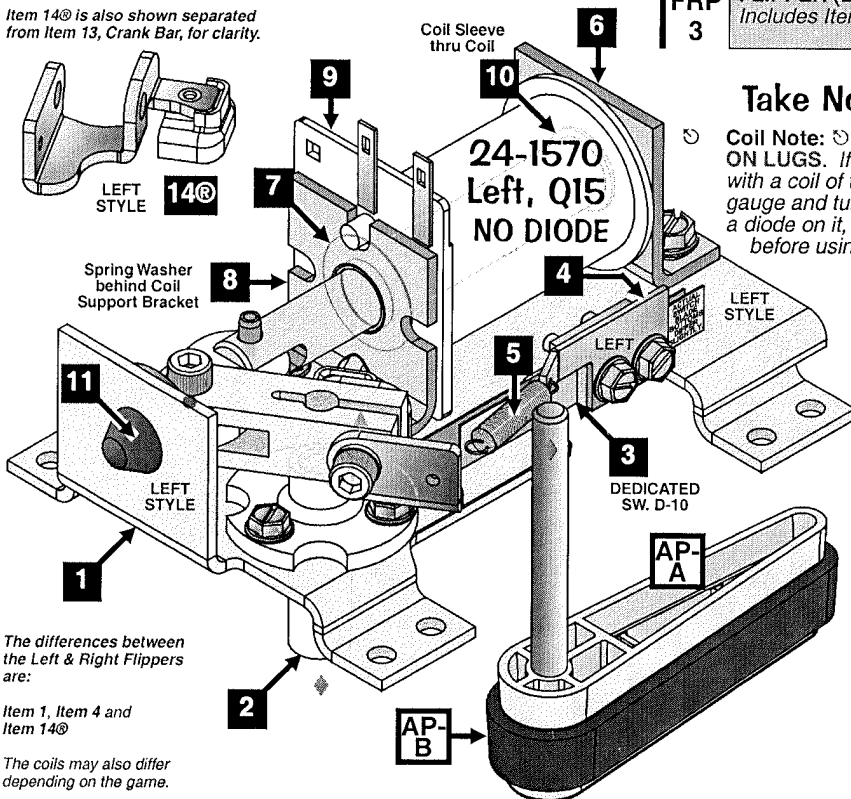
Nr.	4-BALL TROUGH PARTS	QTY.	SPI PART Nr.	Nr.	4-BALL TROUGH PARTS	QTY.	SPI PART Nr.
1	Ball Trough Outhole Mounting Bracket	1	515-6580-01	11	Trough Ball Guide Plate	1	535-7801-00
Item 1 is secured below the playfield by: #8 X 1/2" SHWH AB (Zc.) (Qty. 4) (234-5101-00)				Item 11 is secured to Item 1 by: 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.							
5	Coil Sleeve (Short) (Formost #10-7077)	1	545-5076-01	ASSOCIATED PARTS ARE NOT INCLUDED WITH THE ABOVE ASSEMBLY.			
6	Steel & Nylon Plunger Asm. (3.57")	1	515-7309-01	Nr.	ASSOCIATED PART(S)	QTY.	SPI PART Nr.
7	Compression (Return) Spring	1	266-5020-00	AP-A	Ball Trough Enter / Exit Scoop	1	535-7329-01
8	Rubber Bumper (Grommet)	1	545-5105-00	Item AP-A secured to the playfield by: #8 X 1/2" SHWH AB (Zinc) (Qty. 4) (234-5101-00).			
9	Micro Switch (Roller Actuator, Lite-Force)	3	180-5119-02	AP-B	Steel Balls (1-1/16" ø)	4	260-5000-00
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, 500-6543-15-ND (Items 1-15) and Associated Parts: Yellow Flipper Bat & Shaft Asm., 515-5133-06-06 (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) 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 (Serr) 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, 24-1570 [ NO DIODE ]	1	090-5025-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) 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®

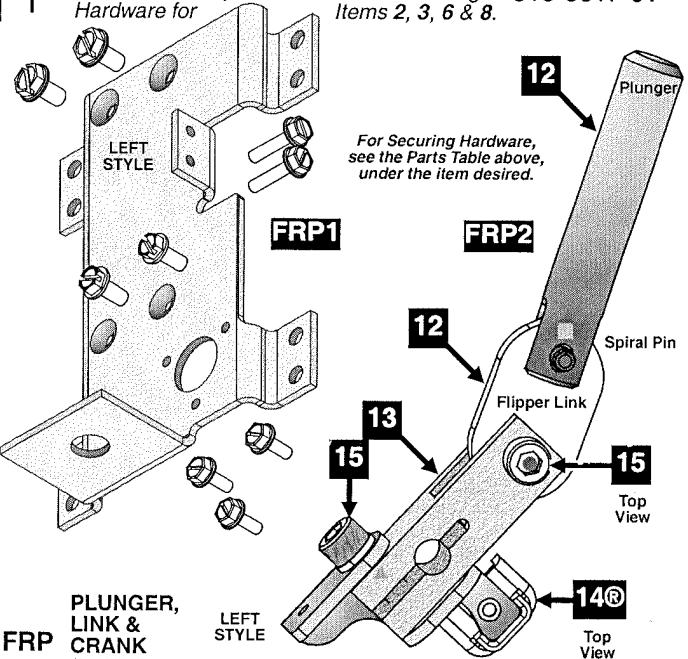
The coils may also differ depending on the game.

ASSOCIATED PARTS ARE NOT INCLUDED WITH THE ABOVE ASSEMBLY.

Nr.	ASSOCIATED PART(S)	QTY.	SPI PART Nr.
AP-A	White Flipper Bat & Shaft Asm. (Non-Knurled End) <u>without Rubber Ring</u>	1	515-5133-08-06
AP-B	Large Flipper Red Rubber Ring	1	545-5277-22

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

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

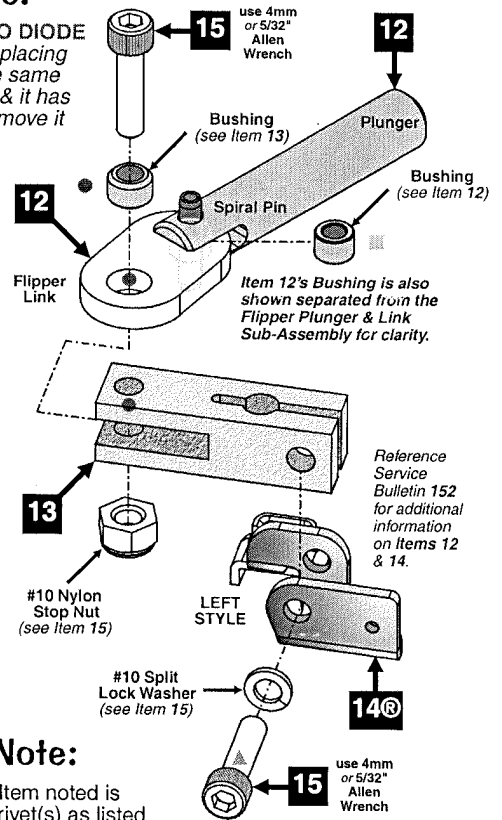


**FRP 2 PLUNGER, LINK & CRANK (LEFT STYLE) ASSEMBLY:** Includes Items 12, 13, 14 & 15 (comes assembled). **515-7203-01**

**FRP 3 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.



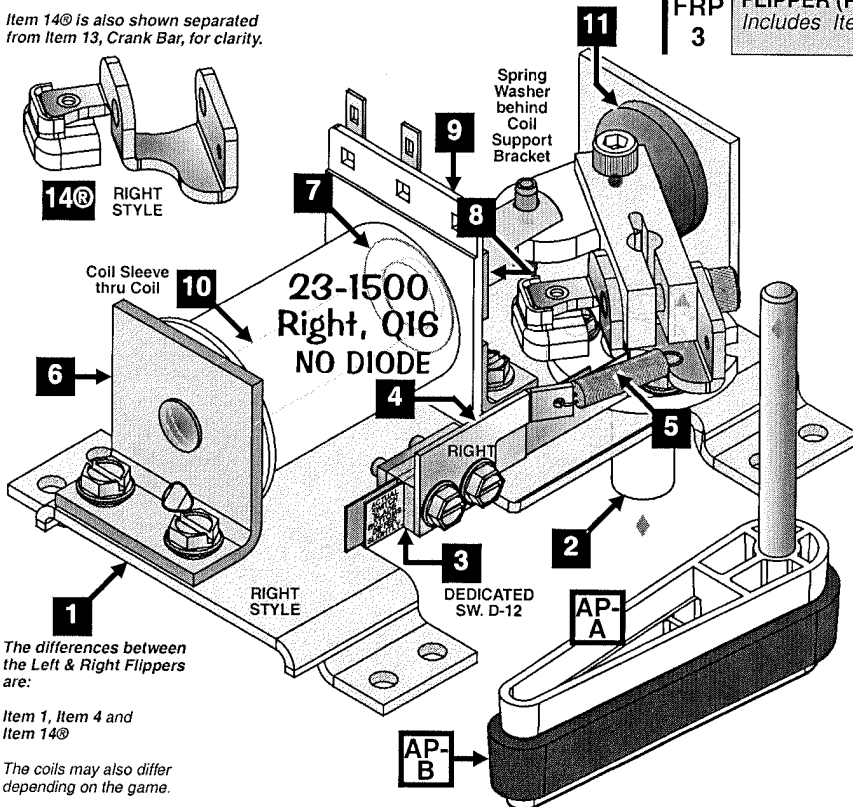
### Take Note:

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

# Flipper (Right) Assembly, 500-6543-05-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) 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 (Serr) 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, 23-1500 [ NO DIODE ]	1	090-5062-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 (240-5203-00) and #10 Split Lock Washer (Qty. 1) Switch Actuator Side Only (244-5003-00) 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®

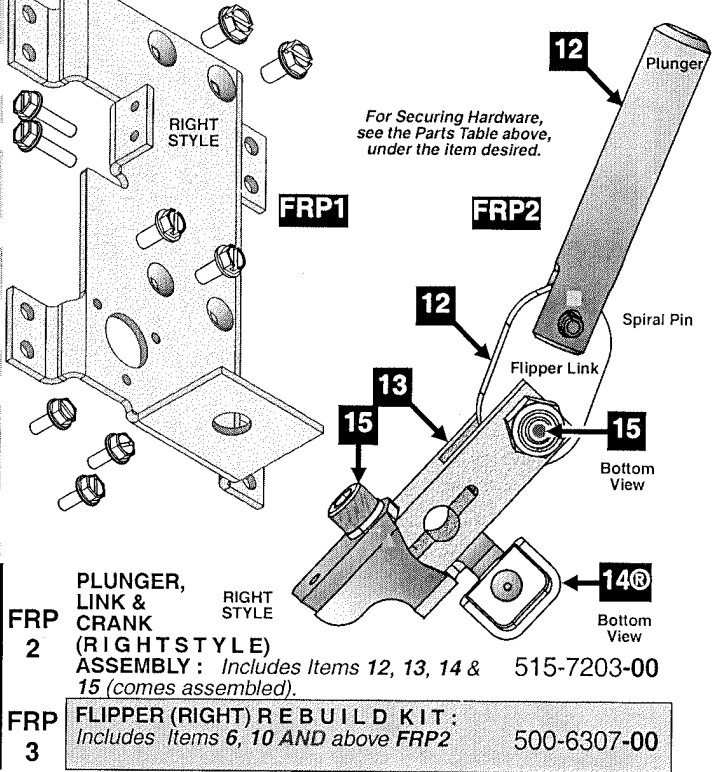
The coils may also differ depending on the game.

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) without Rubber Ring	1	515-5133-08-06
AP-B	Large Flipper Red Rubber Ring	1	545-5277-22

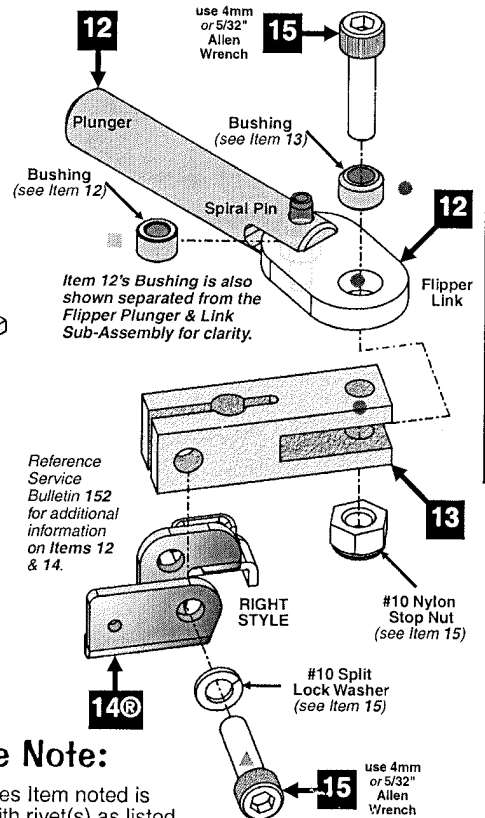
## Flipper Rebuild Parts for Easier Installation, Save \$:

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



**FRP 2 PLUNGER, LINK & CRANK (RIGHT STYLE) ASSEMBLY:**  
Includes Items 12, 13, 14 & 15 (comes assembled). 515-7203-00

**FRP 3 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.

Sec. 4: Drawings ...

# Slingshot (Lower Left & Right) Assemblies, 500-5849-00-ND (Qty. 2) (Items 1-9)

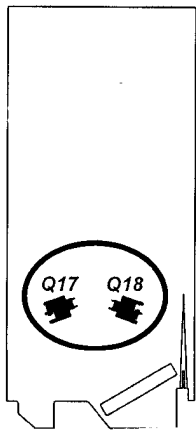
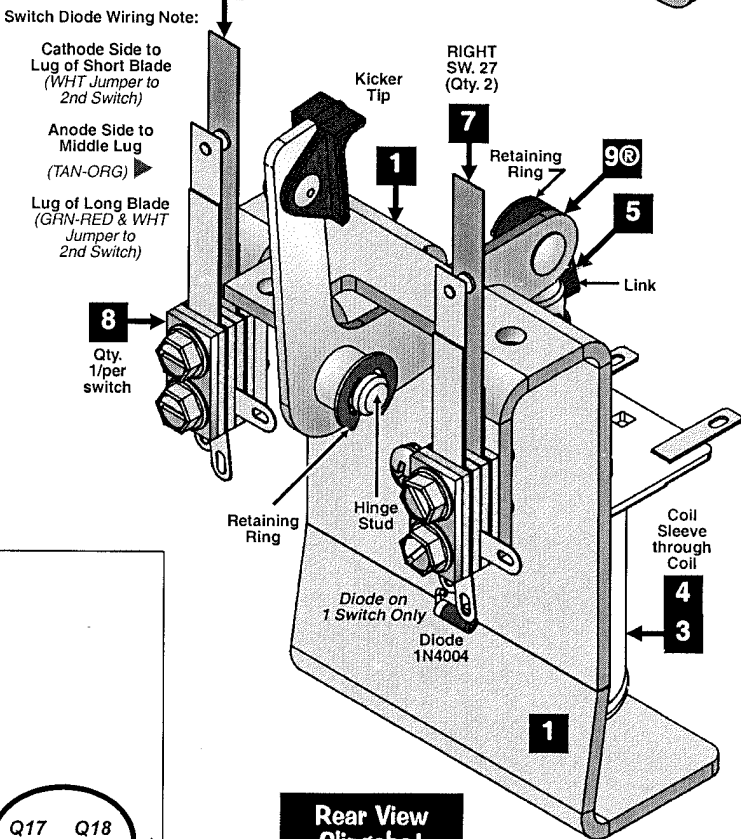
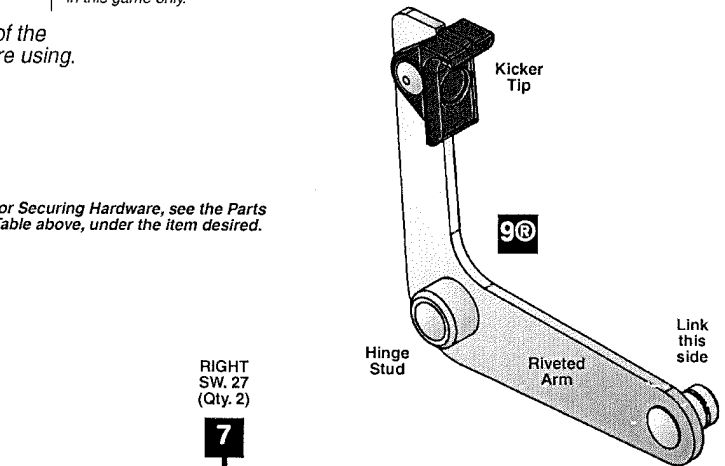
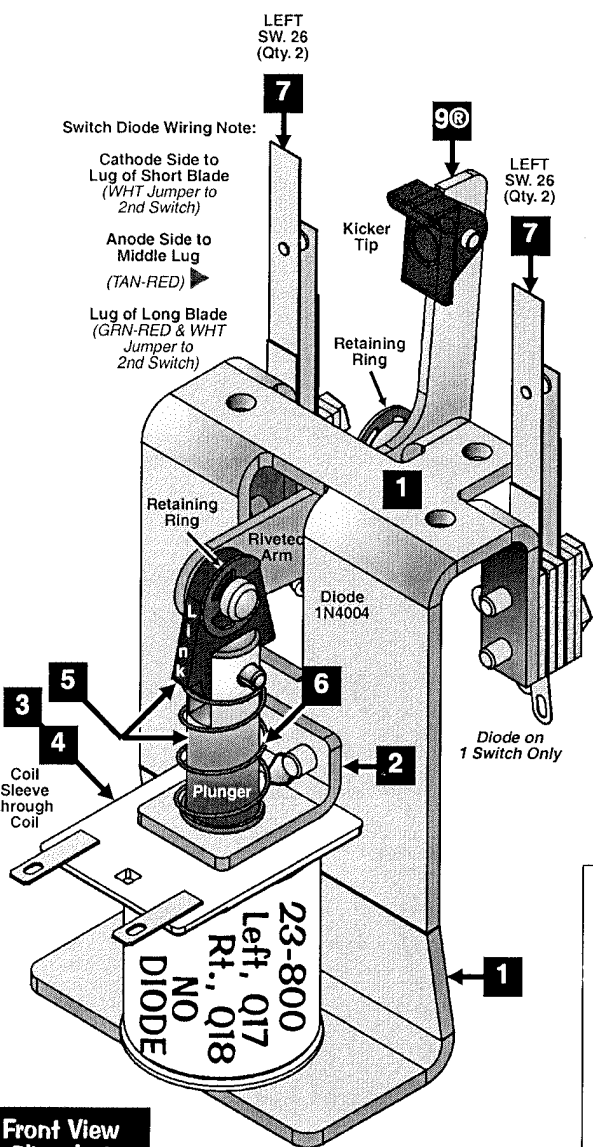
Nr.	SLINGSHOT PARTS	QTY.	SPI PART Nr.	Nr.	SLINGSHOT PARTS	QTY.	SPI PART Nr.
1	Slingshot Bracket Assembly	1/per	515-5339-01	6	Compression (Return) Spring	1/per	266-5020-00
Item 1 is secured below the playfield by: #8 X 1/2" SHWH AB (Zc.) (Qty. 3) (234-5101-00)				7	Slingshot Stack (Blade) Switch	2/per	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, 23-800 [ NO DIODE ]	1/per	090-5001-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-rewiring): Arm (515-5341-01), Kicker Tip (545-5216-01) and Rivet, 1/8" ø x 1/4" Lg. (249-5003-00)			
5	Plunger & Link Assembly	1/per	515-5338-00	The Riv. Arm is secured to Item 1 by: Retaining Ring, 1/4" ø Shaft (Qty. 1) (270-5002-00)			
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)				Ordering Note: If 515-5340-01 is unavailable, order the individual part(s) actually required.			
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 500-5849-00R-ND with the exception of Item 3, which has the coil rotated as shown in the drawing on the next page. This assembly is identical to 500-5849-ND-A4 with the exception of Item 1, which is modified to fit the space constraints in this game only.			

## 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.

For Securing Hardware, see the Parts Table above, under the item desired.



Sec. 4: Drawings ...

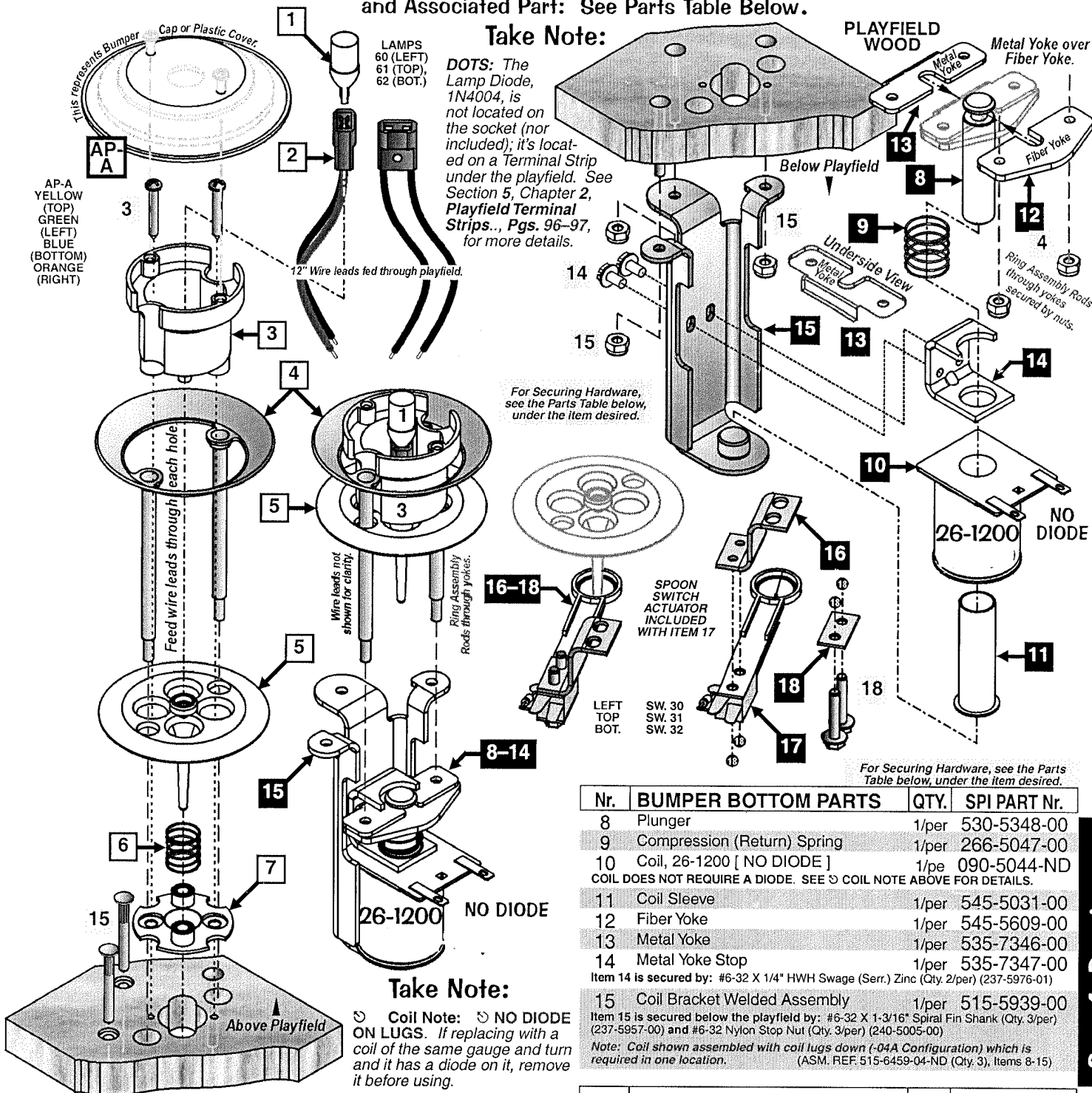
Front View Slingshot (Left)

Rear View Slingshot (Right)

# Left, Top & Bottom Bumper Top, Bottom & Switch Individual Parts Only (Items 1-18) and Associated Part: See Parts Table Below.

**Take Note:**

**DOTS:** The Lamp Diode, 1N4004, is not located on the socket (nor included); it's located on a Terminal Strip under the playfield. See Section 5, Chapter 2, Playfield Terminal Strips., Pgs. 96-97, for more details.



**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.

Nr.	BUMPER BOTTOM PARTS	QTY.	SPI PART Nr.
8	Plunger	1/per	530-5348-00
9	Compression (Return) Spring	1/per	266-5047-00
10	Coil, 26-1200 [ NO DIODE ]	1/pe	090-5044-ND
COIL DOES NOT REQUIRE A DIODE. SEE ☉ COIL NOTE ABOVE FOR DETAILS.			
11	Coil Sleeve	1/per	545-5031-00
12	Fiber Yoke	1/per	545-5609-00
13	Metal Yoke	1/per	535-7346-00
14	Metal Yoke Stop	1/per	535-7347-00
Item 14 is secured by: #6-32 X 1/4" HWH Swage (Serr.) Zinc (Qty. 2/per) (237-5976-01)			
15	Coil Bracket Welded Assembly	1/per	515-5939-00
Item 15 is secured below the playfield by: #6-32 X 1-3/16" Spiral Fin Shank (Qty. 3/per) (237-5957-00) and #6-32 Nylon Stop Nut (Qty. 3/per) (240-5005-00)			
Note: Coil shown assembled with coil lugs down (-04 Configuration) which is required in one location. (ASM. REF. 515-6459-04-ND (Qty. 3), Items 8-15)			

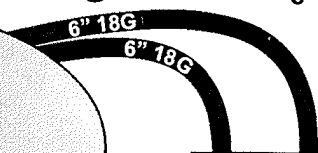
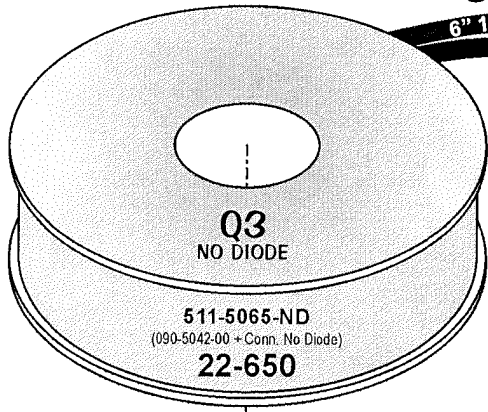
Nr.	BUMPER TOP PARTS	QTY.	SPI PART Nr.
1	LED Module (WHT) (6.3v) Wedge Base	1	112-5024-08
2	Wedge Base Socket	1	077-5206-00
3	Bumper Body	1/per	545-5197-00
Item 3 is secured above the P/F by: #5 X 7/8" PRH AB (Zinc) (Qty. 2/per) (237-5826-00)			
4	Ring Assembly	1/per	515-5085-00
Item 4 is secured by: #6-32 Nylon Stop Nut (Qty. 2/per) (240-5005-00)			
5	Bumper Skirt (Switch Actuator)	1/per	545-5607-00
6	Bumper Skirt Compression Spring	1/per	266-5048-00
7	Bumper Base	1/per	545-5195-00
(ASM. REF. 515-6459-01L (Qty. 3), Items 1-7; 515-6459-01L-A4 (Qty. 1), Items 5 Diff.)			
The Top & Bottom Assemblies are secured together by hardware noted in Item 4.			

Nr.	BUMPER SWITCH PARTS	QTY.	SPI PART Nr.
16	Switch Bracket	1/per	535-7342-00
Item 16 is secured by: #8 X 1/2" HWH AB (Zinc) (Qty. 2/per) (234-5101-00)			
17	Bumper Stack (Blade) Switch Assy.	1/per	180-5015-04
Included with Item 17: Spoon Switch Actuator (545-5610-02). Switch has a Diode (1N4004) (112-5003-00). Can be replaced with (1N4001) (112-5001-00).			
18	Switch Body Protect Plate	1/per	535-7344-00
Items 17 & 18 are secured by: #6-32 X 3/4" HWH Swage (Serr) Zc. (Qty. 2) (237-5976-05) Can substitute Item 17 with 180-5015-05 (ASM. REF. 515-6459-09/R (Qty. 3), Items 16-18)			
ASSOCIATED PARTS ARE NOT INCLUDED WITH THE ABOVE ASSEMBLIES.			

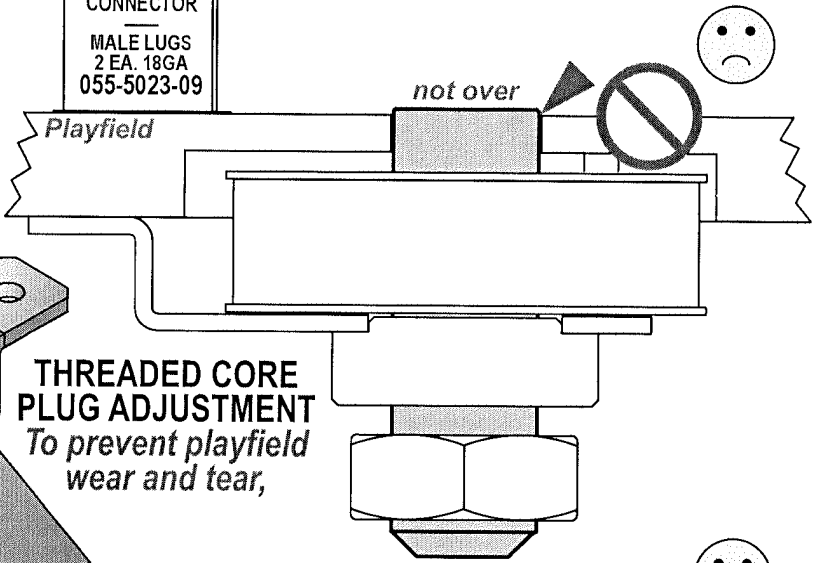
Nr.	ASSOCIATED PART(S)	QTY.	SPI PART Nr.
AP-A	Bumper Cap (Green, Blue & Yellow)	1/per	550-5057-XX
Note: Replace -XX with -04 Green; -05 Blue; -06 Yellow (-07 Orange, -07-A4 Org. Modified)			
Item AP-A is secured Item 3 by: #4 X 3/4 Phillip Rnd. 25 (Zinc) (Qty. 2/per) (237-5873-00)			

Sec. 4: Drawings ...

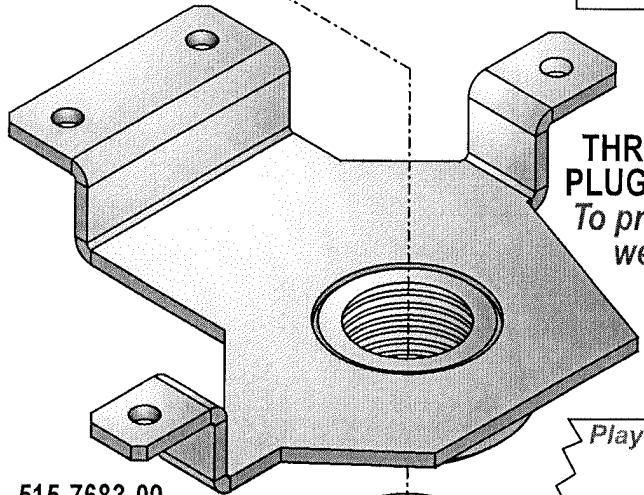
# Magnet Assembly, Individual Parts Only



045-5004-03  
1 X 3.093" CONNECTOR  
MALE LUGS  
2 EA. 18GA  
055-5023-09



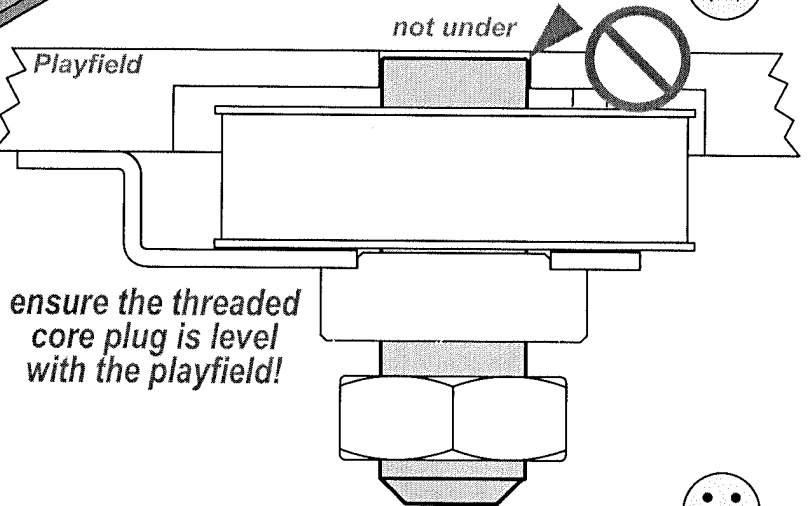
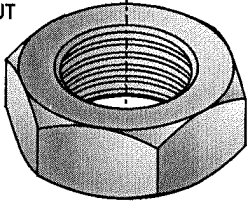
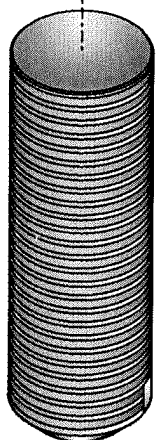
**THREADED CORE PLUG ADJUSTMENT**  
*To prevent playfield wear and tear,*



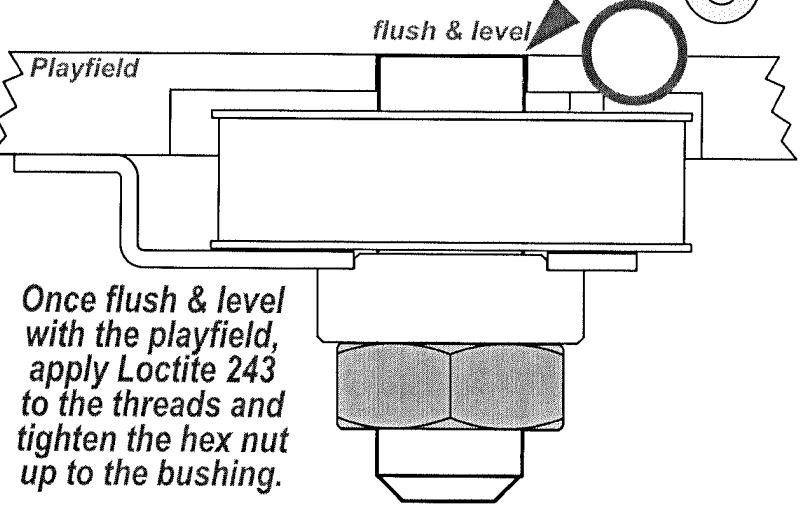
515-7683-00  
THREADED BUSHING / CORE WELD ASSEMBLY

530-5320-00  
THREADED CORE PLUG

240-5315-00  
3/4-16 HEX NUT

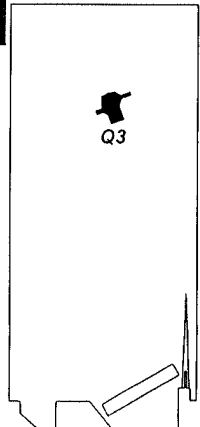


*ensure the threaded core plug is level with the playfield!*



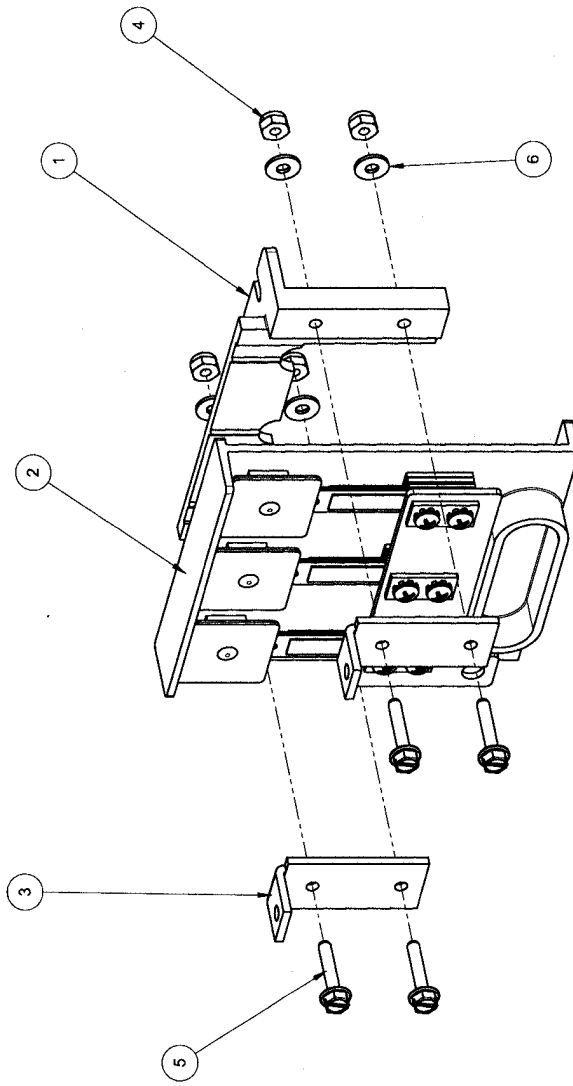
*Once flush & level with the playfield, apply Loctite 243 to the threads and tighten the hex nut up to the bushing.*

Sec. 4: Drawings ...

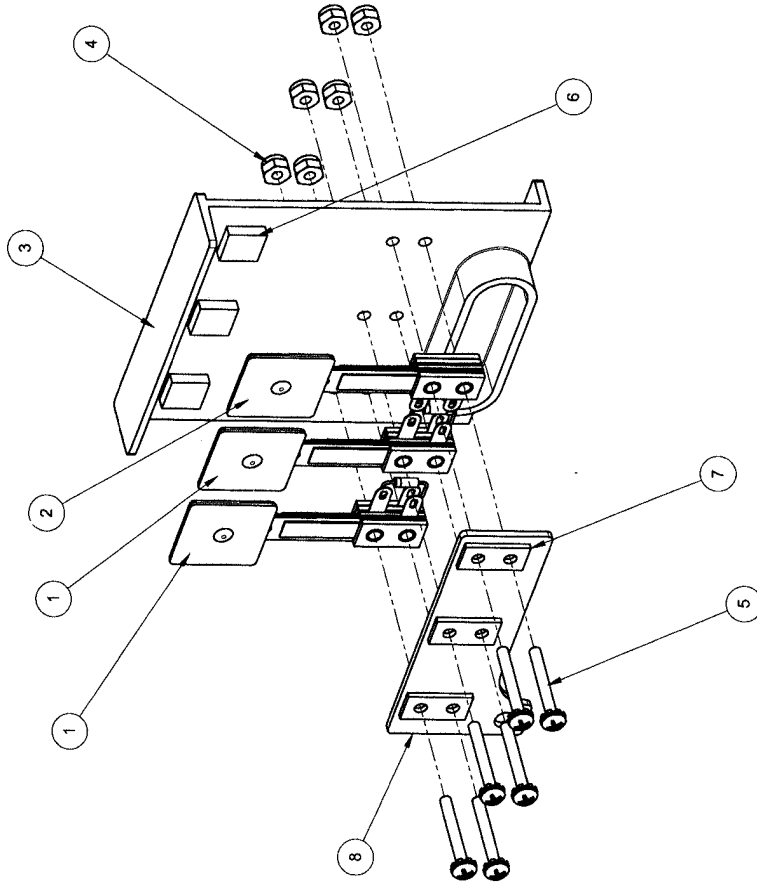




ITEM #	QTY	PART #	DESCRIPTION
1	1	545-6278-00	SLIDE FRAME
2	1	500-7059-01	3 BANK SLIDE ASSEMBLY - AVATAR
3	2	535-9852-00	GIB
4	4	240-5005-00	6-32 NYLOK STOP NUT
5	4	237-5976-05	SCREW, 6-32 x 3/4 HWH SWAGE ZINC
6	4	242-5001-00	#6 WASHER

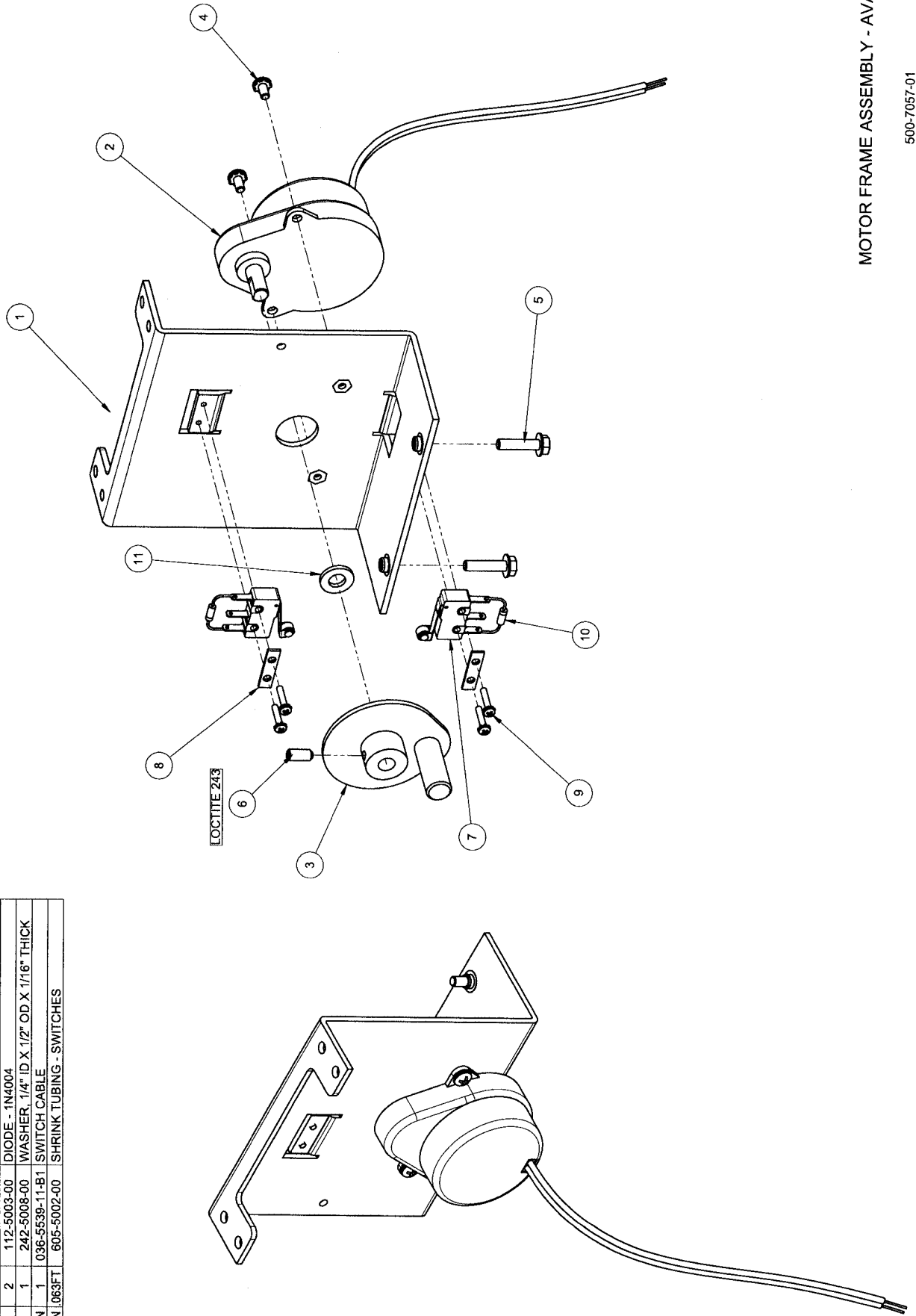


ITEM #	PART NUMBER	DESCRIPTION	QTY.
1	515-7497-06-01	1" SQ. TARGET & SWITCH ASSY -RT SIDE LUGS - YELLOW	2
2	515-7497-06-00	1" SQ. TARGET & SWITCH ASSY - LFT SIDE LUGS - YELLOW	1
3	545-6277-00	SLIDE	1
4	240-5005-00	6-32 NYLON STOP NUT	6
5	232-5206-00	SCREW, 6-32 X 1" PPH SEMS	6
6	626-5029-00	FOAM PAD	3
7	535-5045-00	SWITCH PLATE	3
8	830-6113-18	BUTY #18, MOTOR 3-BANK , AVATAR	1
NOT SHN	036-5522-13-94	CABLE ASSEMBLY	1



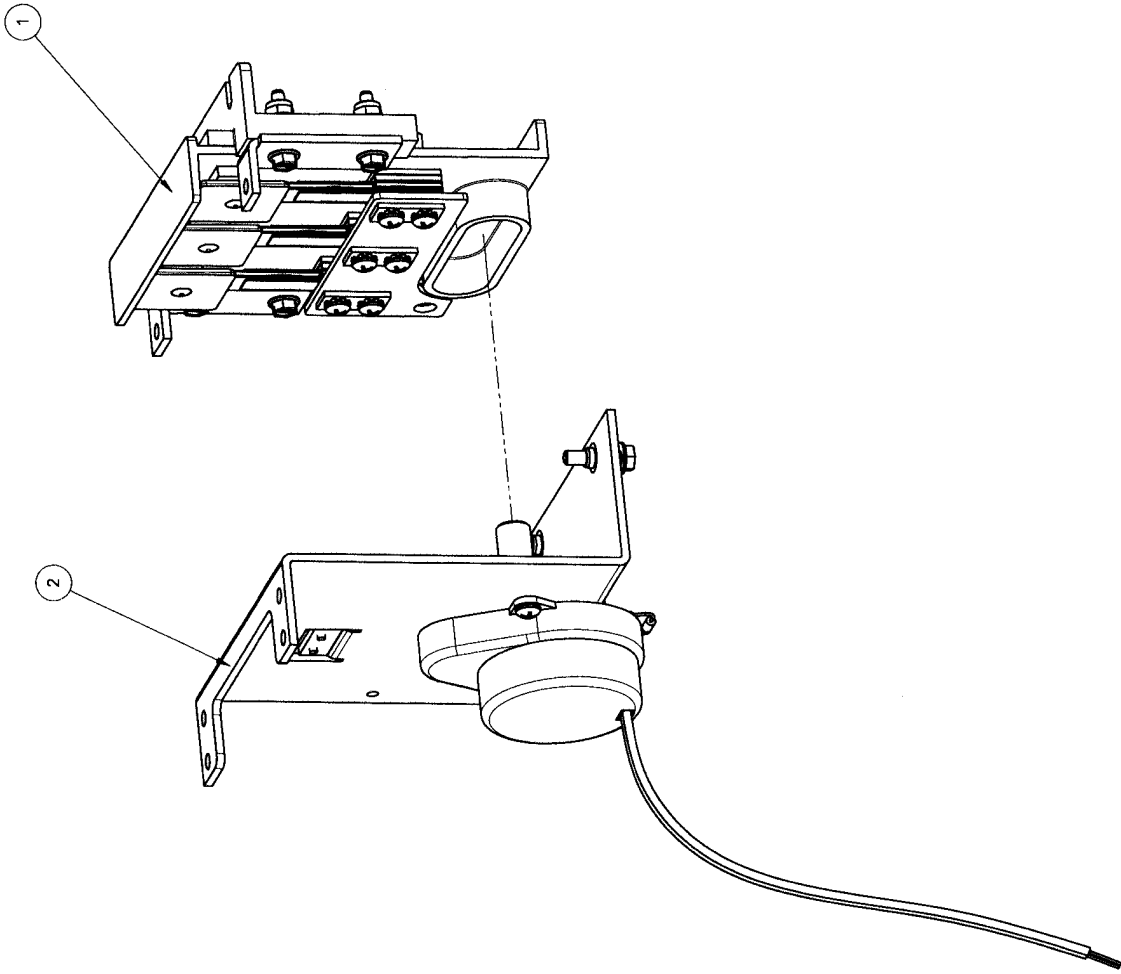
b10

ITEM #	QTY	PART #	DESCRIPTION
1	1	515-7633-01	MOTOR FRAME - MOT. 3 BANK - AVATAR
2	1	511-5063-00	MOTOR & CONN ASSY - SYNCH 24 VAC
3	1	515-7634-00	DISC
4	2	232-5200-00	SCREW, 6-32 X 1/4" PPH SEMS
5	2	237-5975-03	SCREW, 8-32 X 5/8" HWH SWAGE
6	1	237-5839-00	SET SCREW, 8-32 X 3/8" CUP PT
7	2	190-5119-02	MICRO-SWITCH - LIGHT ACTUATION
8	2	535-6539-00	SWITCH BODY PROTECT PLATE
9	4	237-5872-01	SCREW, 2-56 X 7/16" PPH SEMS
10	2	112-5003-00	DIODE - 1N4004
11	1	242-5008-00	WASHER, 1/4" ID X 1/2" OD X 1/16" THICK
NOT SHN	1	036-5539-11-B1	SWITCH CABLE
NOT SHN	063FT	605-5002-00	SHRINK TUBING - SWITCHES



511

ITEM #	QTY	PART #	DESCRIPTION
1	1	500-7058-01	SLIDE FRAME ASSEMBLY - AV
2	1	500-7057-01	MOTOR FRAME ASSEMBLY - A



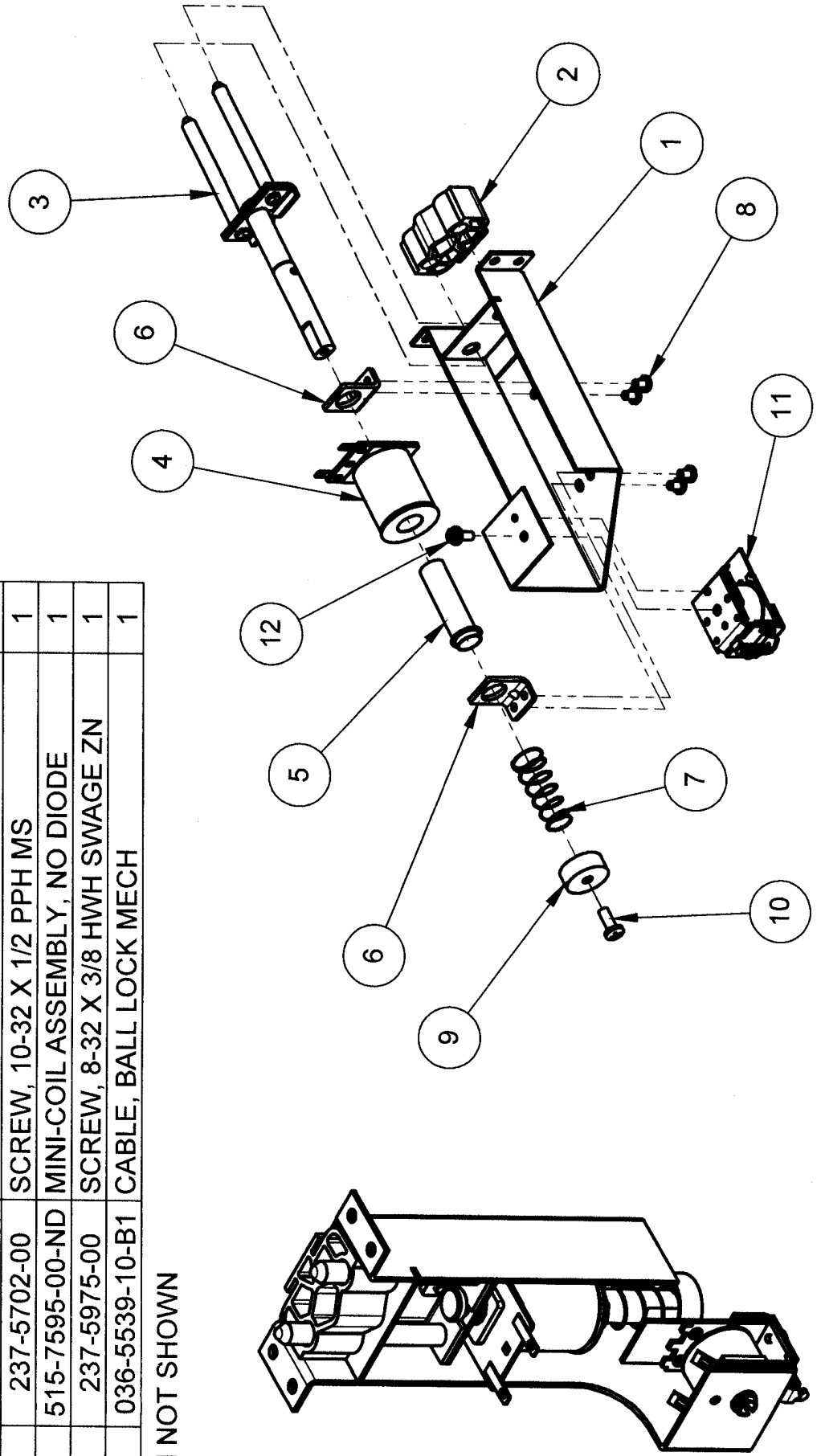
b12

# ASSEMBLY, LATCHING BALL LOCK

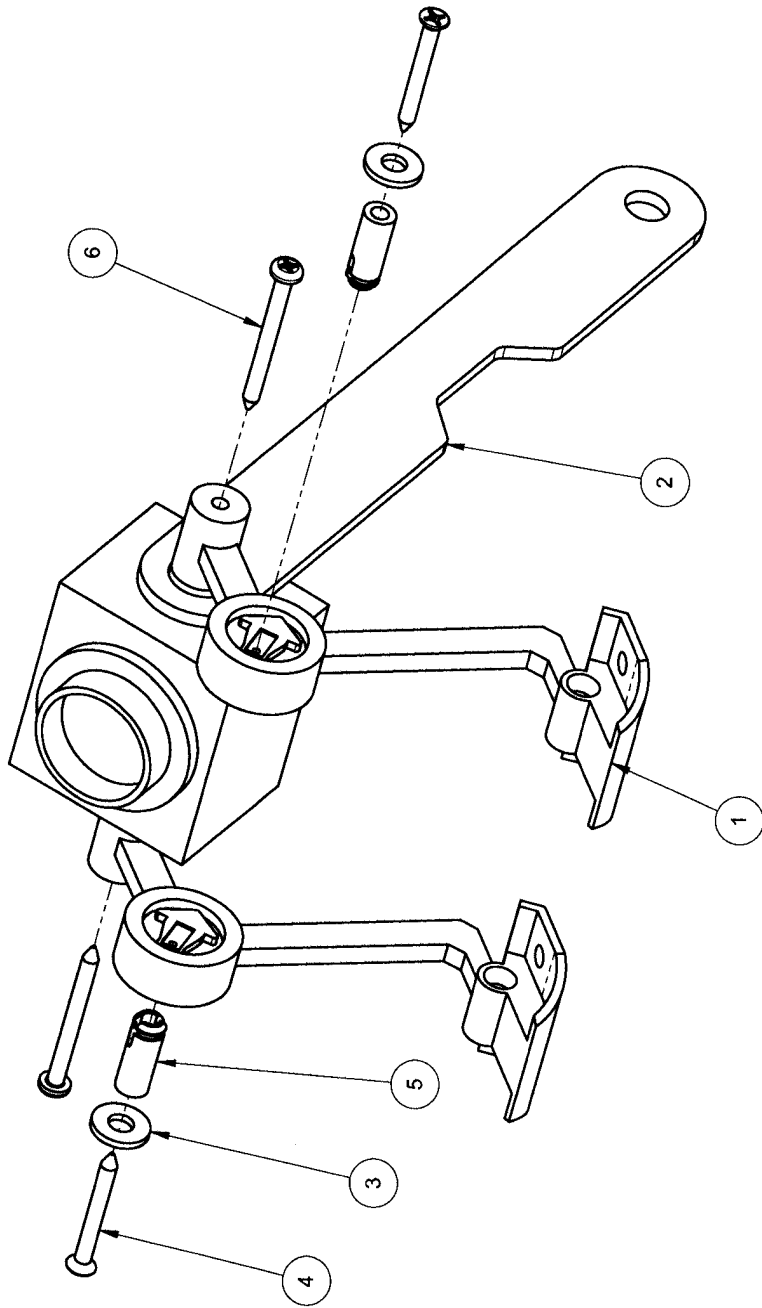
511-6770-00

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	515-7734-00	WELDMNT, BALL LOCK BRACKET	1
2	545-6816-01	BEARING BLOCK - BALL LOCK	1
3	511-6769-00	ASSY, BALL LOCK PLUNGER & BARS	1
4	090-5044-ND	COIL 26-1200 - NO DIODE	1
5	545-5076-01	COIL SLEEVE	1
6	535-5203-03	COIL RETAINING BRACKET	2
7	266-5020-00	COMPRESSION SPRING-CONICAL	1
8	232-5300-00	SCREW, 8-32 X 1/4" PPH SEMS	4
9	530-5511-00	PLUNGER HEAD	1
10	237-5702-00	SCREW, 10-32 X 1/2 PPH MS	1
11	515-7595-00-ND	MINI-COIL ASSEMBLY, NO DIODE	1
12	237-5975-00	SCREW, 8-32 X 3/8 HWH SWAGE ZN	1
99*	036-5539-10-B1	CABLE, BALL LOCK MECH	1

\* ITEM NOT SHOWN



b14

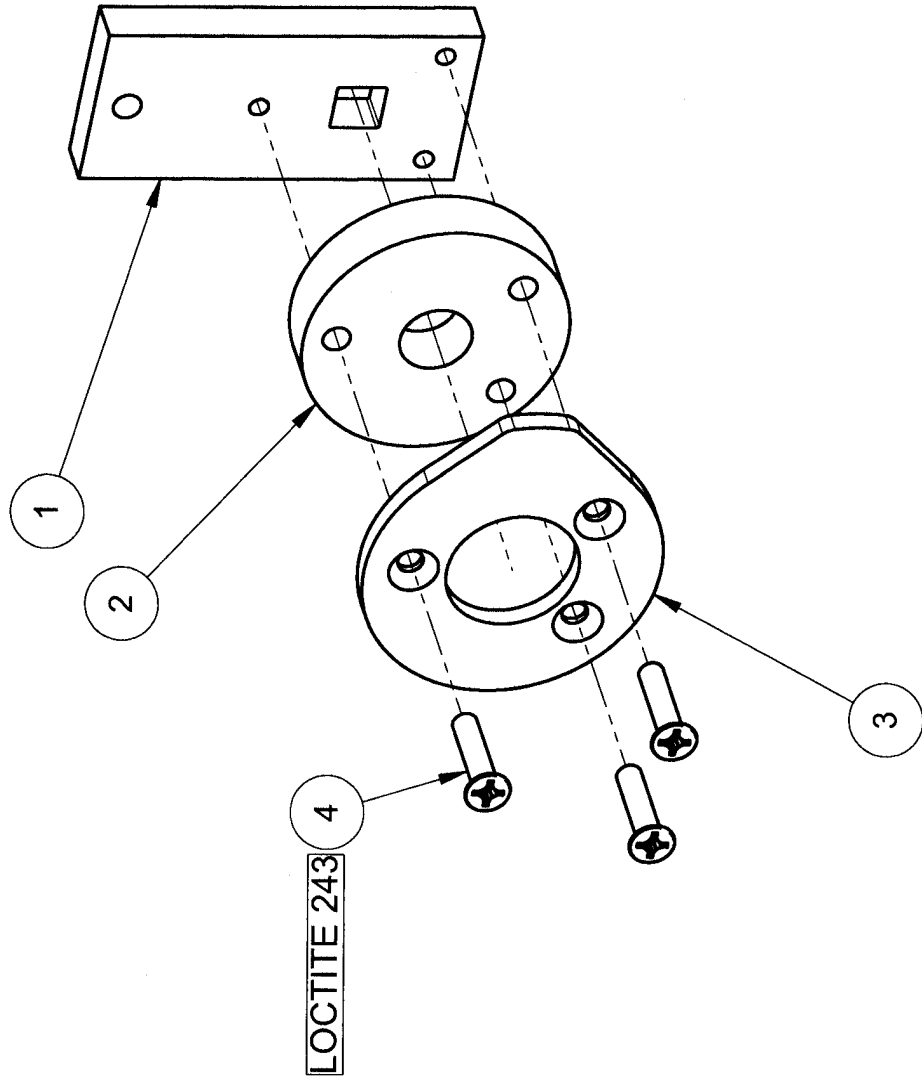


ITEM #	QTY	PART #	DESCRIPTION
1	1	880-5118-01	AMP SUIT - MODIFIED - AVATAR
2	1	545-6813-00	LINK - AMP SUIT
3	2	242-5003-00	#10 FLAT WASHER - 1/2" O.D. X .062
4	2	237-5804-00	#6 x 1 1/4 PHILLIPS FLAT HEAD ZINC
5	2	254-5007-00	5/8" SELF RETAINING SPACER
6	2	232-5007-00	6 x 1 1/2 PAN HEAD PHILLIPS AB ZINC

AMP SUIT ASSEMBLY

511-6764-00

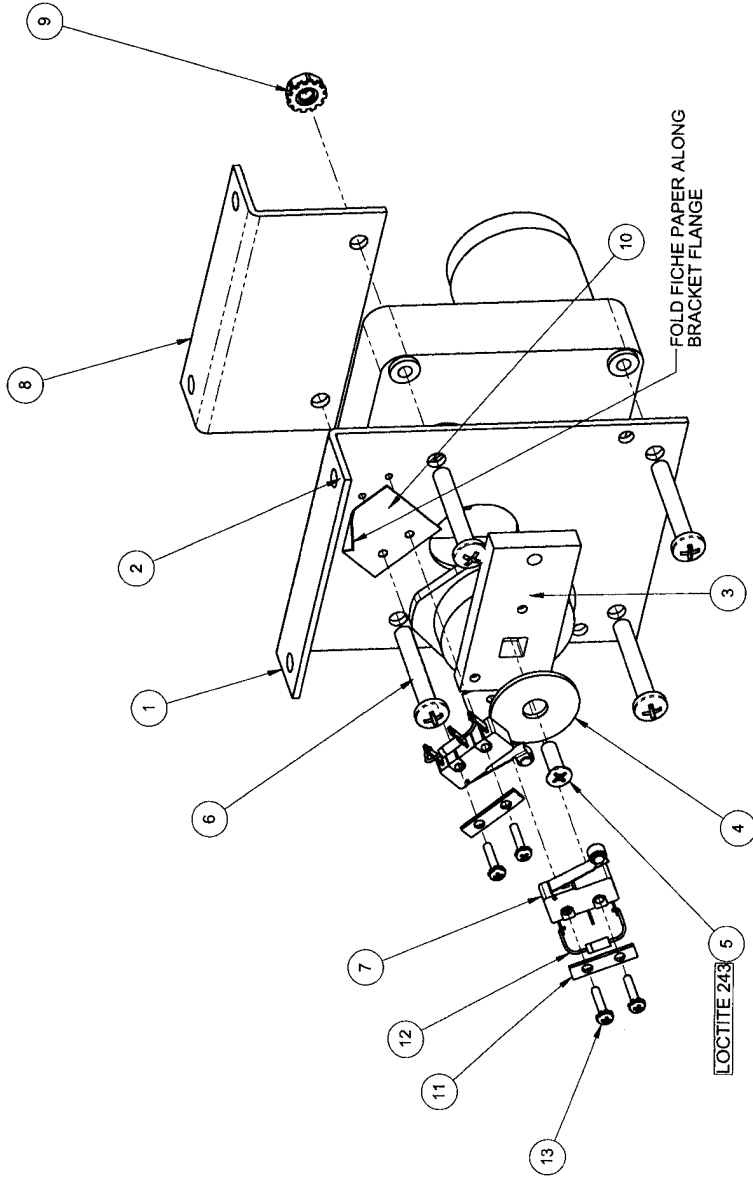
ITEM #	QTY	PART #	DESCRIPTION
1	1	535-0388-00	CRANK ARM
2	1	545-6814-00	SPACER
3	1	535-0389-00	SWITCH ACTUATOR - POSITION
4	3	237-6172-00	6-32 x 5/8 PHILLIPS FLAT HEAD ZINC



CRANK ARM ASSEMBLY

511-6766-00

b16



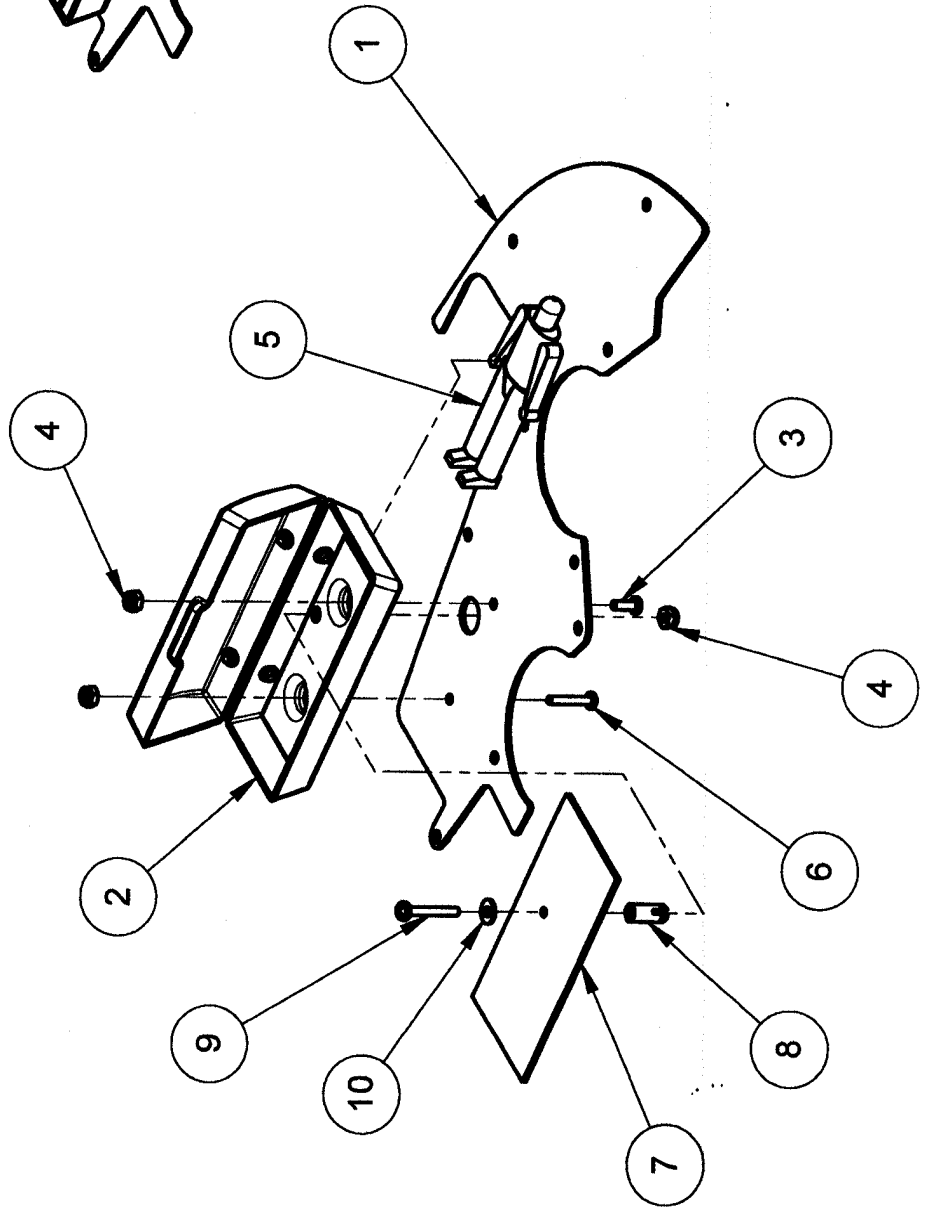
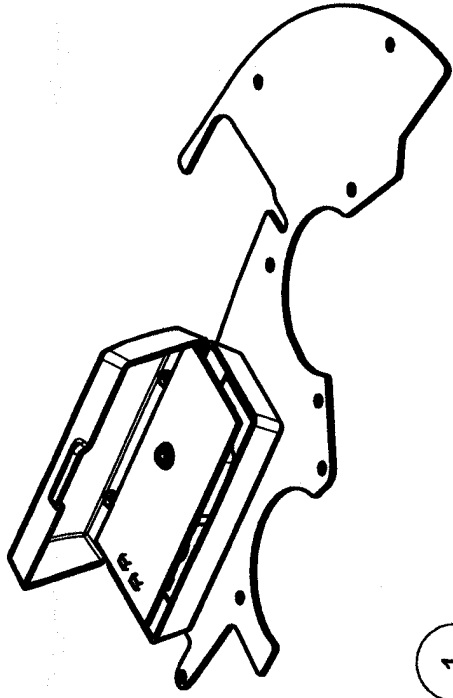
ITEM #	QTY	PART #	DESCRIPTION
1	1	535-0387-00	MOTOR BRACKET - DRIVE SIDE - AMP SUIT
2	1	041-5109-00	GEAR MOTOR - 24VDC - 40 RPM
3	1	511-6766-00	CRANK ARM ASSEMBLY
4	1	242-5009-00	WASHER, 1/4" ID X 1" OD X .048" THICK
5	1	237-6023-00	8-32 x 1/2 PPH MS
6	4	237-5708-00	SCREW, 10-32 X 1-1/4 PPH MS
7	2	180-5119-02	MICRO-SWITCH - LIGHT ACTUATION
8	1	535-0387-01	MOTOR BRACKET - MOTOR SIDE - AMP SUIT
9	2	240-5208-00	10-32 KEPS NUT
10	2	545-6268-00	FISCHE PAPER
11	2	535-6539-00	SWITCH BODY PROTECT PLATE
12	2	112-5003-00	DIODE - 1N4004
13	4	237-5872-01	SCREW, 2-56 X 7/16" PPH SEMS
NOT SHN	1	036-5552-00	CABLE - MOTOR
NOT SHN	1	036-5539-06-B1	CABLE - MICROSWITCH

MOTOR BRACKET ASSEMBLY - AMP SUIT



# ASSEMBLY, POD & TOY, AVATAR PRO

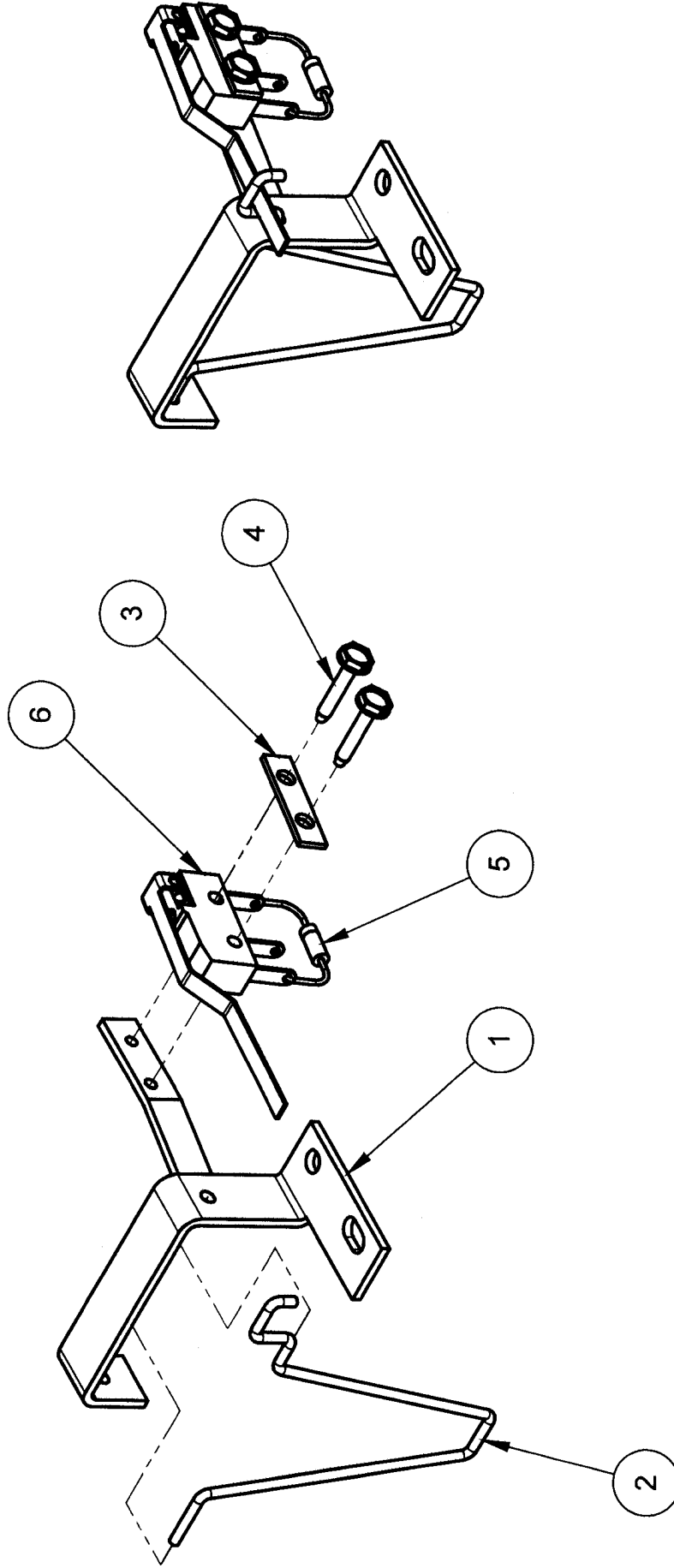
511-6762-09



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	830-6113-09	PLASTIC #9, POD LOWER, AVATAR	1
2	510-5117-00	RIVETED ASSY, POD, AVATAR	1
3	237-5501-00	SCREW, 6-32 X 3/8" PPH MS ZINC	1
4	240-5005-00	6-32 NYLON STOP NUT	3
5	880-5119-01	TOY, JAKE ONLY, AVATAR	1
6	237-5504-00	SCREW, 6-32 X 3/4" PPH MS	1
7	830-6113-22	PLASTIC #22, JAKE COVER, AVATAR	1
8	254-5007-04	1/2" SELF RETAINING SPACER	1
9	232-5206-00	SCREW, 6-32 X 1" PPH SEMS	1
10	242-5001-00	#6 WASHER	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	535-7756-01	BRACKET - GATE	1
2	535-0400-00	WIRE FORM, EXTENDED	1
3	535-6539-00	SWITCH BODY PROTECT PLATE	1
4	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	2
5	112-5003-00	DIODE - 1N4004	1
6	180-5087-00	SWITCH - GATE	1

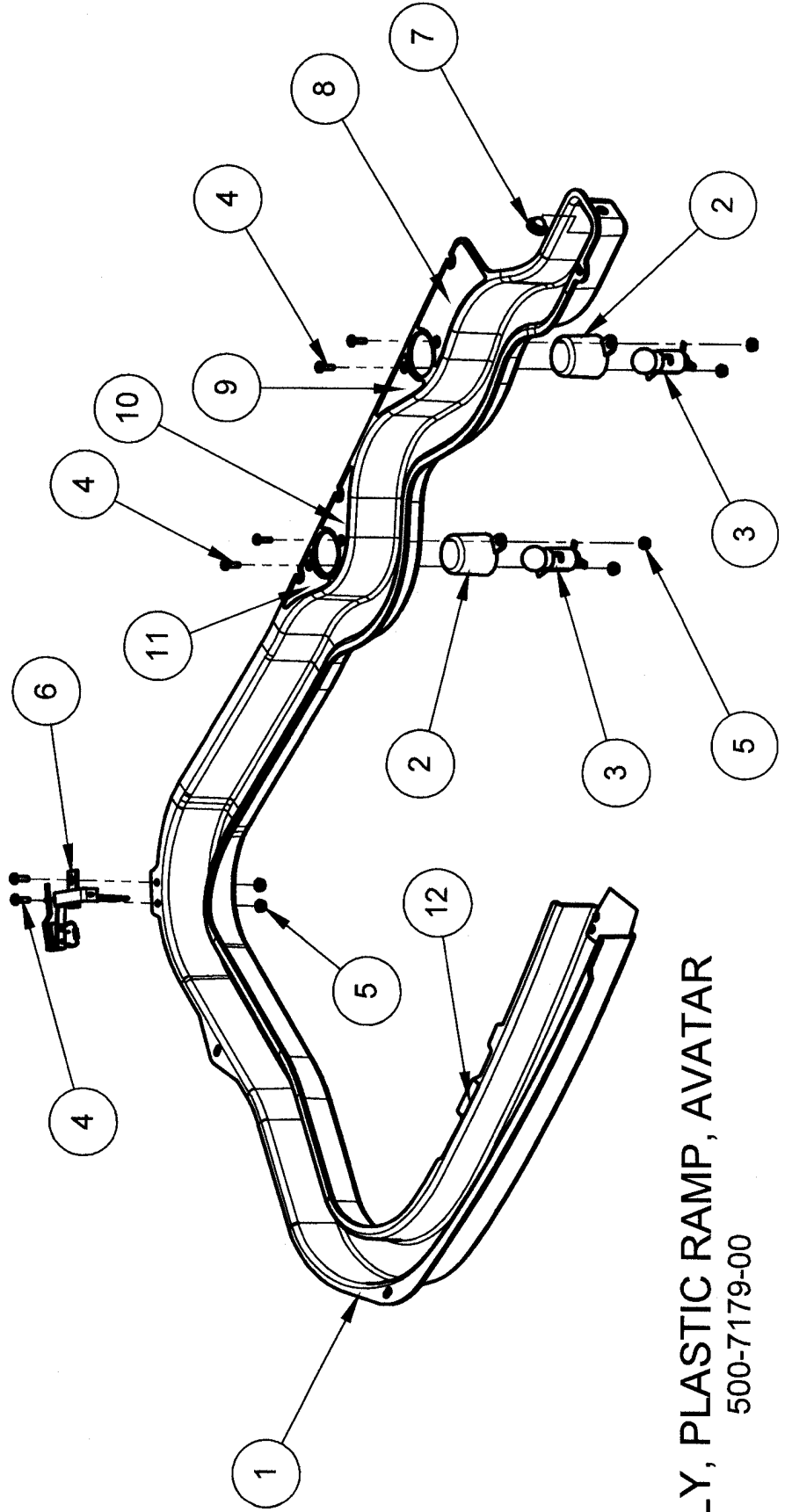
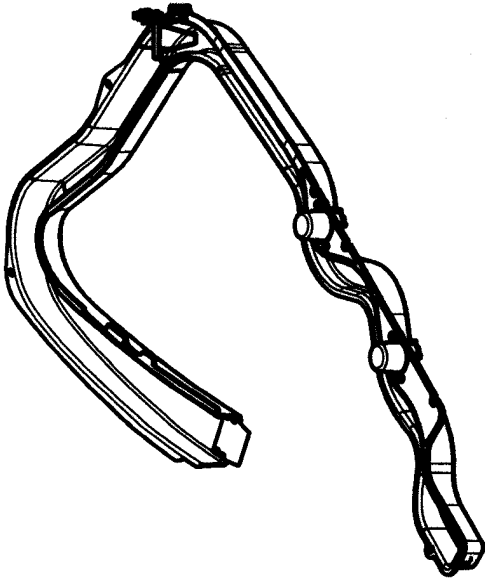
b20



# ROLLUNDER GATE ASSEMBLY, AVATAR RAMP

511-6773-00

ITEM #	PART NUMBER	DESCRIPTION	QTY.
1	510-5116-00	RIVETED ASSY, PLASTIC RAMP, AVATAR	1
2	550-5031-05	MINI MARS W/ EARS - BLUE SB	2
3	511-5241-05	ASSEMBLY, FLASH LAMP BLUE	2
4	232-5202-00	SCREW, 6-32 X 1/2" PPH MS SEMS	6
5	240-5005-00	6-32 NYLON STOP NUT	6
6	511-6773-00	R/U SWITCH & CABLE ASSEMBLY	1
7	545-5105-00	RUBBER BUMPER	1
8	820-6567-31	DECAL #31, AVATAR RAMP	1
9	820-6567-32	DECAL #32, AVATAR RAMP	1
10	820-6567-33	DECAL #33, AVATAR RAMP	1
11	820-6567-34	DECAL #34, AVATAR RAMP	1
12	820-6567-42	DECAL #42, AVATAR RAMP	1



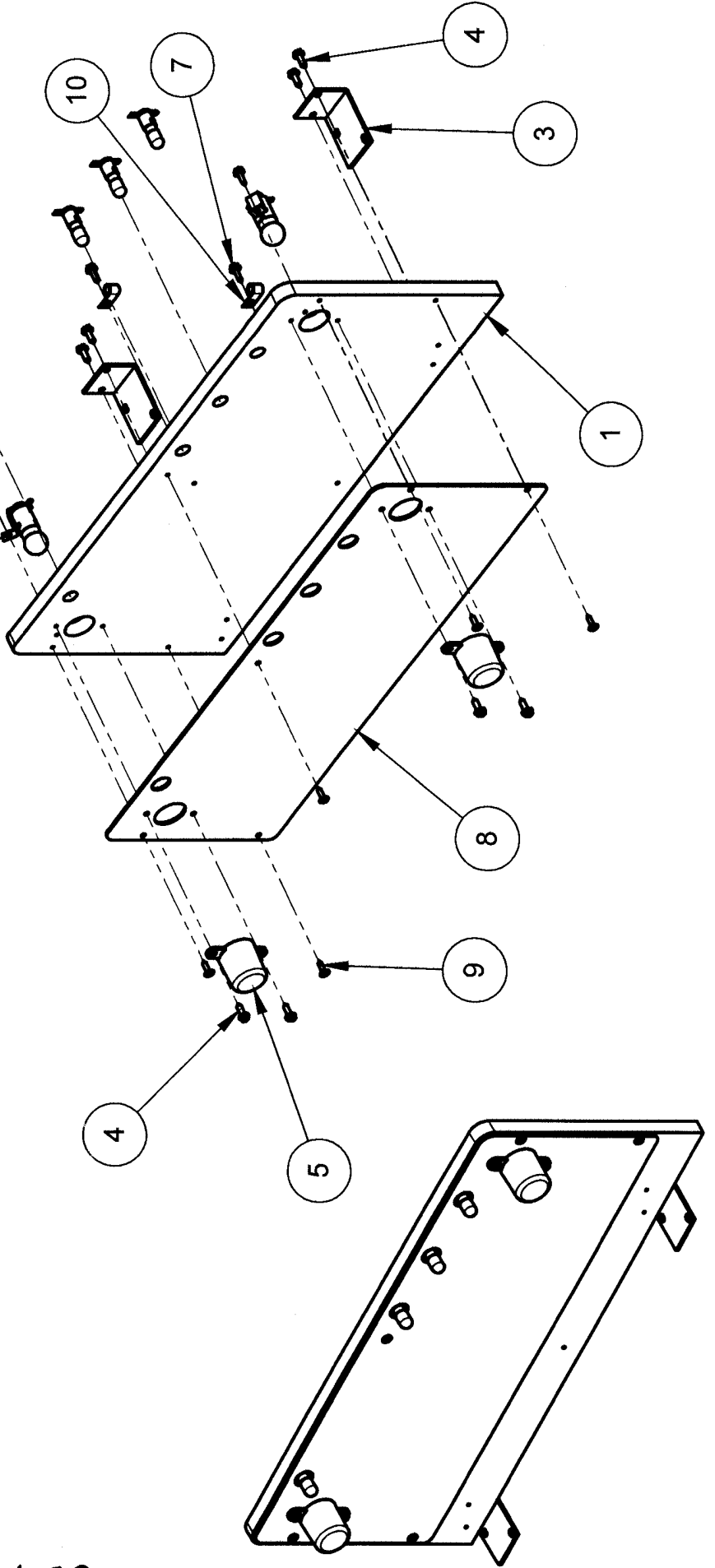
b21

ASSEMBLY, PLASTIC RAMP, AVATAR  
500-7179-00

# ASSEMBLY, BACK PANEL, AVATAR 500-7177-00

ITEM #	PART NUMBER	DESCRIPTION	QTY.
1	525-5700-00	BACK PANEL, AVATAR	1
2	519-5000-00-HF	SOCKET & BULB ASSY, CLEAR	4
3	535-8964-00	BRACKET - BACK PANEL SUPPORT	2
4	234-5101-00	SCREW, #8 X 1/2" SLT HWH AB ZINC	8
5	550-5031-05	MINI MARS W/ EARS - BLUE SB	2
6	519-5101-05-HF	SOCKET#89 BULB ASSY, BLUE - HEAVY FIL	2
7	234-5001-02	SCREW, #6 X 1/2" HWH	4
8	830-6113-16	BUTYRATE #16, BACK PANEL, AVATAR	1
9	237-5809-00	SCREW, #6 X 1/2" PTH A	5
10	040-5000-03	1/4" CABLE CLAMP	2
97*	600-5003-00	BRAIDED WIRE - 20GA.	3 FT.
98*	631-5000-00	STAPLE - 5/16	18
99*	036-5539-04-B1	BACK PANEL CABLE ASSEMBLY	1

\* ITEM NOT SHOWN



D22

**AVATAR PREMIUM PARTS:**

Pivot Hinge Chrome (Left Style) ..... 535-7999-06  
Pivot Hinge Chrome (Right Style).....535-7999-07  
Speaker Grill Chrome.....535-8081-04  
Chrome Legs with Leveler Asm. ....500-5921-10  
Chrome Side Armor (Left &Right).....535-7297-05  
White Ceramic Pinball.....260-5012-00  
Front Molding Lockdown Asm.....500-6881-00  
Front Molding (Chrome) No Button Hole.....500-6882-02-02  
Bracket, Playfield Support Slide.....535-6862-05  
Ramp Butyrate.....830-6132-00  
Metal Lower Arch.....500-6005-B6

**Optional Kits available through your Distributor:**

**Pinball Location Maintenance Standard Kit (for Avatar Pinball) ..... 502-6002-B1**

*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 Avatar Pinball)..... 502-6003-B1**

*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 Avatar Pinball) ..... 803-5000-B1**

*Plastics Kit includes: Plastic Sets (830-6113-XX)*

**Decals\*Kit (for Avatar Pinball) ..... 802-5000-B1**

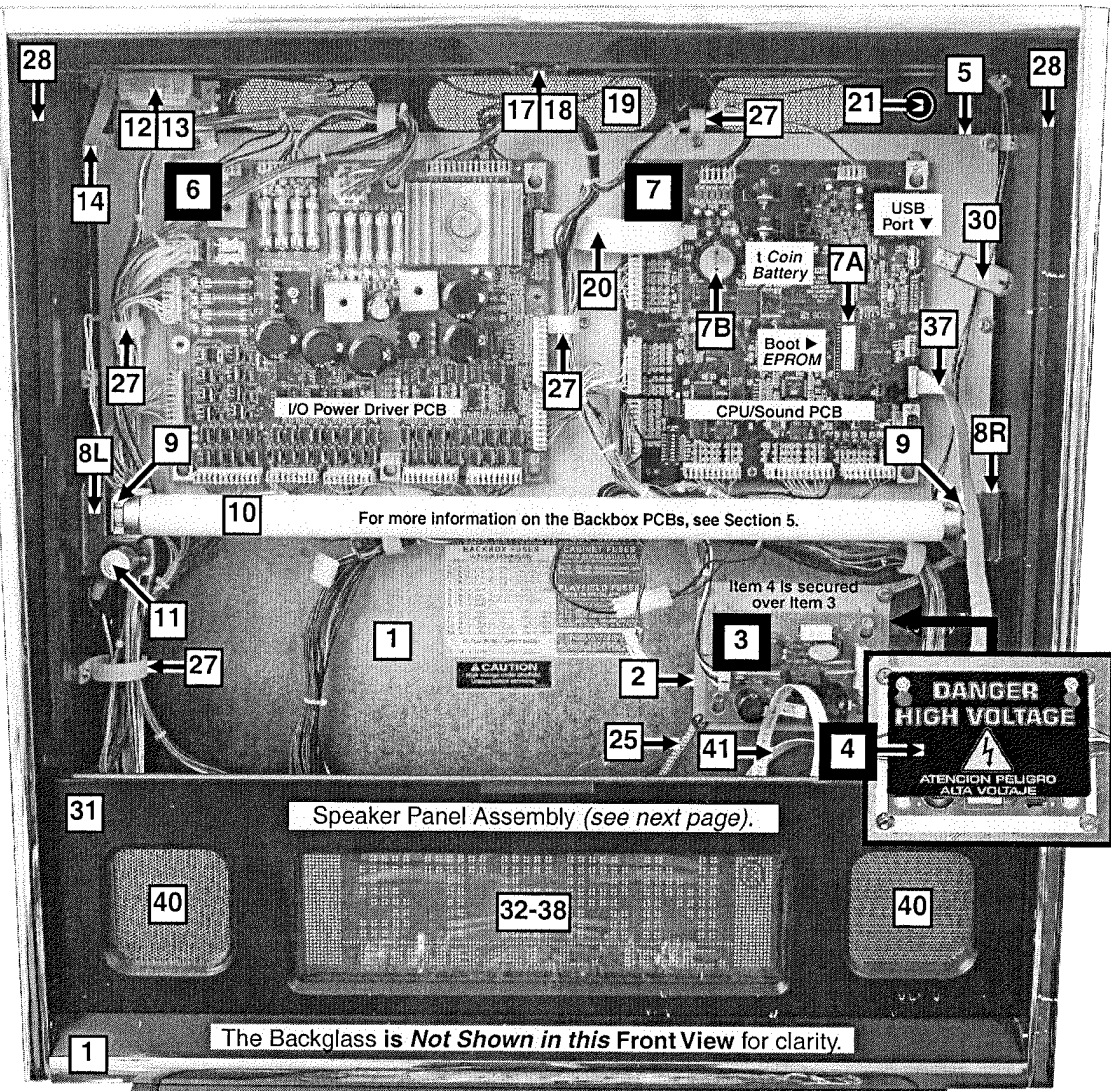
*Decals Kit includes: Decal Set (820-6567-XX)*

**Mylar\*Kit (for Avatar Pinball)..... 802-5001-B1**

*Mylar Kit includes: Pop Bumper (820-6570-00)*

*\*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.*

# TOURNAMENT PINBALL



For more information on the Backbox PCBs, see Section 5.

Speaker Panel Assembly (see next page).

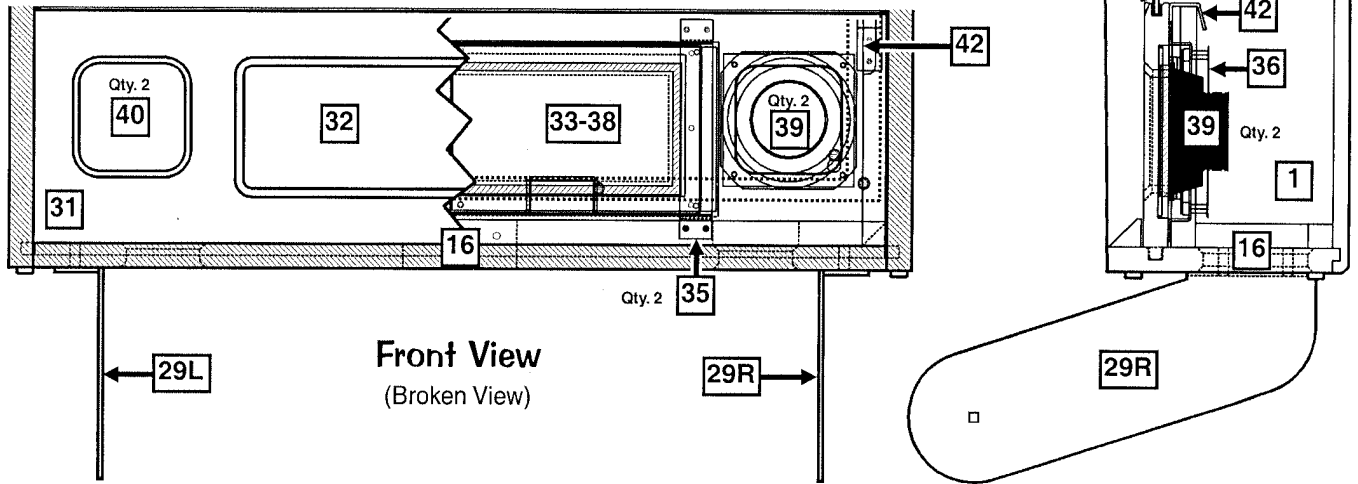
The Backglass is *Not Shown* in this Front View for clarity.

## Parts Identification

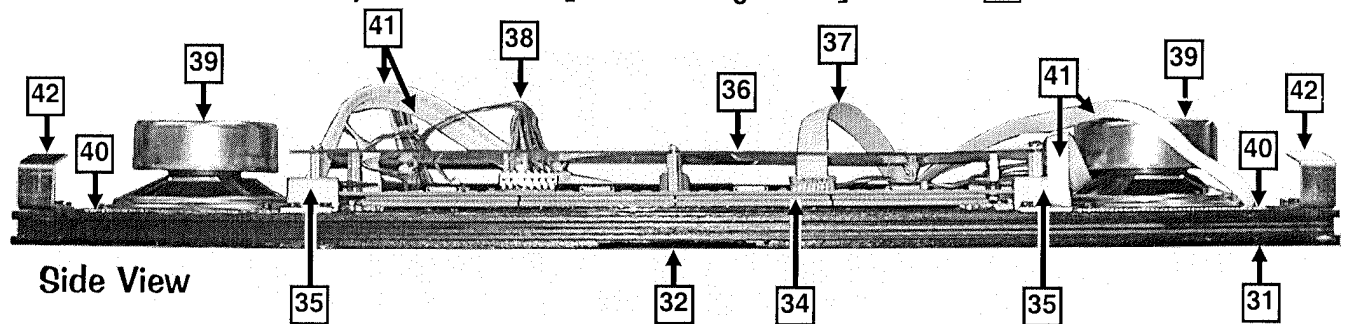
Nr.	BACKBOX PARTS	QTY.	SPI PART Nr.	Nr.	BACKBOX PARTS	QTY.	SPI PART Nr.
1	Backbox Avatar™ (No Parts)	1	525-5631-17-B1	11	Starter - Fluorescent (FS2 Light)	1	165-5011-01
<i>Item 1 Note: Chrome T-Molding is installed and cannot be ordered separately. Fuse Description (820-6384-00) and High Voltage Caution (UL) (820-6082-01 &amp; -02) Decals.</i>				12	Starter Base (with leads) [on Item 8L]	1	077-5213-00
2	PCB Metal Mounting Plate [Display]	1	535-9769-00	<i>Item 11 is secured to Item 8L by: #4-40 X 1/2" PPH MS (Sems) Zc. (Qty. 2) (237-5813-00)</i>			
3	Display Power Supply PCB	1	520-5138-00	13	Ballast Mounting Plate	1	535-8657-00
<i>Item 3 is secured to @ bottom by: #8-32 X 3/8" SHWH Swg. (Zinc) (Qty. 2) (237-5975-00)</i>				14	Ballast CU452-W 1/2" Core 120v 60 Hz 13W	1	010-5015-00
4	Plastic Cover [DANGER HIGH VOLTAGE]	1	830-6053-00	<i>Items 12 &amp; 13 are secured to Item 1 by: #8 X 1/2" SHWH AB (Zinc) (Qty. 2) (234-5101-00) &gt;&gt;&gt; CAUTION - VERY HOT" Decal (820-6266-00) EU / UK Only : Ballast, 5/8" Core 50/60 Hz (010-5015-01)</i>			
<i>Items 3 &amp; 4 are secured to @ top by: 1-1/4" X 3/8" Plastic Spacer Gray (Qty. 2) (254-5000-05) and #8-32 X 1-3/4" SHWH Ser. (Zinc) (Qty. 2) (237-5975-28)</i>				15	Ground Strap (5")	1	600-5006-05
5	PCB Metal Mounting Plate [I/O+CPU]	1	535-9664-00	16*	Roto Lock Male (on Cabinet)	1	355-5006-01
<i>Items 2 &amp; 5 are secured to Item 1 by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1/hole) (234-5101-00) and #10 Washer 7/32" I.D. X .5" O.D. X 1/16" Thick (Qty. 1/hole) (242-5003-00) Note: Where a Wire Clamp (Item 27) is mounted, a #10 Washer is not required.</i>				17	Roto Lock Female (R2-0002-02)	1	355-5006-02
6	I/O Power Driver PCB [S.A.M. Sys.]	1	520-5249-00	<i>Item 16 is secured by: #10-24 X 1-3/4" CBSN (231-5022-00), #10-24 Keps Nut (Qty. 2) (240-5207-00), #10-24 X 2" CBSN (231-5045-00) and #10 Washer 7/32" I.D. X .5" O.D. X 1/16" (Qty. 5) (242-5003-00); See opposite next page.</i>			
7	CPU/Sound PCB [S.A.M. System]	1	520-5246-00	18	Lock Mounting Plate	1	535-0072-00
7A: 8MB EPROM #M27C801-100F1 (960-5016-00) Ordering Note: Programmed EPROM (965-BOOT-SAM) 7B: Coin Cell Battery (CR2430 3V) (000-0644-01) For USB Memory Stick Information, see Item 30 on the next page.				19	Lock 5/8" Barrel, 3/4"ø, 1.5" Flat Cam	1	355-5055-00
<i>Items 6 &amp; 7 are secured to Item 5 by: #8-32 X 3/8" SHWH Swage (Zinc) (Qty. 10) (237-5975-00) and 1/4" Slit. Rtn. Spacer White (Qty. 5 [I/O] / Qty. 4 [CPU]) (254-5007-05)</i>				<i>Items 17 &amp; 18 are secured by: #8 X 1/2" TP Torx T20 Black (Qty. 2) (237-6173-05)</i>			
8L	Fluorescent Light Bracket (Left Style)	1	535-7739-00	20	Back Vent Grill 2-1/2" X 18"	1	545-5072-02
8R	Fluorescent Light Brckt. (Right Style)	1	535-7739-01	21	Ribbon Cable, 20-Pin (3.5")	1	036-5000-350
<i>Items 8L &amp; 8R are secured to Item 1 by: #10-24 X 1-1/4" Carriage Bolt Square Neck (Qty. 2/per) (231-5012-00), #10-24 Keps Nut (Qty. 2/per) (240-5207-00) and 3/4" X 3" Reinforced Strapping-Tape (Qty. 1, sold in 12" length only) (626-5040-00)</i>				<i>Item 20 connects the I/O Pwr. Drvr. PCB to the CPU/Sound PCB; For 14-Pin see next page.</i>			
9	Fluorescent Lamp Holder (Socket)	2	077-5214-01	22	Button Hole Plug (Blk) (Happ #52-6214-00)	1	500-6566-00
<i>Item 9 is secured to Items 8L and 8R by: #6-32 X 5/8" PPH MS (Sems) Zinc (Qty. 1/per) (232-5203-00) Lock-In Fluor. Bulb with Yellow Socket Clip (Qty. 1/per) (545-6271-00)</i>				<i>Item 21 plugs the Access Hole required if using optional BETAbrite Sign or Data cables.</i>			
10	Fluorescent Tube 24" (F18T8CW)	1	165-5061-00	23	Header Sign TOURNAMENT PINBALL	1	545-6133-00
				24	Bracket, Tournament Sign (Black)	2	535-0081-02
				<i>Item 22 is mounted to Item 23 with #8-32 x 3/8 PPA screw (Qty 2/per) (232-5303-01) &amp; #8-32 Nylock Nut (Qty 2/per) (240-5102-00). Item 23 is secured to Item 1 by: #8 X 5/8" PPH (Qty. 2/per) (232-5101-01)</i>			

PARTS TABLE & VIEWS CONTINUED ON THE NEXT PAGE. ▶

## Backbox [ S.A.M. System ] - Parts



## Speaker Panel [ S.A.M. System ] - Parts



Nr.	BACKBOX PARTS	QTY.	SPI PART Nr.	Nr.	SPEAKER PANEL PARTS	QTY.	SPI PART Nr.
<b>← PARTS TABLE &amp; VIEWS CONTINUED FROM THE PREVIOUS PAGE.</b>							
25	Braided Wire (1-1/2 Feet)	1	600-5001-00	31	Speaker Panel (Black Wood)	1	525-5515-00
Item 25 is secured by: Staple 5/16" (Qty. 23) (631-5000-00)				32	Plastic Shield (Display Front Cover)	1	545-5884-00
26*	Zip Cable Tie (Screw Down Style)	4	040-5005-00	Item 33 is secured to inside Item 31 by: #6 X 3/8" SHWH AB (Zinc) (Qty. 8) (234-5000-00)			
Item 26 is secured @ inside bot. by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1/per) (234-5101-00)				33*	Foam 3/16" Thick X 1/4" Wide X 12"	6	626-5026-00
27	Clamps [Multiple Sizes]	30	040-5000-XX	Above Item 33 is self-adhesive. Located between Items 32-34. Sold in 12" Lengths only.			
Item 27 secured by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1/per) (234-5101-00) For the following sizes, replace -XX with: 1/4" Double = -23 (Qty. 5); 1/2" Single = -06 (Qty. 3); 3/4" Single = -08 (Qty. 4); 1" Single = -09 (Qty. 1); 1-1/4" Double = -30 (Qty. 1)				34	// EURO ONLY RoHS // 128 X 32 DM CES PCB	1	520-5052-00
28	Foam 3/16" Thick X 1/4" Wide X 12"	6	626-5026-00	// EURO ONLY RoHS // Dot Matrix Bezel			
Above Item 28 is self-adhesive. 17.5" strip on each side. Sold in 12" Lengths only.				545-6281-00			
29L	Pivot Hinge (Left Style)	1	535-7999-00	Item 34 is secured to Item 35 by (at corners): 3/16" X 3/8" Spacer Gray (Qty. 4) (254-5000-18) and #6-32 X 1/2" SHWH Swage (Serr) Zinc (Qty. 4) (237-5976-03)			
29R	Pivot Hinge (Right Style)	1	535-7999-01	35	Dot Matrix Display Mounting Bracket	2	535-8368-01
Items 29L-29R are secured to Backbox by: 1/4"-20 X 1-1/4" C.B. Sq. Neck (Qty. 4) (231-5003-00) and 1/4"-20 Flange Nut (Qty. 4) (240-5300-00)				Item 35 is secured to Item 31 by: #8 X 1/2" SHWH AB (Zinc) (Qty. 4/per) (234-5101-00)			
Items 29L-29R are secured to Cabinet by: Spacer Hex Nut 1/2" O.D. - 1/4-20 X 1/2" TD (Black) (Qty. 1/per) (254-5042-00), Nylon Spacer (Black) (Qty. 1/per) (242-5084-00), 1/4-20 X 1/2" Carriage Bolt Square Neck (Black) (Qty. 1/per) (231-5072-00) and Washer 1" O.D. X 1/2" I.D. X 1/16" (Black) (Qty. 1/per side, only if required) (242-5087-00)				36	Plastic Shield (Display Back Cover)	1	830-6040-00
30*	Memory Stick USB 1.1+ [Generic] 64MB	1	970-0064-00	Item 36 is secured to Item 34 by: 1/2" X 1/4" Hex Spacer #6-32 Tap (Qty. 4) (254-5008-03), 3/4" X 1/4" Hex Spacer #6-32 Tap (Qty. 2) (254-5008-04), #6-32 X 1/4" PPH MS (Serr) Zinc (Qty. 2) (232-5200-00) and #6-32 X 3/8" PPH (Qty. 6) (232-5201-00)			
Memory Stick USB 1.1+ [Generic] 128MB				37	Ribbon Cable, 14-Pin (33")	1	036-5260-33
970-0128-00				// EURO ONLY RoHS // LED Ribbon Cable Filter PCB			
Item 30 was not included with your game. Read the inside cover or go on-line for more info. To order with the latest game code copied onto it, add -A3 to the Part Nr. (970-0128-00-A3). File(s) can be downloaded from our website (Files are 25MB or larger, DSL or Fast Modem recommended). Not all manufacturers of Memory Sticks are compatible with our system. Test it out, if it doesn't work properly, return your purchase and order the memory stick through you local pinball distributor. (Stern Pinball Memory Sticks guaranteed compatible). (ASM. REF. 505-6002-A3-A3, Items 1-42 Only, [29-30 not included in assembly])				520-5259-00			
				Item 37 (14-Pin) connects the 128 X 32 Dot Matrix Display PCB to the CPU/Sound PCB.			
				38	Display Cable (Wiring Harness)	1	036-5454-01
				// EURO ONLY RoHS // LED Display Adapter Harness			
				036-5520-00			
				39	Speaker (Shld.) 4" 8Ω #MG ELE 4060SH	2	031-5004-02
				40	Speaker Grill (Black w/Artwork)	2	535-8081-03
				Items 39-40 are secured by: #8 X 1/2" SHWH AB (Black) (Qty. 4/per) (234-5101-01)			
				41	Ground Strap (25") [ 2 per : Items 35 & 39 ]	4	600-5006-25
				42	Speaker Panel Hook Bracket	2	535-7009-02
				Item 42 is secured by: #8 X 1/2" SHWH AB (Zinc) (Qty. 2/per) (234-5101-00)			
				(ASM. REF. 515-6888-05, Items 31-42 Only [includes wiring])			

### Take Note:

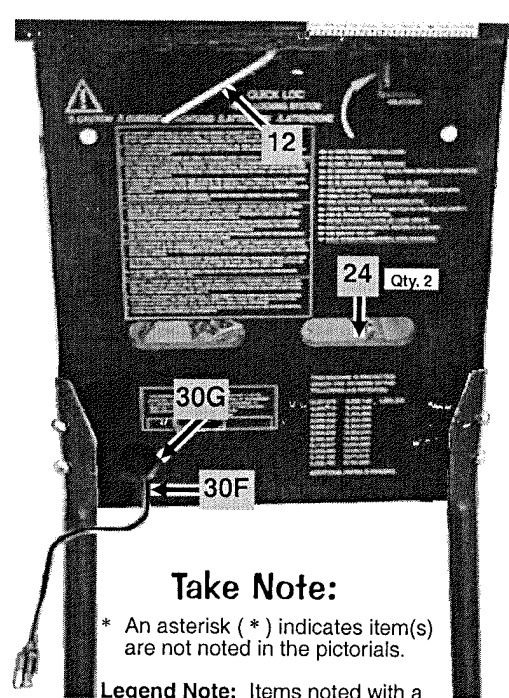
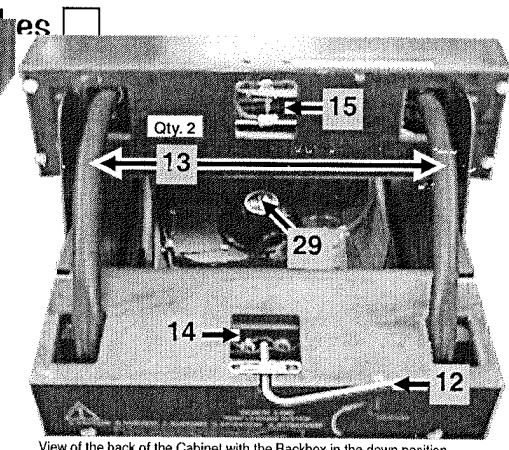
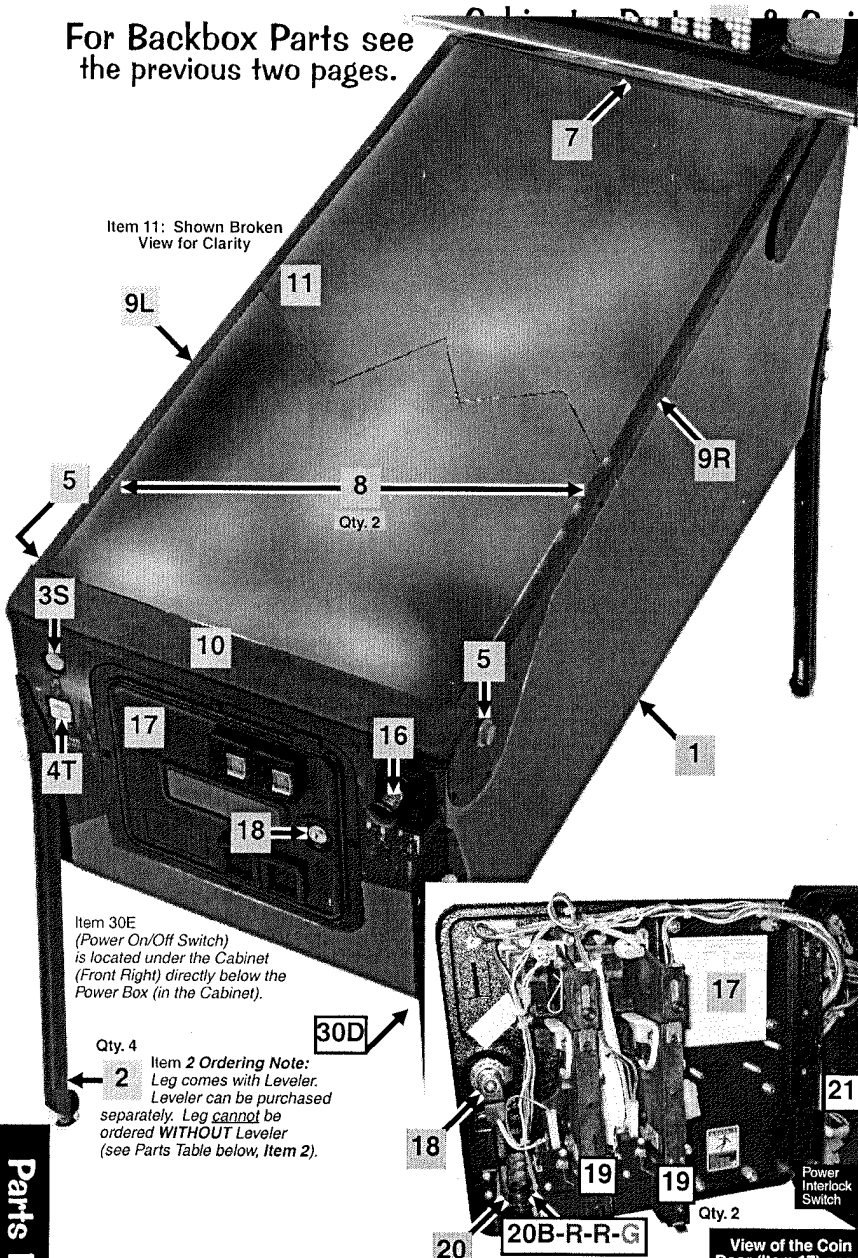
\* An asterisk ( \* ) indicates item(s) are not noted in the pictorials.

Nr.	BACKGLASS PARTS	QTY.	SPI PART Nr.	Nr.	BACKGLASS PARTS	QTY.	SPI PART Nr.
ij*	Glass (Tempered) 25.906" X 19.187" X .125"	1	660-5038-02	iv*	Bottom Plastic Lift Channel - 26"	1	545-6313-01
jj*	Avatar™ Film Art (#B1)	1	830-52B1-00	v*	Plastic Edging (Left/Right) - 18-1/8"	2	545-5018-14
jjj*	Top Plastic Channel - 26"	1	545-5018-15	Items i-v are secured to Item I by: 3M Tape (Double-Sided), 12" (Qty. 1) (626-5080-00)			
				Note: Only 6" required, sold in 12" lengths only.			
				(ASM. REF. 515-5450-00-A9, Items i-v)			

Parts Identification



For Backbox Parts see the previous two pages.

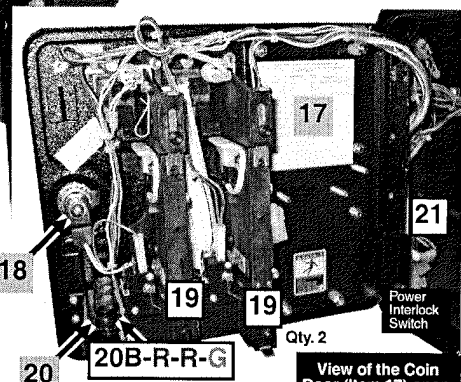


**Take Note:**

\* An asterisk (\*) indicates item(s) are not noted in the pictorials.

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

**Parts Identification**

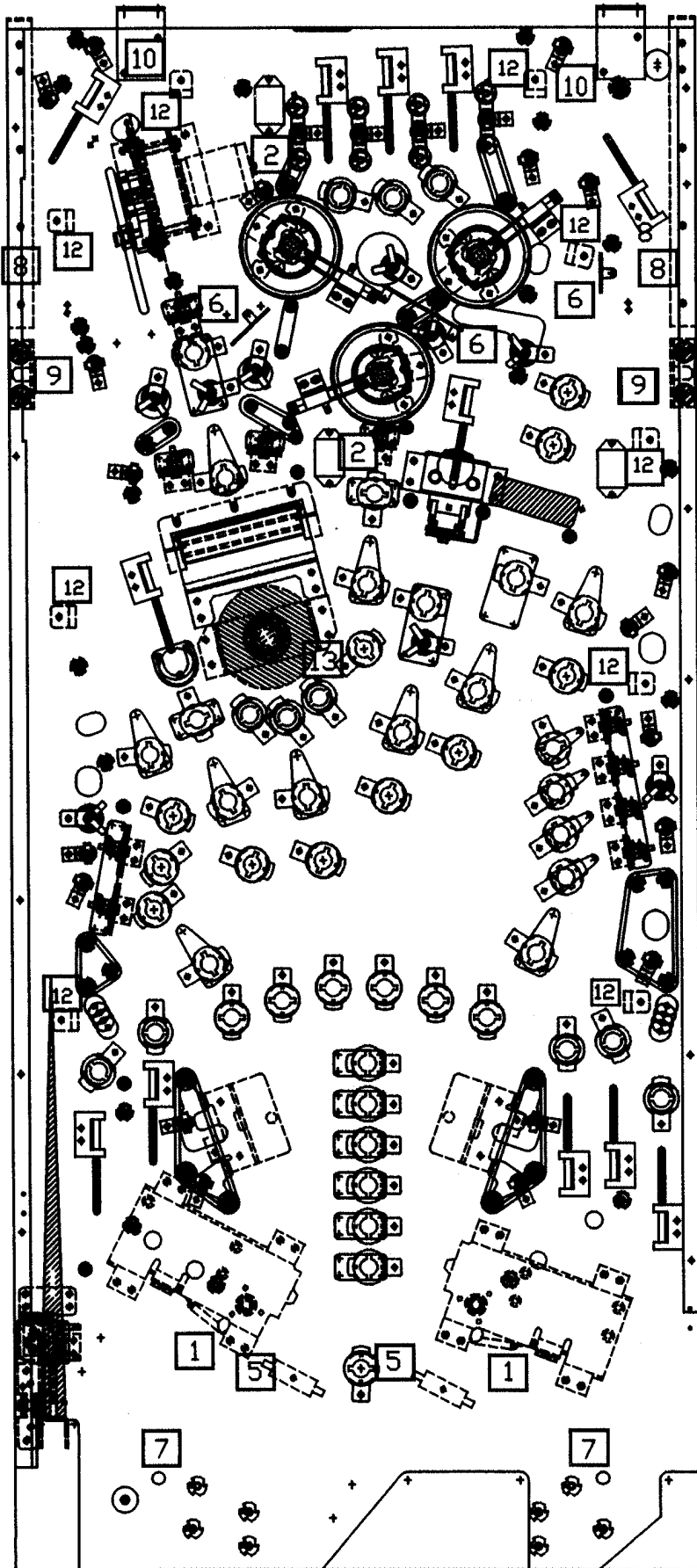


View of the Coin Door (Item 17) open.

Nr.	CAB. PARTS & SWITCHES	QTY.	SPI PART Nr.	Nr.	CAB. PARTS & SWITCHES	QTY.	SPI PART Nr.
1	Screened Cabinet Ironman™ (No Parts)		525-5395-15P-B1	7	Rear Glass Channel 20-3/8" Length	1	545-5038-00
2	Black Leg with Leveler Asm.	4	500-5921-50	8	Plastic Channel 42-5/8" Lg. (Left/Rt.)	2	545-5017-00
Item 2 is secured by: Leg Bolt Back Plate (535-7394-00) 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).				9L	Side Armor (Left) W/O Button Guard	1	535-7297-02
3S	Start Button (Green Round) with Sw. + Lamp	1	500-6388-44-TL	9R	Side Armor (Right) W/O Button Guard	1	535-7297-02
4T	Tournament Button (Yel. Sq.), w/Sw. + Lamp	1	500-6587-06-TL	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)			
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.)				10	Front Molding (Black) < NO BUTTON HOLE >	1	515-7729-00
5	Flipper Button (White) Assembly (No Switch)	2	500-5026-38	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.			
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)				11	Playfield Glass (Tempered) 21" X 43" X 3/16"	1	660-5001-00
6S	Flipper Switch Single Assembly	2	500-6889-01	12	Hex Key Allen Wrench 5/16"	1	777-0001-00
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)				13	Corrugated Tubing Black 1" o x 2.6" Lg.	1	605-5008-03
6D	Flipper Switch Double Assembly	0	500-6890-01	Above Item 13 covers the Cable Wiring Harnesses going into the Backbox from the Cabinet.			
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)				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	500-6146-00-04

PARTS TABLE & VIEWS CONTINUED ON THE NEXT PAGE. ►

# Main Playfield Bottom - Miscellaneous Parts and Brackets



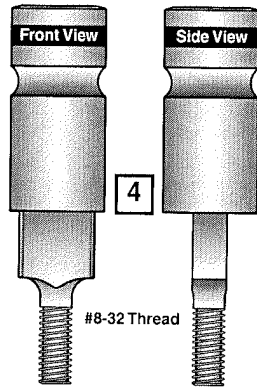
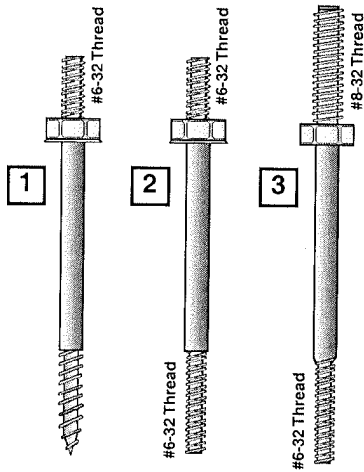
Nr.	THE PLAYFIELD	QTY.	SPI PART Nr.
Main	P/F Screened w/ Inserts & NO Parts	1	830-5100-B1
P/F	P/F Complete w/ Inserts & ALL Parts	1	505-6004-B1-B1

Nr.	MISC. PARTS (BELOW)	QTY.	SPI PART Nr.
1	Insulation Fiche Paper (under Lower Flippers)	2	545-5721-00
2	Relay + Conn. Asm. Amp Suit	1	511-5249-00
2	Relay+ Conn Asm Transporter (Prem)	1	511-5249-01
2	Relay+ Conn Asm 3-Bank	1	511-5249-02
3	PCB, OPTO Transceiver Amplifier	1	520-5239-01
Item 3 is secured by: #6 X 3/4" SHWH AB (Zinc) (Qty. 4) (234-5003-00)			
<i>Application Note : Required for OPTO Transceiver Pairs (500-6775-01) listed on the next page (... Switches). See the Yellow Pages, PCBs, Pages y 42 - y 43.</i>			
4	Resistor Assy		511-5223-00
See the Yellow Pages,			
5	3A 250v Slo-Blo Fuse	2	200-5000-08
	Fuse Clip Holder (Socket)	1	205-5000-01
Item 5 is secured by: #6 X 1/2" PPH AB (Qty. 1/per) (237-5805-00)			
<i>Note: Item 5, Fuse Clip Holder (Socket) 205-5000-01 is part of a set of 12 (205-5000-12). You can order them as individuals (...-01) or a set of 12 (...-12).</i>			
6	Diode Terminal Strip 3-Lug (810) Isolated	1	055-5204-03
6	Diode Terminal Strip 5-Lug (813) Isolated	1	055-5204-05
6	Diode Terminal Strip 7-Lug (824) Isolated	1	055-5204-07
Items 6B-6C are secured by: #6 X 3/8" HWH AB Zinc (Qty. 1-2/per) (234-5000-00)			
<i>Item 6B (Qty. 1) located in Cabinet. Note: 1N4004 Diodes (112-5003-00) are used in all Diode applications. 1N4001 Diodes can be used for Switches and/or Lamps.</i>			

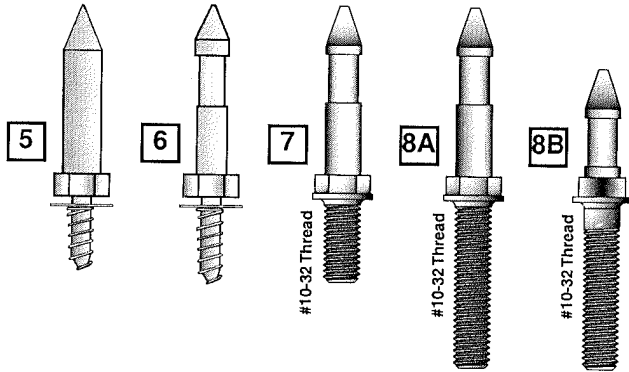
Nr.	MISC. BRACKETS (BELOW)	QTY.	SPI PART Nr.
7	Bracket, Playfield Support Slide	2	535-6862-05
Item 7 is secured by: #10 X 1/2" HWH A (Zinc) (Qty. 2/per) (237-5817-00), #8-32 X 5/8" SHWH Swage (Zinc) Wax (Qty. 1/per) (237-5975-03) and #8-32 T-Nut (Qty. 1/per) (240-5101-00)			
8	Bracket, Edge Slide (Extended)	2	535-5988-01
Item 8 is secured by: #4 X 1/2" PFH (Zinc) (Qty. 5/per) (237-5840-00) and #8-32 T-Nut (Qty. 2/per) (240-5101-00)			
9	Bracket, Pivot Pin Welded Assembly	2	500-5329-03
Item 9 is secured by: #8-32 X 5/8" SHWH Swage (Zinc) Wax (Qty. 2/per) (237-5975-03)			
10	Bracket, Back Panel Mounting	2	535-8964-00
Item 10 is secured by: #8 X 1/2" SHWH AB (Zinc) (Qty. 2/per) (234-5101-00) and #8-32 T-Nut (Qty. 2/per) (240-5101-00) For a 3D View: See the Blue Pages, Page b 23.			
11	Bracket, Hole Protect (center up-post)	0	535-0289-00
Item 11 secured under the playfield by: #8 X 1/2" SHWH AB (Zinc) (Qty. 2) (234-5101-00)			
12	Tie Post (White Nylon) 3-1/2"	11	545-5253-01
Item 12 is secured by: #6 X 5/8" SHWH AB Green (Qty. 1/per) (234-5002-00) and wiring with Cable Tie, 5-1/2" (Qty. 1/per) (040-5001-02)			

Parts Identification

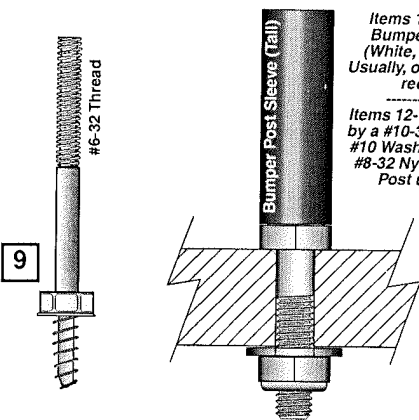
# Playfield - Metal Posts & Fin Shank Screws (Actual Size) †



Item 4 Post can use 5/16" I.D. Black Ring, 545-5348-02 or White Ring 545-5348-52.



Items 6-8 Posts can use 7/16" O.D. Black Ring, 545-5348-17 or White Ring, 545-5348-67.



Items 11-16 & 18 Posts can use a Black Bumper Post Sleeve (Tail), 545-5308-00 (White, 545-5308-08 or Red, 545-5308-22) Usually, only Posts which are in the ball path require a Bumper Post Sleeve.

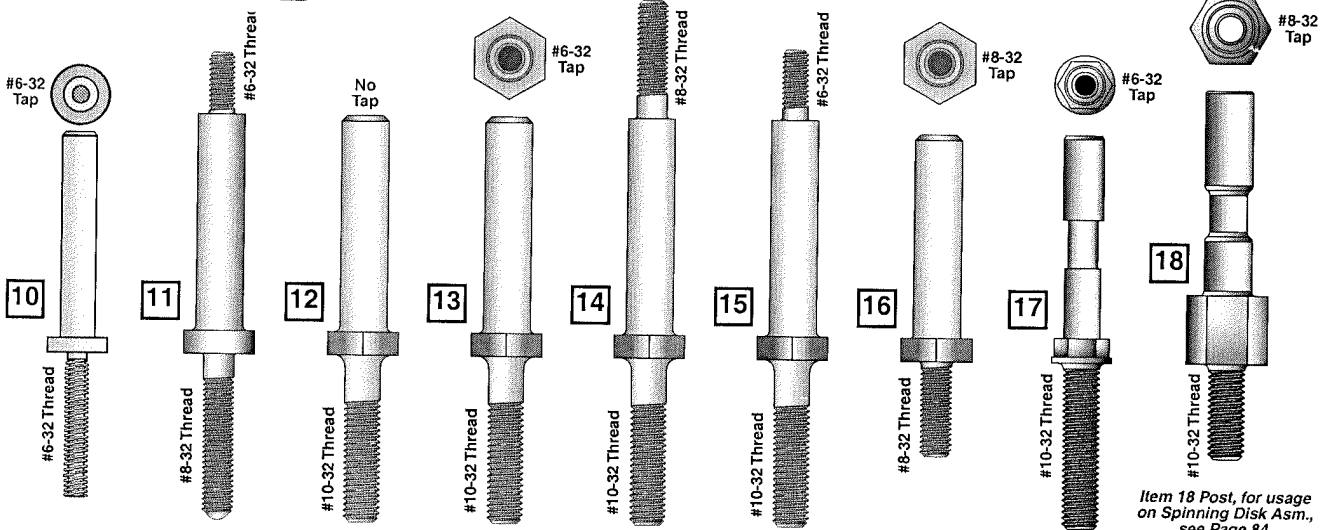
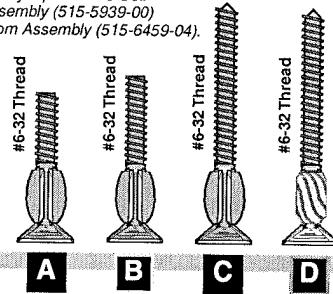
Items 12-15 & 18 Posts are typically secured by a #10-32 Nylon Stop Nut, 240-5203-00 and #10 Washer, 242-5010-00 (Item 11 Post use a #8-32 Nylon Stop Nut, 240-5102-00; Item 16 Post use a #8-32 T-Nut, 240-5101-00).

**A & B** Items A & B Note: Typically used to secure Hex Spacers onto the Playfield Wood or Back Panel.

**C** Item C Note: Quantity 4 on bottom Cabinet Speaker Grill (Qty. 4) (also requires #6-32 Nylon Stop Nut, 240-5005-00).

**D** Item D Note: Quantity 3/per on the Coil Bracket Welded Assembly (515-5939-00) in the Bumper Bottom Assembly (515-6459-04).

**A - D** Items A-D Note: The "Fins" keep the screw from turning inside the wood hole.



Item 18 Post, for usage on Spinning Disk Asm., see Page 84.

Parts Identification

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	<b>Nr.</b>	<b>FIN SHANK SCREWS</b>	<b>SPI PART Nr.</b>
9	Post [Fasten] #6-32 Thread // Wood Screw	530-5263-01	A	#6-32 X 3/4" Fin Shank Screw	237-5921-02
10	Post #6-32 Tap // #6-32 Thread	530-5127-00	B	#6-32 X 7/8" Fin Shank Screw	237-5921-04
11	Post [Fasten] #6-32 Thread // #8-32 Thread	530-5007-00	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

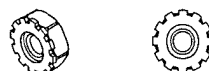
**8** NOT ALL PARTS LISTED ABOVE ARE USED ON THIS GAME (QUANTITIES PER GAME WILL DIFFER). COMPARE ACTUAL PART ON GAME TO ABOVE DRAWINGS TO IDENTIFY THE PART NUMBER REQUIRED.

# Playfield - 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 Foto 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



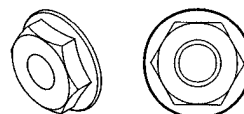
Nr.	HEX NUTS*	SPI PART Nr.
H1	#6-32 Hex Nut (No Star Washer)	240-5004-00
H2	#8-32 Hex Nut	240-5103-00
H3	#10-32 Hex Nut	240-5201-00
H4	#10-24 Hex Nut	240-5202-00
<i>Item H4 used with #10-24 X 1" Carriage Bolt Square Neck Black (231-5021-00) located in the Cabinet for the Side Armor Rear (towards Backbox).</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 Slide 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

Parts Identification

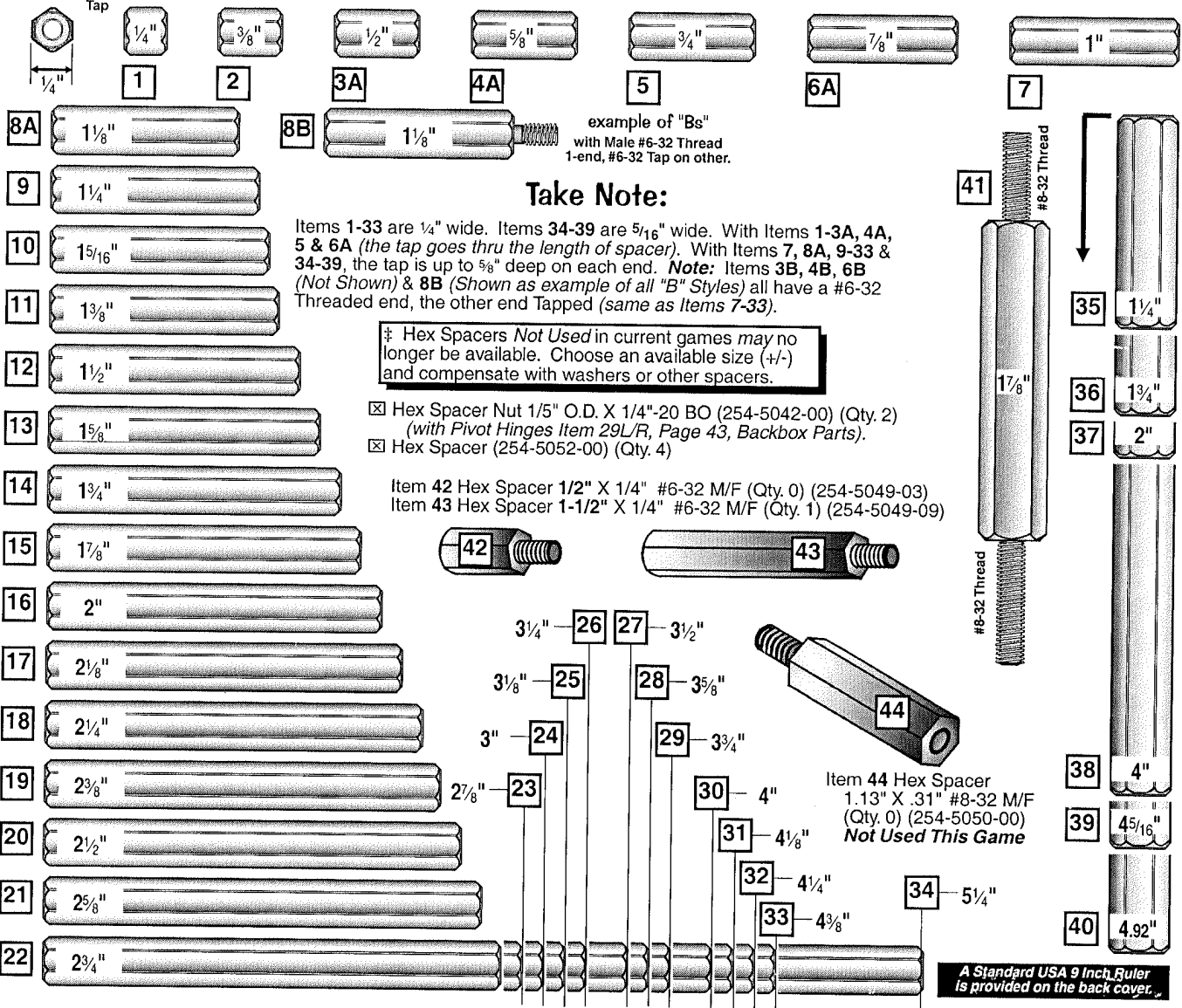
**NOT ALL PARTS LISTED ABOVE ARE USED ON THIS GAME (QUANTITIES PER GAME WILL DIFFER).  
COMPARE ACTUAL PART ON GAME TO ABOVE DRAWINGS TO IDENTIFY THE PART NUMBER REQUIRED.**

# Playfield Top - Hex Spacers (Actual Size) †

Hex Spacers:

#6-32

Tap



## Take Note:

Items 1-33 are 1/4" wide. Items 34-39 are 5/16" wide. With Items 1-3A, 4A, 5 & 6A (the tap goes thru the length of spacer). With Items 7, 8A, 9-33 & 34-39, the tap is up to 5/8" deep on each end. **Note:** Items 3B, 4B, 6B (Not Shown) & 8B (Shown as example of all "B" Styles) all have a #6-32 Threaded end, the other end Tapped (same as Items 7-33).

‡ Hex Spacers Not Used in current games may no longer be available. Choose an available size (+/-) and compensate with washers or other spacers.

- ☒ Hex Spacer Nut 1/5" O.D. X 1/4"-20 BO (254-5042-00) (Qty. 2) (with Pivot Hinges Item 29L/R, Page 43, Backbox Parts).
- ☒ Hex Spacer (254-5052-00) (Qty. 4)

Item 42 Hex Spacer 1/2" X 1/4" #6-32 M/F (Qty. 0) (254-5049-03)  
 Item 43 Hex Spacer 1-1/2" X 1/4" #6-32 M/F (Qty. 1) (254-5049-09)

Item 44 Hex Spacer  
 1.13" X .31" #8-32 M/F  
 (Qty. 0) (254-5050-00)  
**Not Used This Game**

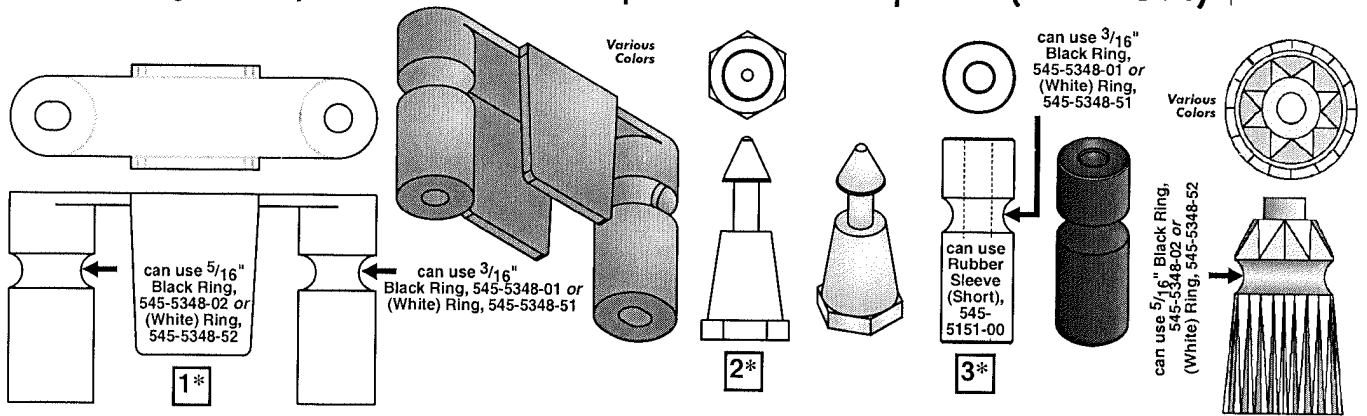
A Standard USA 9 Inch Ruler Is Provided on the Back Cover.

Parts Identification

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.**

# Playfield Top - Plastic Posts & Spacers & Metal Spacers (Actual Size) †



## PLASTIC PART COLOR CHART

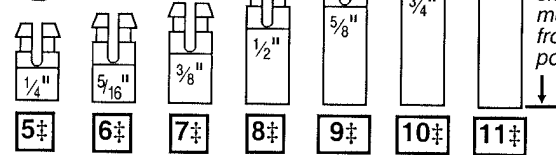
Nr.	Color	Nr.	Color	Nr.	Color
-00	Black	-06	Yellow	-12	Fluor. Blue
-01	Clear	-07	Orange	-13	Teal Green
-02	Red	-08	(White)	-14	(Gray)
-03	Amber	-09	Purple	-15	Luminescent
-04	Green	-10	Fluor. Org.	-16	Gold
-05	Blue	-11	Fluor. Green		

\* 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.

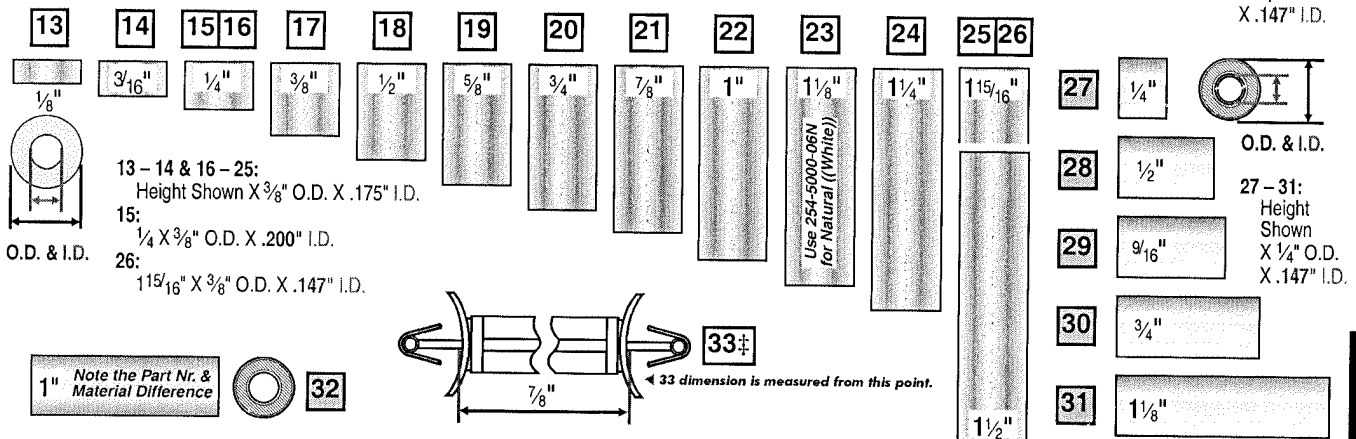


5 - 11:  
Height Shown X 9/32" O.D.  
X .153" I.D.



† 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.

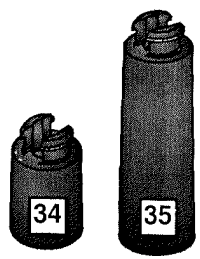
12: 1/2" X 1/4" O.D. X .147" I.D.



1" Note the Part Nr. & Material Difference

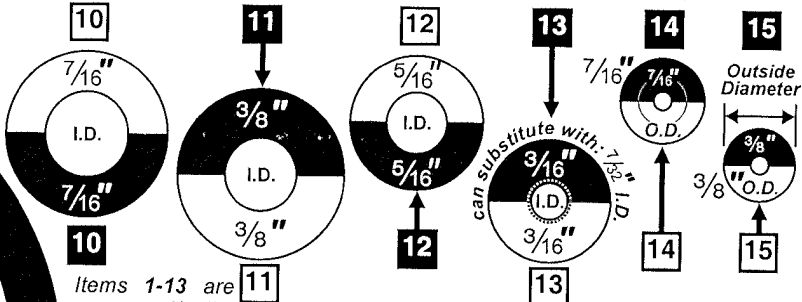
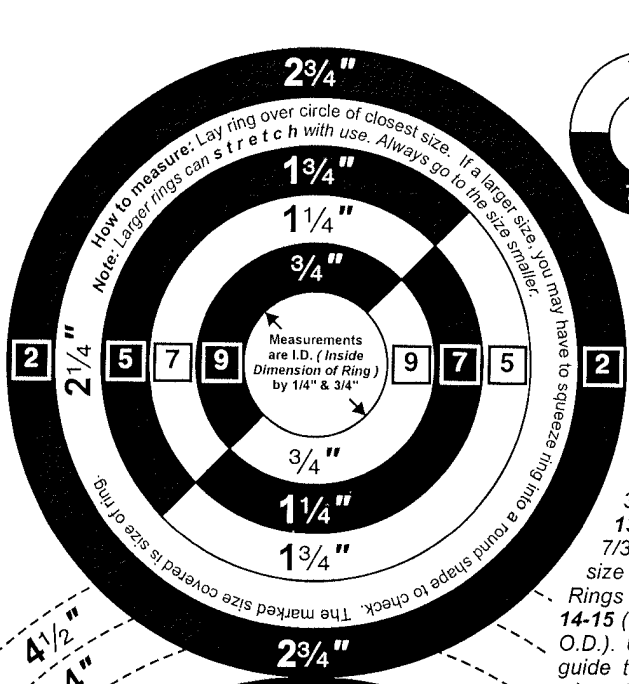
Nr.	PLASTIC POSTS & SPACERS	SPI PART Nr.	Nr.	PLASTIC POSTS & SPACERS	SPI PART Nr.
1**	Top Lane Plastic Mini-Lite Hood (XX-Color)	550-5061-XX	21	7/8" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)	254-5000-11
2**	Mini-Jewel Plastic Post (XX-Color)	550-5052-XX	22	1" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)	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 3 Only: Use Part Number (550-5059-00) for color Black.			Item 23 Only: Add the letter "N" for color Natural (if available) or "B" 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.			25	1 1/2" X 3/8" O.D. X .175" I.D. Pls. Spcr. (Gray)	254-5000-08
Items 1-4 Note: Use Color Chart above for last 2-digits. Not all colors are available.			26	1 15/16" X 3/8" O.D. X .147" I.D. Plastic Spacer (Gray)	254-5000-15
Items 13-26 Only: Spacers may also be Black in color (random from vendor).			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.		
5 ‡	1/4" Self Retain. Plastic Spacer (White)	254-5007-02	27	1/4" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5014-03
6 ‡	9/16" Self Retain. Plastic Spacer (White)	254-5007-05	28	1/2" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5014-00
7 ‡	3/8" Self Retain. Plastic Spacer (White)	254-5007-01	29	9/16" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5014-04
8 ‡	1/2" Self Retain. Plastic Spacer (White)	254-5007-04	30	3/4" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5014-01
9 ‡	5/8" Self Retain. Plastic Spacer (White)	254-5007-00	31	1 1/8" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5014-02
10 ‡	3/4" Self Retain. Plastic Spacer (White)	254-5007-03	32	1" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5001-00
11 ‡	1" Self Retain. Plastic Spacer (White)	254-5007-06	33 ‡	7/8" Plastic Spacer Support (Dual-Locking)	254-5039-14
12	1/2" X 1/4" O.D. X .147" I.D. Pls. Spacer (White)	254-5000-03	34	Plastic Spacer, .5"	254-5054-00
13	1/8" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)	254-5000-19	35	Plastic Spacer, 1.13"	254-5054-01
14	3/16" X 3/8" O.D. X .175" I.D. Pls. Spcr. (Gray)	254-5000-18			
15	1/4" X 3/8" O.D. X .200" I.D. Pls. Spcr. (Gray)	254-5000-02			
16	1/4" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)	254-5000-09			
17	3/8" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)	254-5000-12			
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 DRAWING TO IDENTIFY THE P/N REQUIRED.**

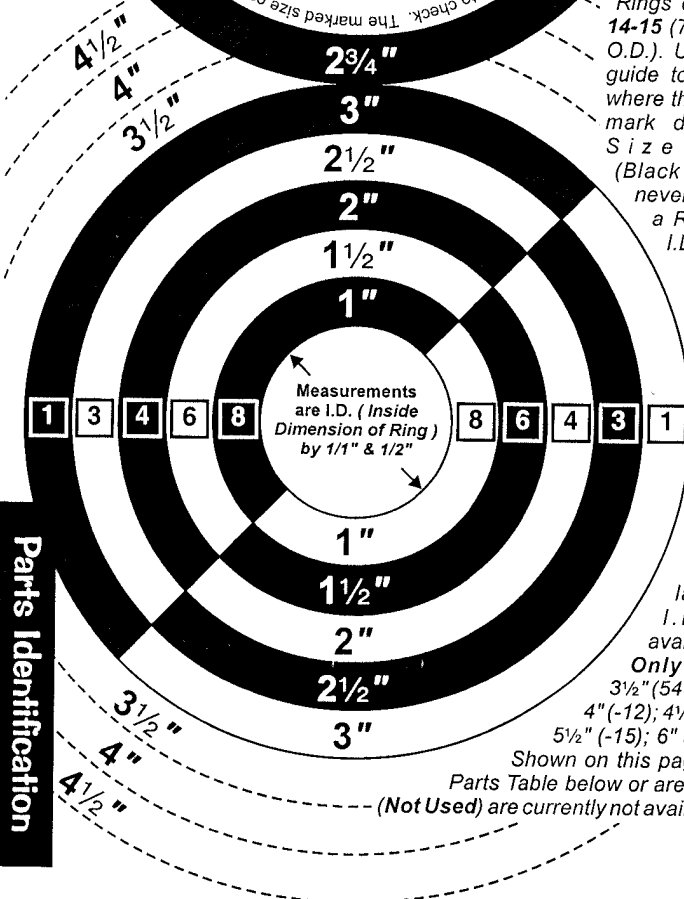


Parts Identification

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



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



Parts Identification

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

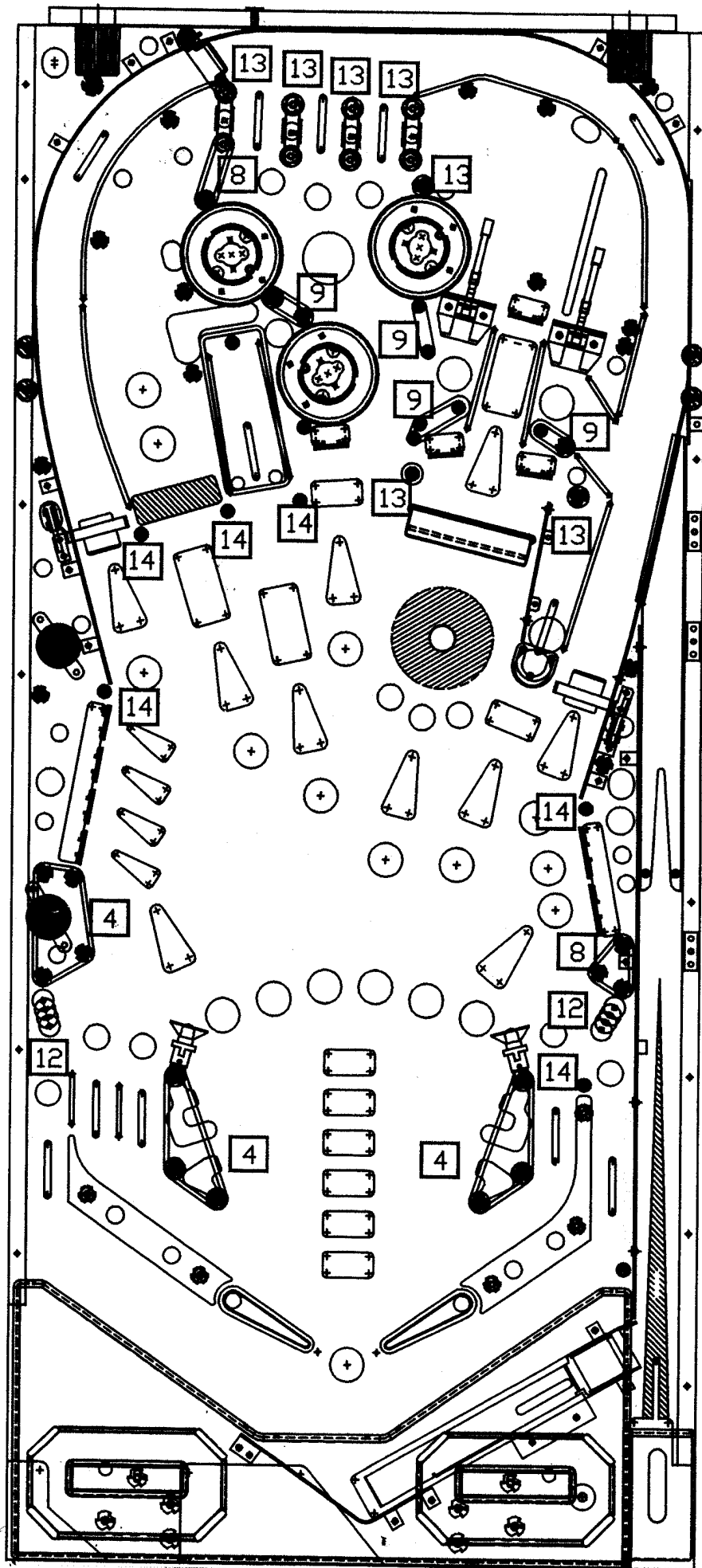
Nr.	RUBBER RINGS	QTY.	SPI PART Nr.
1	3" I.D. Rubber Ring BLACK		545-5348-10
	3" I.D. Rubber Ring WHITE		545-5348-60
2	2 3/4" I.D. Rubber Ring BLK		545-5348-20
	2 3/4" I.D. Rubber Ring WHT		545-5348-70
3	2 1/2" I.D. Rubber Ring BLK		545-5348-09
	2 1/2" I.D. Rubber Ring WHT		545-5348-59
4	2" I.D. Rubber Ring BLACK	3	545-5348-08-40
	2" I.D. Rubber Ring WHITE		545-5348-58
5	1 3/4" I.D. Rubber Ring BLK		545-5348-21
	1 3/4" I.D. Rubber Ring WHT		545-5348-71
6	1 1/2" I.D. Rubber Ring BLK	1	545-5348-07
	1 1/2" I.D. Rubber Ring WHT		545-5348-57
7	1 1/4" I.D. Rubber Ring BLK		545-5348-06
	1 1/4" I.D. Rubber Ring WHT		545-5348-56
8	1" I.D. Rubber Ring BLACK	2	545-5348-05-40
	1" I.D. Rubber Ring WHITE		545-5348-55
9	3/4" I.D. Rubber Ring BLACK	4	545-5348-04-40-40
	3/4" I.D. Rubber Ring WHITE		545-5348-54
10	7/16" I.D. Rubber Ring BLK		545-5348-18
	7/16" I.D. Rubber Ring WHT		545-5348-68
11	3/8" I.D. Rubber Ring BLACK		545-5348-03
	3/8" I.D. Rubber Ring WHITE		545-5348-53
12	5/16" I.D. Rubber Ring BLK	7	545-5348-02-40
	5/16" I.D. Rubber Ring WHT		545-5348-52
13	3/16" I.D. Rubber Ring BLK	7	545-5348-01-40
	3/16" I.D. Rubber Ring WHT		545-5348-51
14	7/16" O.D. Rubber Ring BLK	38	545-5348-17-40
	7/16" O.D. Rubber Ring WHT		545-5348-67
Note: Item 14, 7/16" O.D. Black Rings (Qty. 44 of 49) are used to cushion the Bayonet Sockets under the playfield (between bracket & playfield).			
15	3/8" O.D. Rubber Ring BLK		545-5348-19
	3/8" O.D. Rubber Ring WHT		545-5348-69
16	Small Flipper BLACK Ring (Soft Duro)		545-5207-00
	Small Flipper RED Ring (Soft Duro)		545-5207-22
	Large Flipper BLACK Ring (50 Duro)		545-5277-00
	Large Flipper YELLOW Ring (50 Duro) (use -06 40 Duro)		545-5277-04
17	Large Flipper WHITE Ring (50 Duro)		545-5277-08
	Large Flipper RED Ring (Soft Duro)	2	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 BLK Pad (Lg. w/ grommet)		545-5428-00
Item A are located on Flipper Assemblies. See next page for location.			
B*	Bumper BLK Pad (Sm. w/ grommet)	6	545-5105-00
Item B are located on multiple assemblies. See next page for location.			

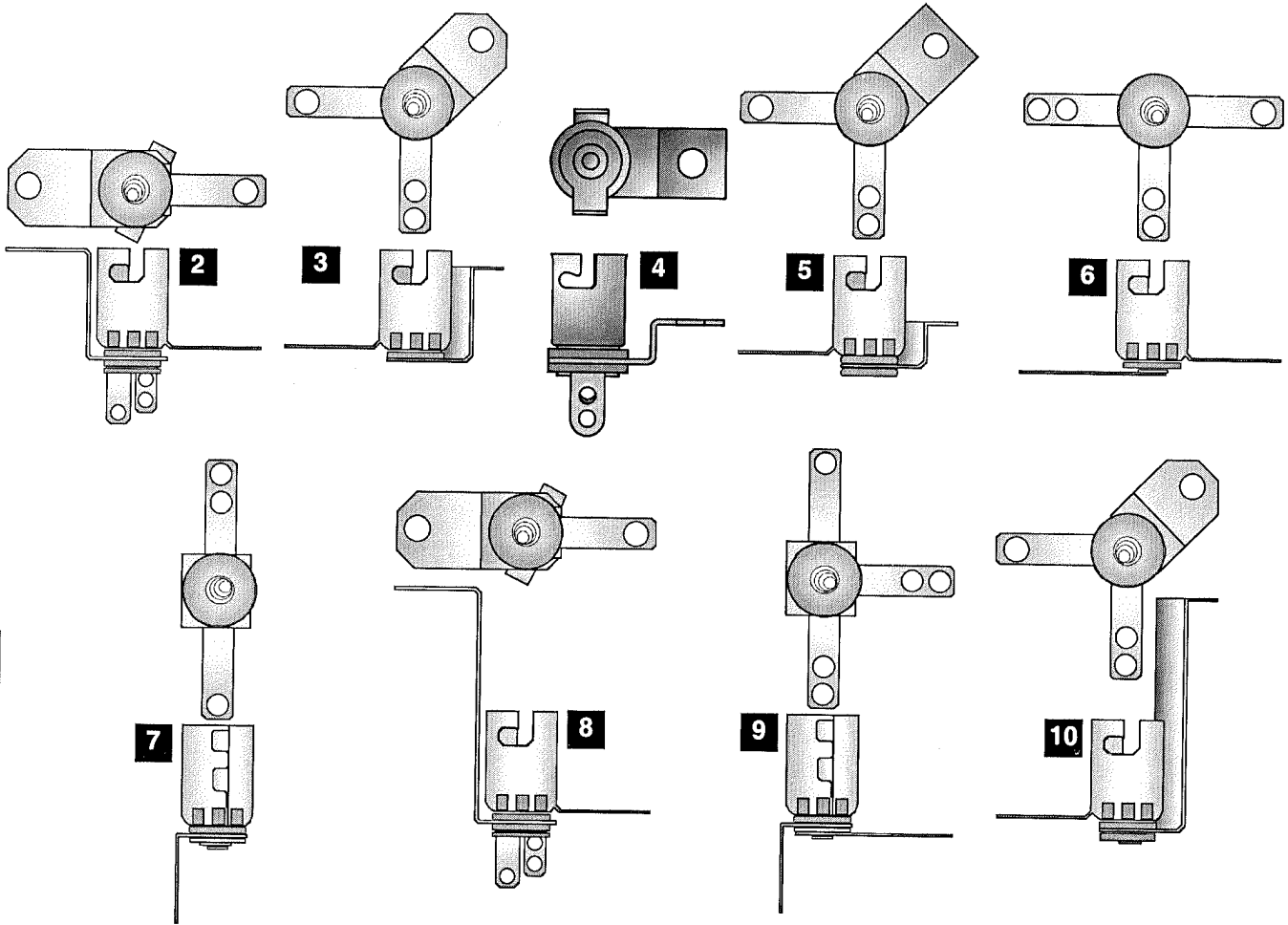
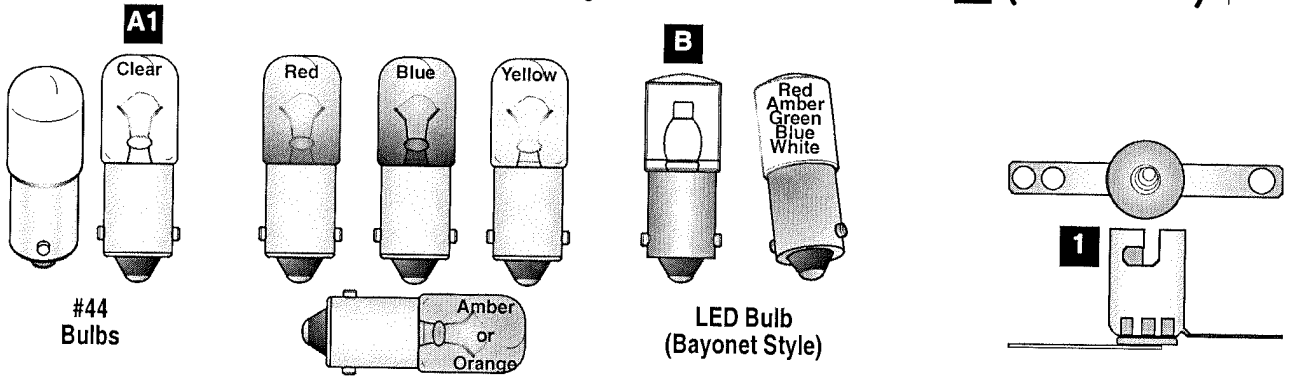
Nr.	RBR. BUMPER POST SLVS.	QTY.	SPI PART Nr.
D*	Bumper BLACK Post Sleeve (Tall)		545-5308-00
Item D in RED use 545-5308-22; Item D in WHITE use 545-5308-08.			
E*	Bumper Post Sleeve (Short)		545-5151-00



P13



# Playfield Top & Bottom - Small Bayonet Sockets & Bulbs ■ (Actual Size) †



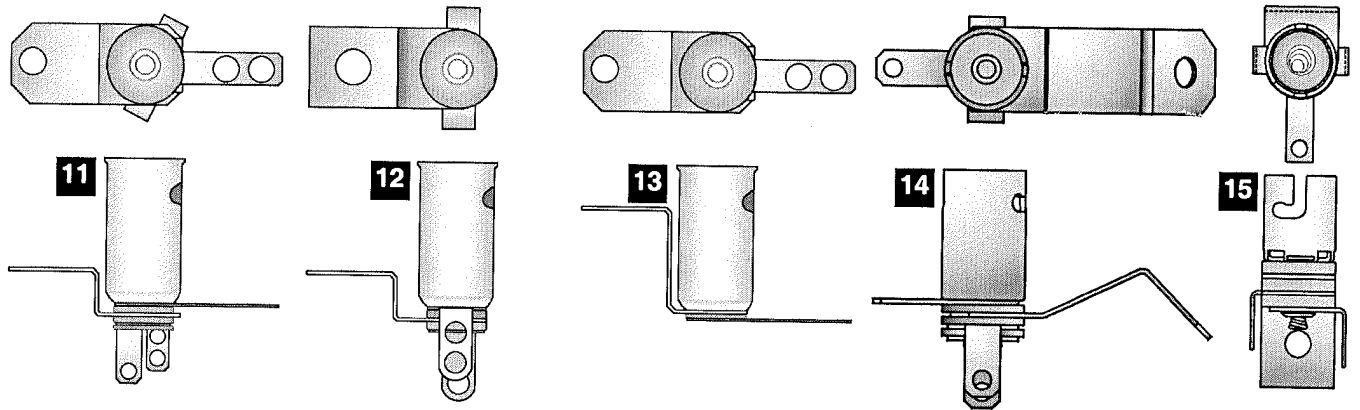
Parts Identification

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		<i>Item B Note: Different Colors may be available -</i>	
	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);	

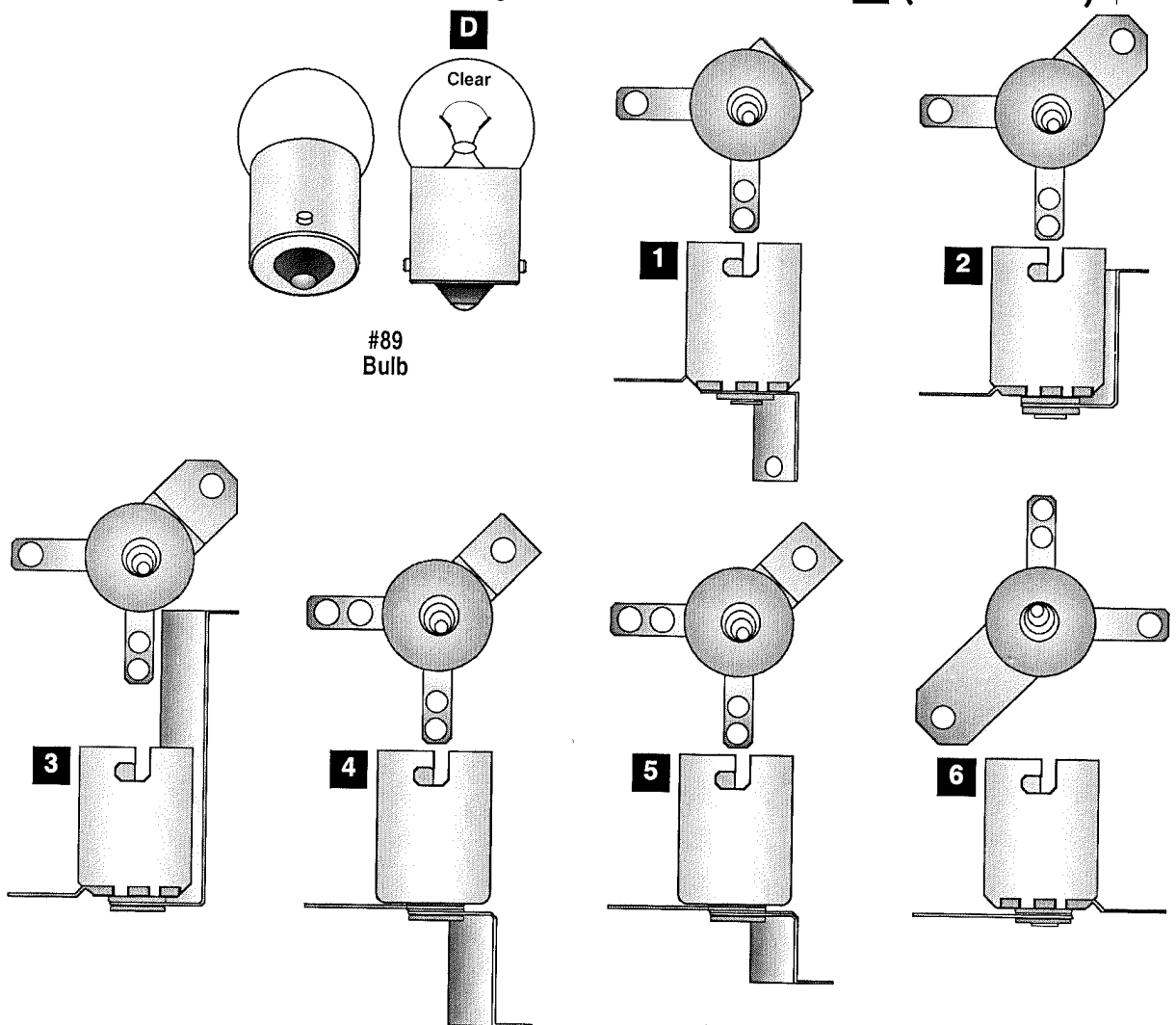
Nr.	SMALL BAYONET SOCKETS	SPI PART Nr.	Nr.	SMALL BAYONET SOCKETS	SPI PART Nr.
1	2-Lug Staple Down Socket	077-5000-00	10	2-Lug Stand-Up Socket (Tall Bracket)	077-5005-00
2	3-Lug Stand-Up Socket (Med. Brkt.)	077-5008-00	11	3-Lug Stand-Up Long Shell Socket	077-5013-00
3	2-Lug Stand-Up Socket (Med. Brkt.)	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 Top & Bot. - Small Bayonet Sockets & Bulbs ■ (Actual Size) † Continued



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



Parts Identification

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.

**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)..... 520-5052-00
  - ▷ 128 X 32 Dot Matrix CES-LED // EURO ONLY RoHS //..... 520-5052-05

**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)

Use the below **Coils Detailed Chart Table** in conjunction with **Sec. 5, Chp. 1, Backbox I/O Power Driver Board Detailed Wiring Diagram (I/O Board Connectors J6, J7, J8 & J9) and Backbox Board Layout Wiring Diagram:**

High Current Coils Group 1			Drive Transistor	Driver Output Board	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	50v DC	BRN-BLK	J8-P1	26-1200 090-5044-ND
#2	AUTO LAUNCH	Q2		YEL-VIO	J10-P9/10	50v DC	BRN-RED	J8-P3	24-940 090-5038-ND	
#3	AMP SUIT MAGNET	Q3		VIO-YEL	J10-P8	50v DC	BRN-ORG	J8-P4	22-650. 090-5042-00-ND	
#4	NOT USED	Q4								
#5	UP-DOWN 3-BANK RELAY	Q5		BROWN	J7-P10	20v DC	BRN-GRN	J8-P6	RELAY 190-5004-00	
#6	LINK LOCKUP UP	Q6		YEL-VIO	J10-P9/10	50v,DC	BRN/BLU	J8-P7	26-1200 090-5044-ND	
#7	LINK LOCKUP LATCH	Q7		YEL-VIO	J10-P9/10	50VDC	BRN- VIO	J8-P8	MINI COIL 515-7585-00-ND	
#8	SHAKER MOTOR (OPTIONAL)	Q8		YEL-VIO	J17-P7	16VAC 12DC	BRN-GRY	J8-P9	S. MOTOR 502-5027-00	
High Current Coils Group 2			Drive Transistor	Driver Output Board	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	TOP LEFT POP BUMPER	Q9	▲ I/O Power Driver ▼		YEL-VIO	J10-P9/10	50v DC	BLU-BRN	J9-P1	26-1200 090-5044-ND
#10	TOP RIGHT POP BUMPER	Q10		YEL-VIO	J10-P9/10	50v DC	BLU-RED	J9-P2	26-1200 090-5044-ND	
#11	BOTTOM POP BUMPER	Q11		YEL-VIO	J10-P9/10	50v DC	BLU-ORG	J9-P4	26-1200 090-5044-ND	
#12	NOT USED	Q12								
#13	AMP SUIT MOTOR RELAY	Q13		BROWN	J7-P10	20VDC	BLU-GRN	J9-P6	RELAY 190-5004-00	
#14	NOT USED	Q14								
#15	LEFT FLIPPER (50v RED/YEL)	Q15		GRY-YEL-3A Fuse-RED-YEL	J10-P6/7	50v DC	ORG-GRY	J9-P8	24-1570 090-5025-ND	
#16	RIGHT FLIPPER (50v RED/YEL)	Q16		BLU-YEL-3A Fuse-RED-YEL	J10-P6/7	50v DC	ORG-VIO	J9-P9	23-1500 090-5062-ND	
Low Current Coils Group 1			Drive Transistor	Driver Output Board	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	LEFT SLINGSHOT	Q17	▲ I/O Power Driver ▼		BROWN	J7-P1	20v DC	VIO-BRN	J7-P2	23-800 090-5001-ND
#18	RIGHT SLINGSHOT	Q18		BROWN	J7-P1	20v DC	VIO-RED	J7-P3	23-800 090-5001-ND	
#19	AMP SUIT MOTOR	Q19		BROWN	J7-P1	20v DC	VIO-ORG	J7-P4	RELAY 190-5004-00	
#20	LINK FLASH	Q20		ORANGE	J6-P10	20v DC	VIO-WHT	J7-P6	#89 Bulb 165-5000-89-HF-5	
#21	BACK PANEL FLASH (X2)	Q21		ORANGE	J6-P10	20v DC	VIO-GRN	J7-P7	#89 Bulb 165-5000-89-HF	
#22	LINK (L) FLASH	Q22		ORANGE	J6-P10	20v DC	VIO-BLU	J7-P8	#89 Bulb 165-5000-89-HF	
#23	LINK (R) FLASH	Q23		ORANGE	J6-P10	20v DC	VIO-BLK	J7-P9	#89 Bulb 165-5000-89-HF	
#24	OPTIONAL (e.g. Coin Meter)	Q24								
Diode On Terminal Strip (if noted)										
Low Current Coils Group 2			Drive Transistor	Driver Output Board	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	POP BUMPER FLASH	Q25	▲ I/O Power Driver ▼		ORANGE	J6-P10	20v DC	BLK-BRN	J6-P1	#89 Bulb 165-5000-89-HF
#26	AMP MULTIBALL FLASH	Q26		ORANGE	J6-P10	20v DC	BLK-RED	J6-P2	#89 Bulb 165-5000-89-HF	
#27	NOT USED	Q27								
#28	AMP SUIT FLASH (X2)	Q28		ORANGE	J6-P10	20VDC	BLK-YEL	J6-P4	#89 BULB 165-5000-89-HF	
#29	LEFT SIDE FLASH	Q29		ORANGE	J6-P10	20v DC	BLK-GRN	J6-P5	#89 Bulb 165-5000-89-HF	
#30	LEFT SIDE BLUE (X2)	Q30		ORANGE	J6-P10	20v,DC	BLK-BLU	J6-P6	#89 Bulb 165-5000-89-HF	
#31	RIGHT SIDE BLUE (X2)	Q31		ORANGE	J6-P10	20v DC	BLK-VIO	J6-P7	#89 Bulb 165-5000-89-HF	
#32	RIGHT SIDE FLASH	Q32		ORANGE	J6-P10	20v DC	BLK-GRY	J6-P8	#89 Bulb 165-5000-89-HF	

Coil Note: ∅ -ND means 'No Diode'. -00B or -00T can be used for coil replacements, but the diode must be removed. Call for more info.

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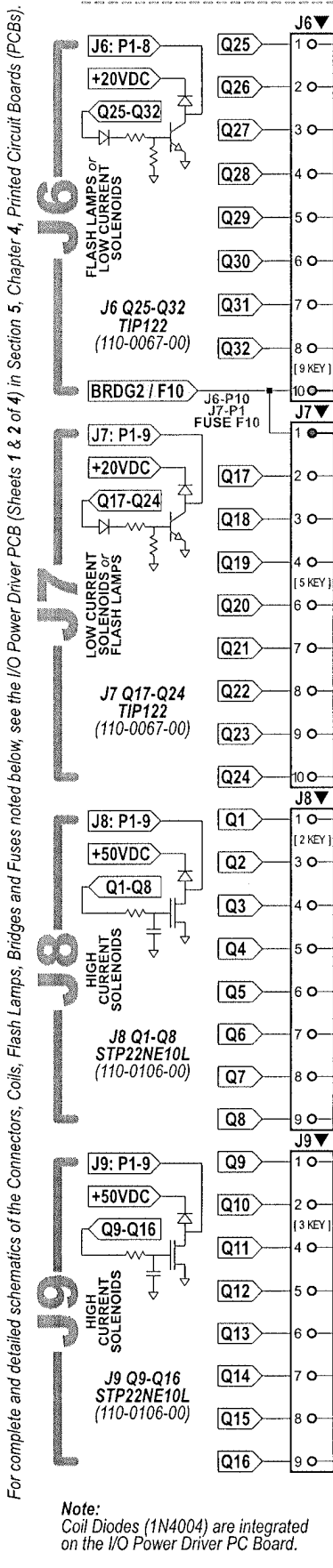
# Backbox I/O Power Driver Board

(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



**Note:**  
Coil Diodes (1N4004) are integrated on the I/O Power Driver PC Board.

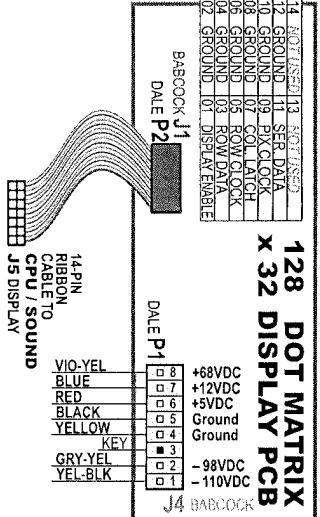
**#33 - #35 Note:** If this game is equipped with an optional Ticket Dispenser & Meter, see the end of Sec. 5, Chapter 4 for wiring information. Ensure Std. Adj. 56, Ticket Dispenser = YES.

Backbox  
Wiring

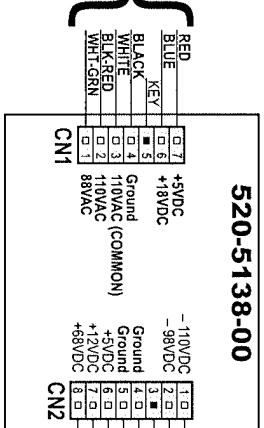
Backbox Wiring

# Backbox Board Layout Wiring Diagram

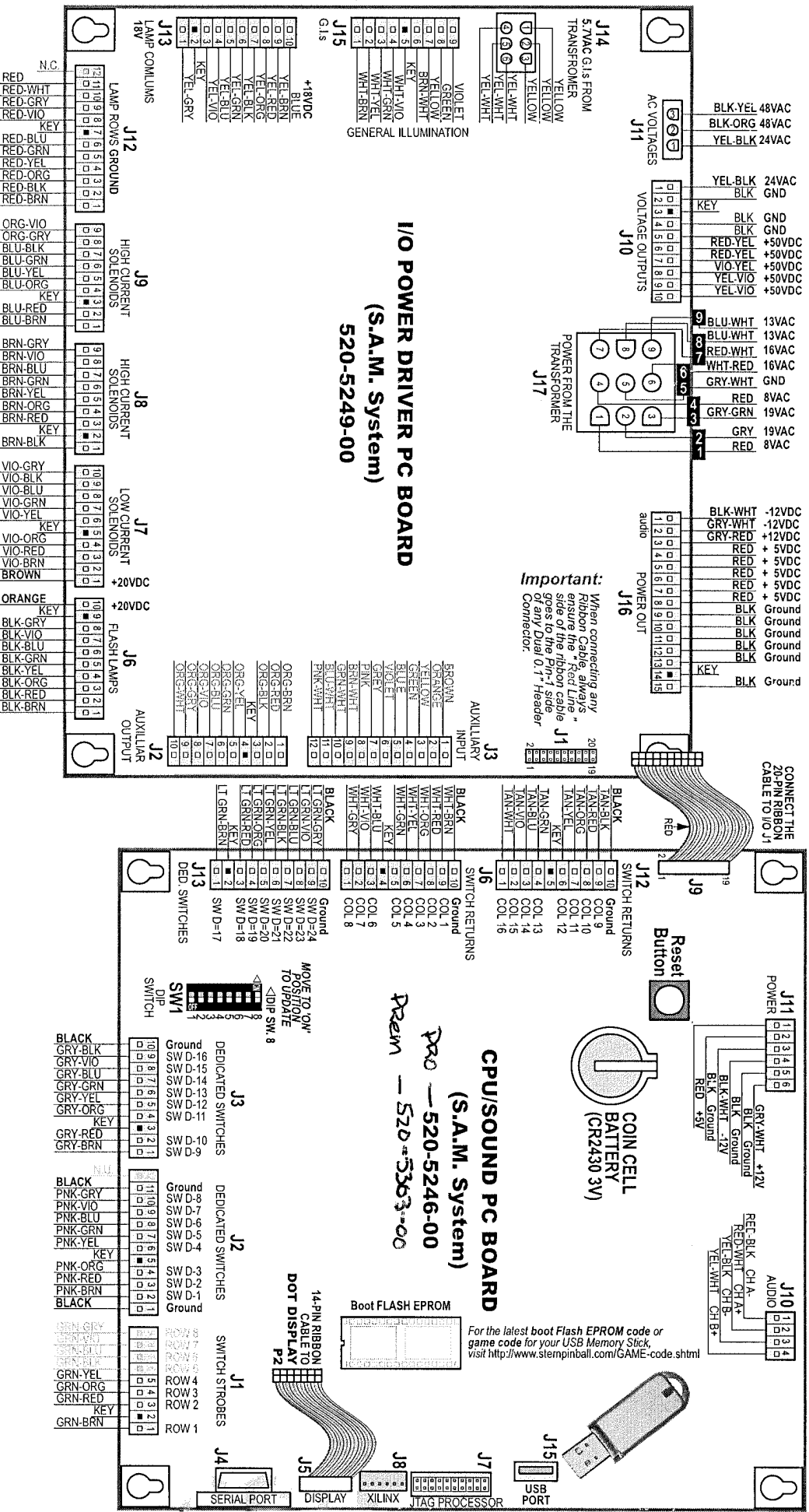
128 X 32 Dot Matrix Display PCB	1	520-5052-00
// EURO ONLY Rohs // 128 X 32 DM CES PCB		520-5052-05
// EURO ONLY Rohs // Dot Matrix Bezel		545-6281-00
Ribbon Cable, 14-Pin (33')		036-5260-33
// EURO ONLY Rohs // LED Ribbon Cable Filler PCB		520-5259-00
Display Cable (Wiring Harness)		036-5454-01
// EURO ONLY Rohs // LED Display Adapter Harness		036-5520-00



CN1 to Transformer (Cabinet)



DISPLAY POWER SUPPLY PCB



## I/O POWER DRIVER PC BOARD (S.A.M. System) 520-5249-00

## CPU/SOUND PC BOARD (S.A.M. System) 520-5246-00

Prém - 520-5363-00

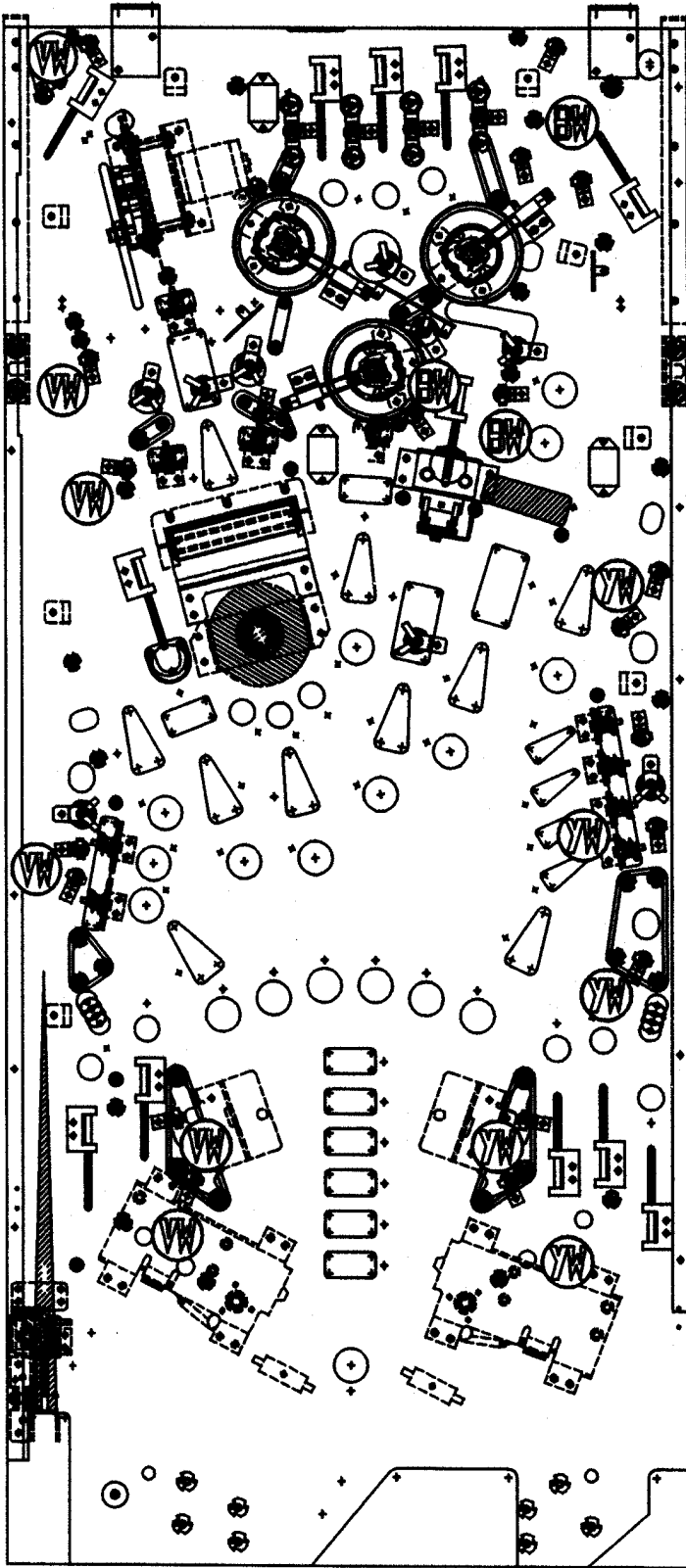
For the latest boot Flash EPROM code or game code for your USB Memory Stick, visit <http://www.stempinball.com/GAME-code.shtml>

Backbox Wiring

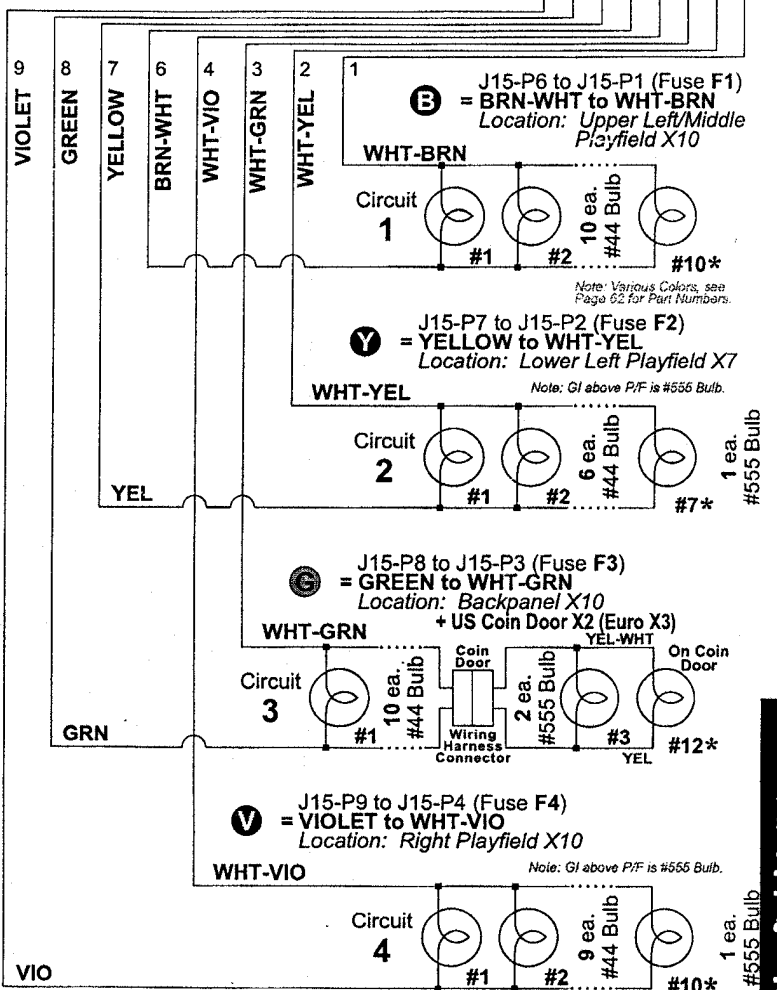
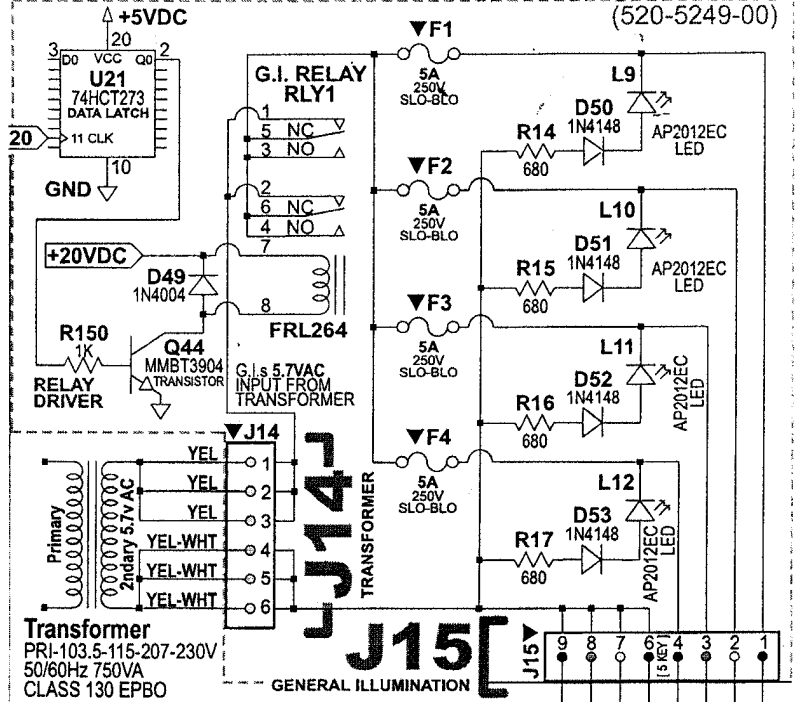
Y4

## General Illumination Circuit Detailed Wiring Diagram

Below: Bottom of Playfield shown as if leaning up against the Backbox.



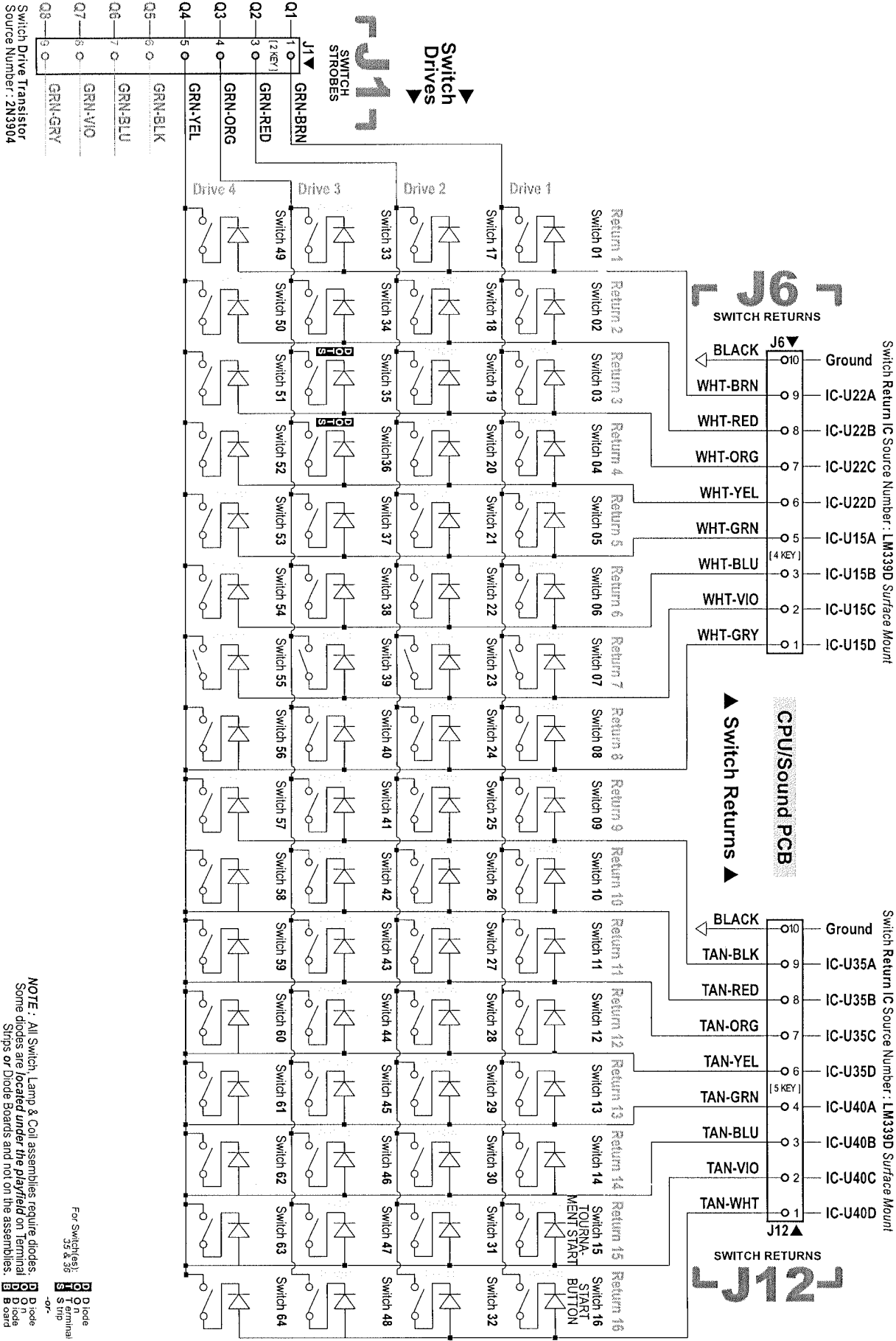
## Partial View I/O Power Driver PCB (520-5249-00)



\* G.I. Bulb quantities may change during production.

Playfield Wiring

# Playfield Switch Wiring Diagram



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

Playfield Wiring

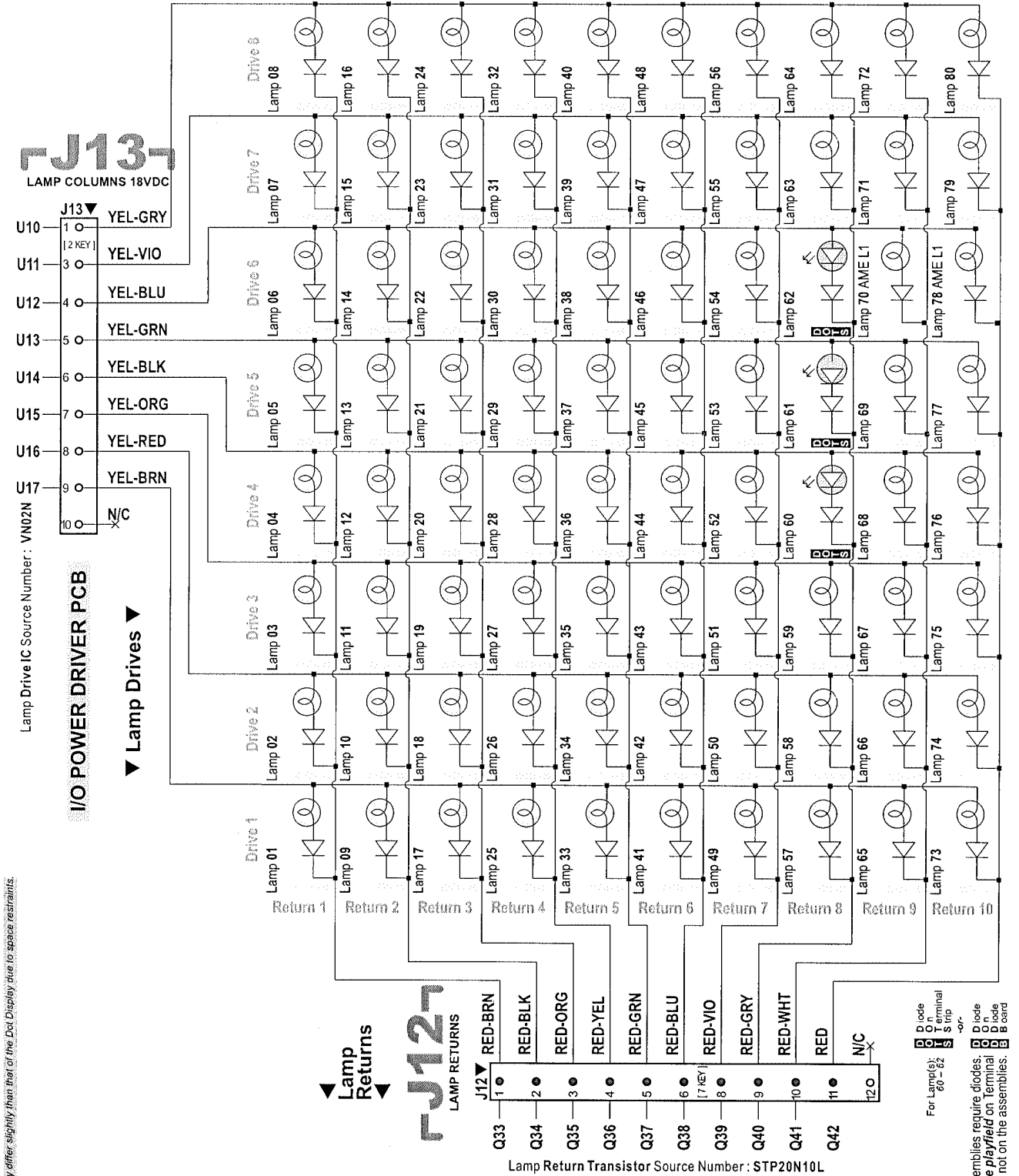
NOTE : All Switch, Lamp & Coil assemblies require diodes. Some diodes are located under the playfield on Terminal Strips or Diode Boards and not on the assemblies.

For Switches 32 & 36

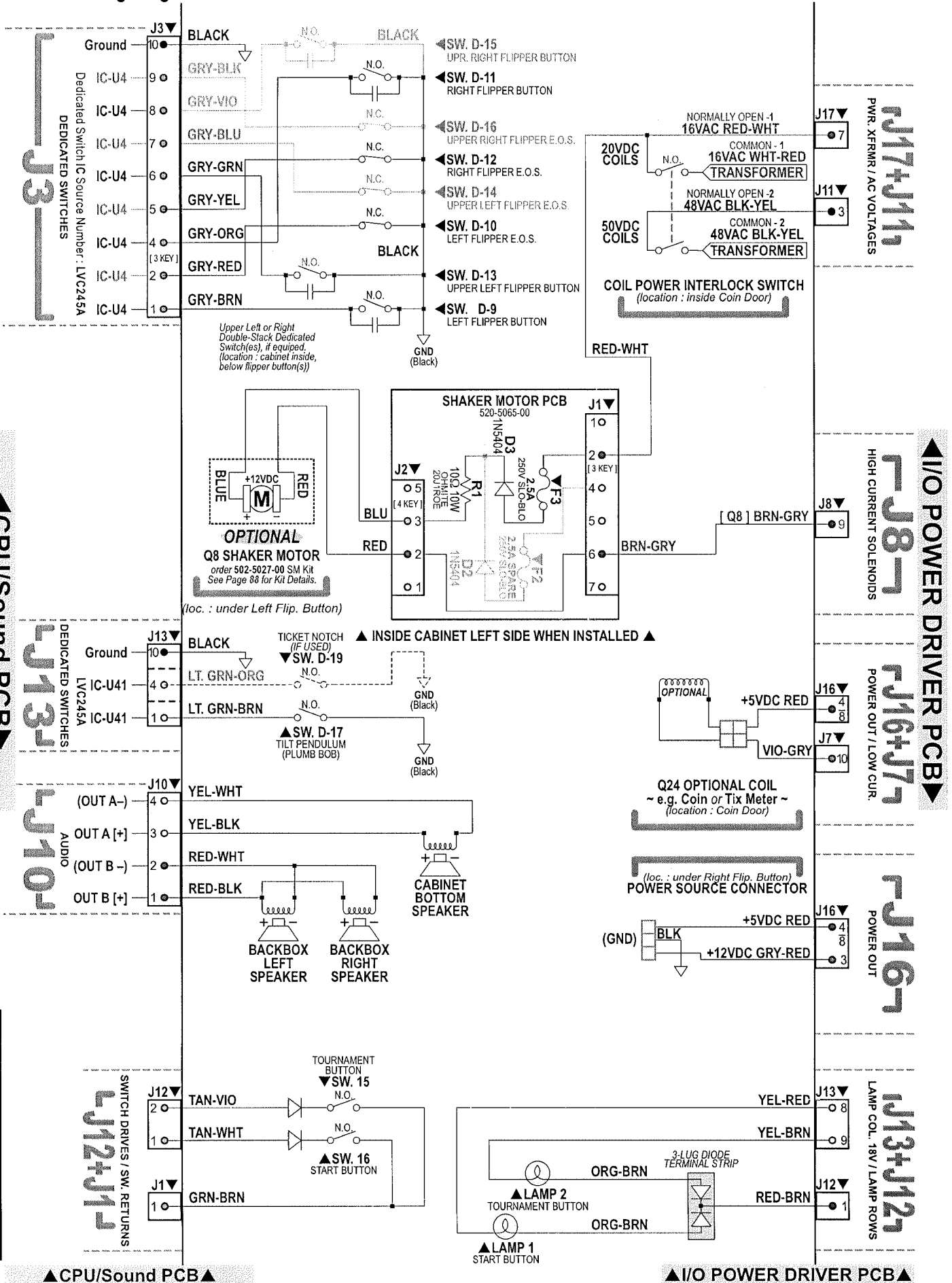




# Playfield Lamp Wiring Diagram



# Cabinet Wiring Diagram



Cabinet and Coin Door Wiring

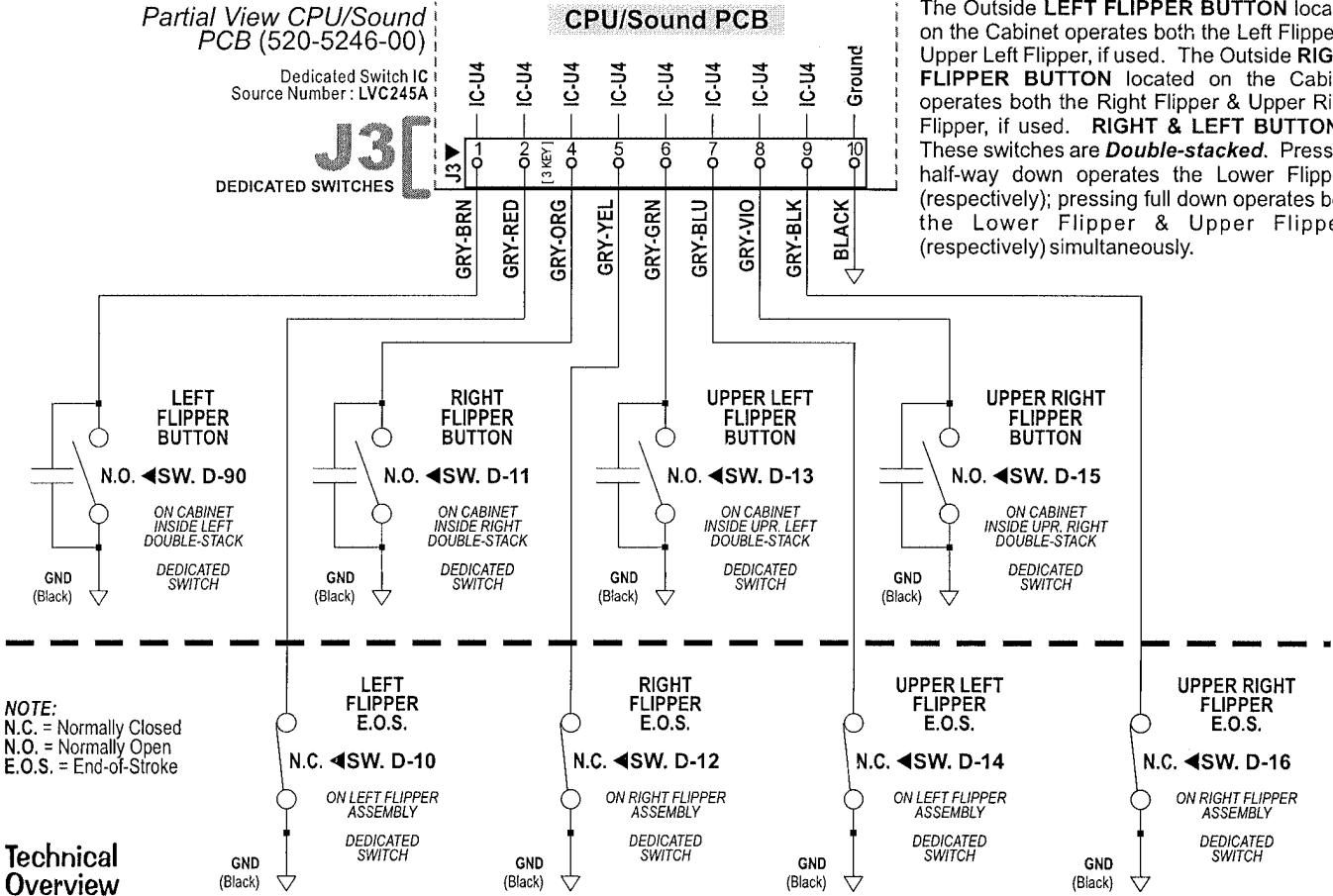
# #-Flipper Circuit Wiring Diagram

Partial View CPU/Sound PCB (520-5246-00)

Dedicated Switch IC Source Number: LVC245A

CPU/Sound PCB

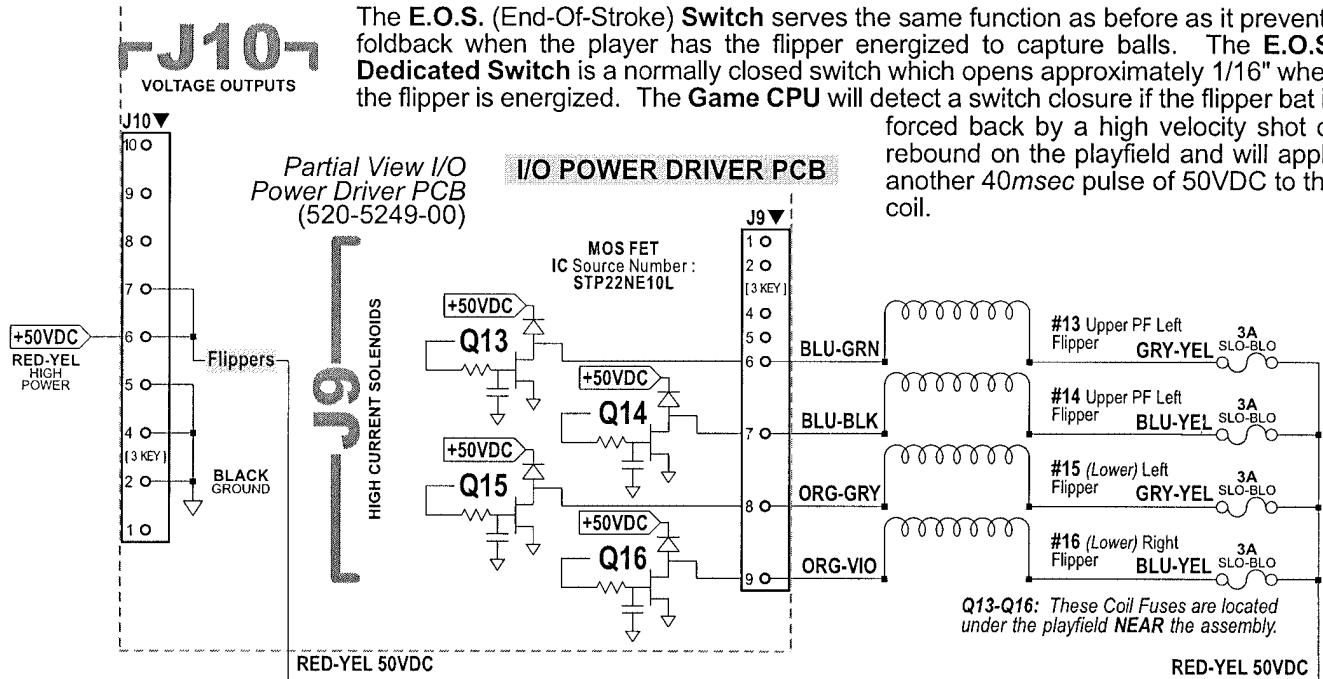
The Outside **LEFT FLIPPER BUTTON** located on the Cabinet operates both the Left Flipper & Upper Left Flipper, if used. The Outside **RIGHT FLIPPER BUTTON** located on the Cabinet operates both the Right Flipper & Upper Right Flipper, if used. **RIGHT & LEFT BUTTONS:** These switches are **Double-stacked**. Pressing half-way down operates the Lower Flippers (respectively); pressing full down operates both the Lower Flipper & Upper Flippers (respectively) simultaneously.



## Technical Overview

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.

The **E.O.S. (End-Of-Stroke) Switch** serves the same function as before as it prevents foldback when the player has the flipper energized to capture balls. The **E.O.S. Dedicated Switch** is a normally closed switch which opens approximately 1/16" when the flipper is energized. The **Game CPU** will detect a switch closure if the flipper bat is forced back by a high velocity shot or rebound on the playfield and will apply another 40msec pulse of 50VDC to the coil.

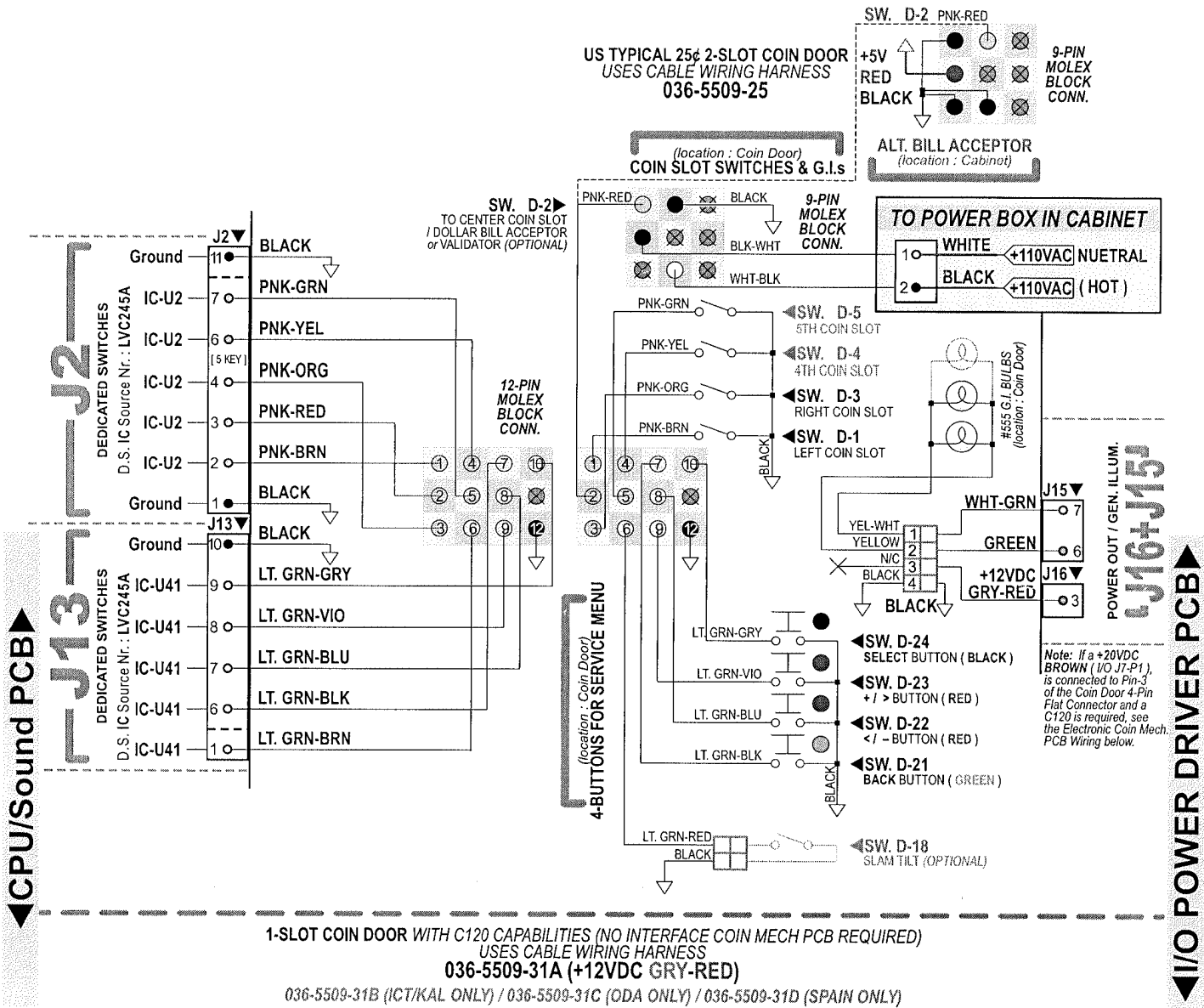


Typical Under-Playfield Fuses are rated:  
**3A 250v Slo-Blo**  
 Do Not Over-Fuse

Playfield Wiring

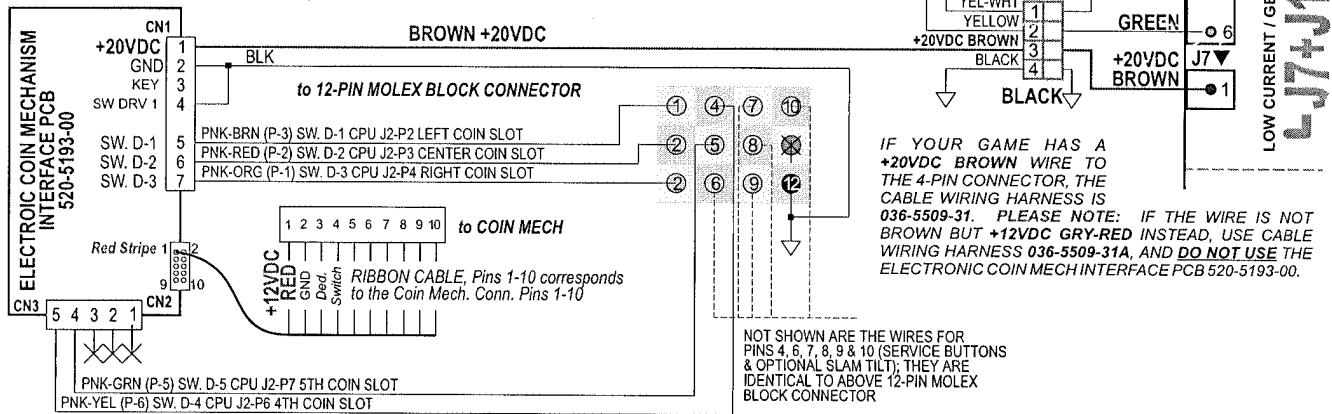
Playfield Wiring

# Coin Door Wiring Diagram



IF YOUR GAME HAS AN ELECTRONIC COIN MECH. INTERFACE PC BOARD ( 520-5193-00 ):

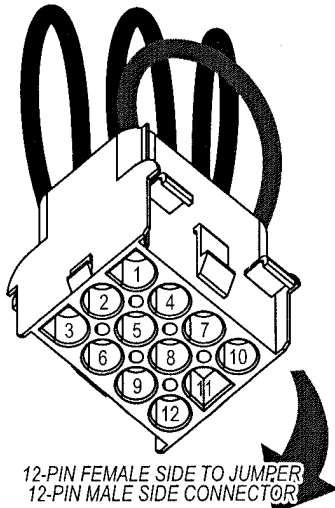
1-SLOT COIN DOOR USE WITH C120 CAPABILITIES REQUIRING PCB 520-5193-00  
USES CABLE WIRING HARNESS  
036-5509-31 (S.A.M. SYSTEM)



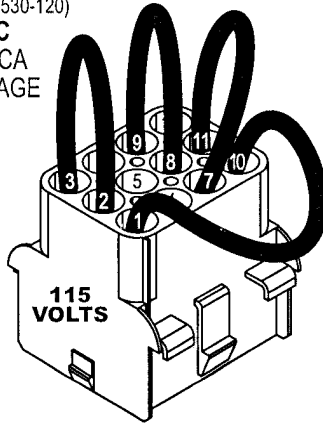
~ WIRING CONFIGURATION WILL VARY ACCORDING TO COUNTRY ~

Cabinet and Coin Door Wiring Y10

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



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



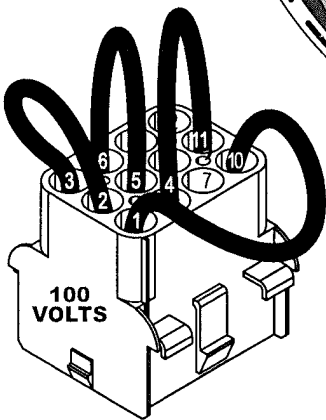
9-PIN MALE SIDE TO TRANSFORMER  
9-PIN FEMALE SIDE CONN.

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

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

12-PIN F/M CONN.  
BACK VIEW ▲

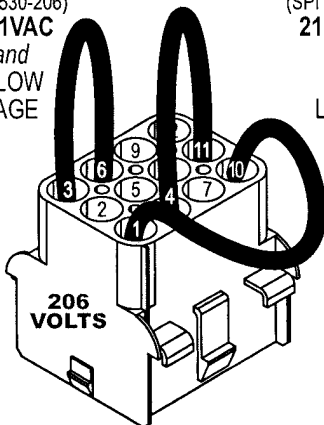
9-PIN F/M CONN.  
▲ BACK VIEW



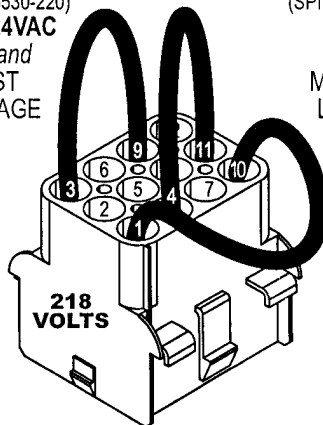
**JUMPER PLUG ▼**  
(SPI PART #036-5530-100)  
**98VAC - 109VAC**  
JAPAN or  
N. AMERICA LOW  
LINE VOLTAGE

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

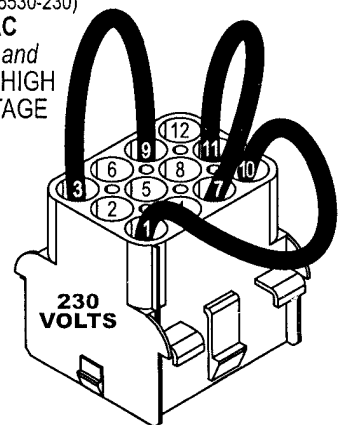
**JUMPER PLUG ▼**  
(SPI PART #036-5530-206)  
**200VAC - 211VAC**  
EUROPE and  
MID. EAST LOW  
LINE VOLTAGE



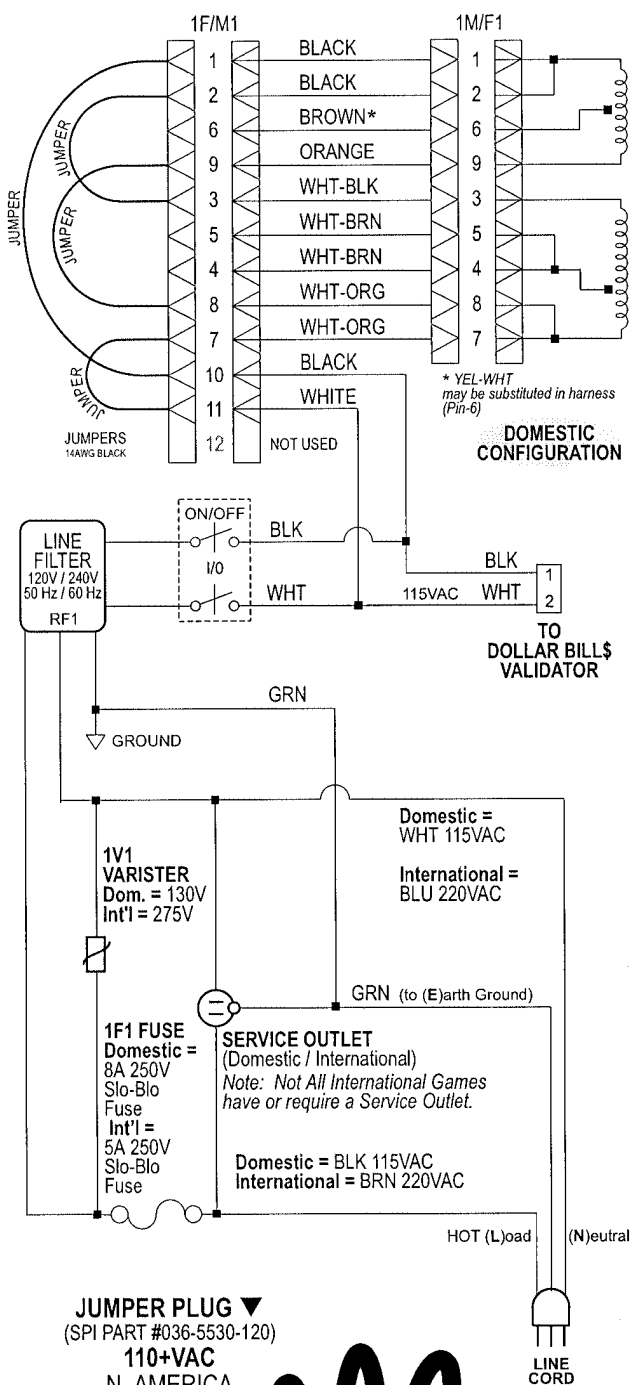
**JUMPER PLUG ▼**  
(SPI PART #036-5530-220)  
**212VAC - 224VAC**  
EUROPE and  
MID. EAST  
LINE VOLTAGE



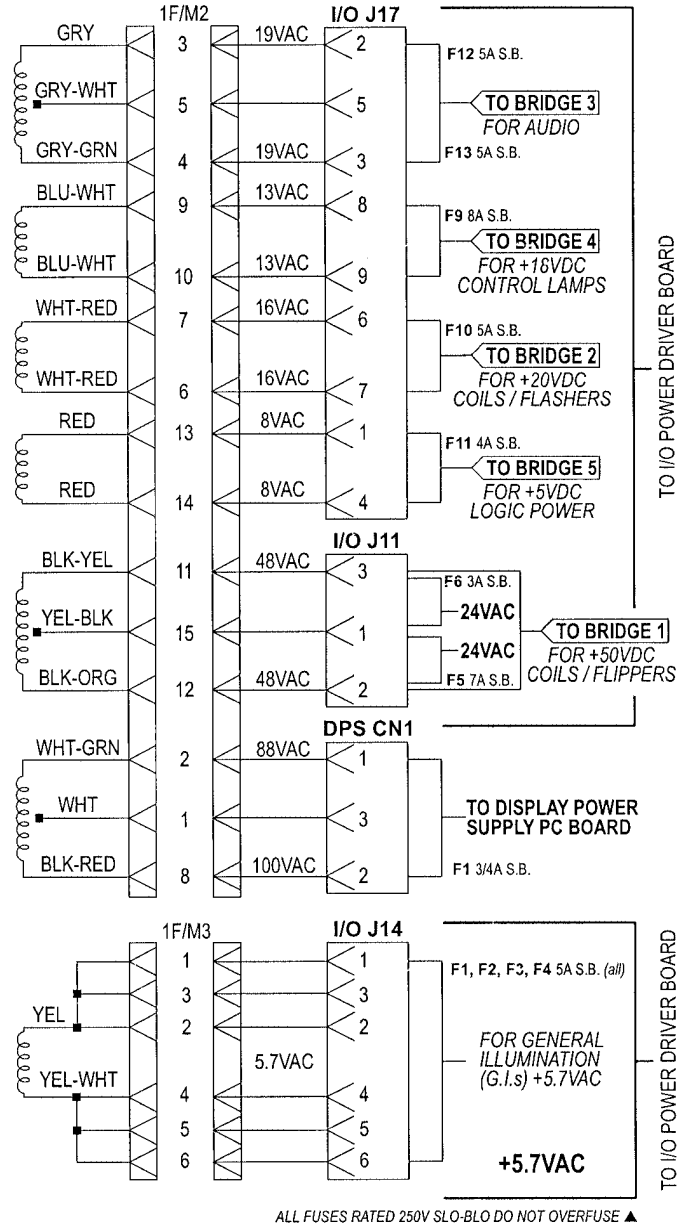
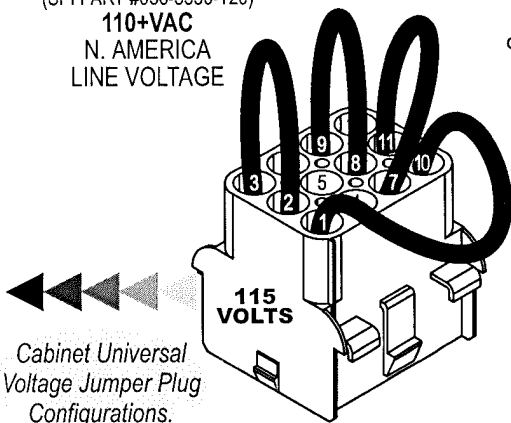
**JUMPER PLUG ▼**  
(SPI PART #036-5530-230)  
**225+VAC**  
EUROPE and  
MID. EAST HIGH  
LINE VOLTAGE



## 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**

# Playfield Terminal Strips

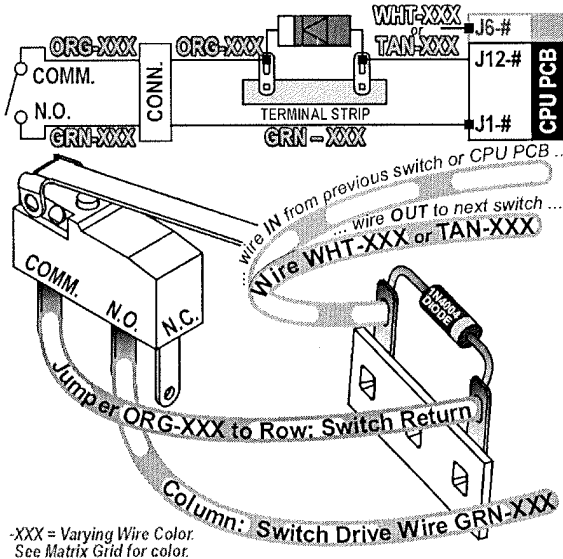


## Explanation:

All Switches, Lamps & Coils require diodes. Coil diodes are located on the I/O Power Driver PCB (*in Backbox*). Some diodes from switches or lamps are moved onto Terminal Strips (*located under the playfield*). This is done where space constraints or excessive vibrations are present. The Switch & Lamp Matrix Grids also note which Switch or Lamp has a diode on a Terminal Strip, noted by **DOTS** (Diode On Terminal Strip).

**Note:** Some wires 'appear' to be doubled on the lugs. The switches and lamps are in a series, so you may see 1 or 2 wires depending where the switch or lamp is in the string.

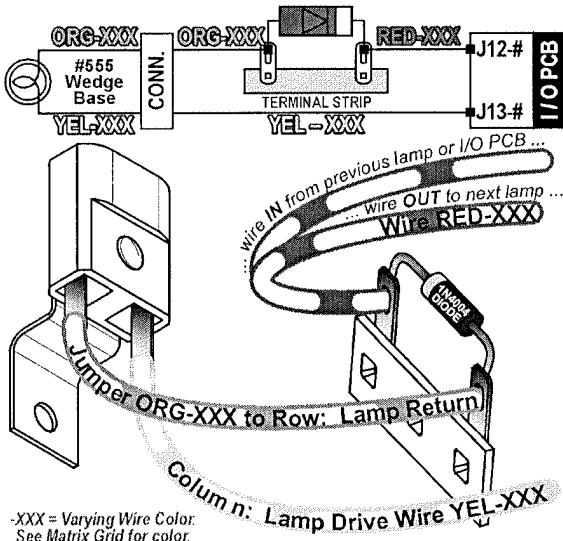
## Typical Switch Wiring & Schematic ... with Switch Diode on a Terminal Strip (DOTS)



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

## Typical Lamp Wiring & Schematic ... with Lamp Diode on a Terminal Strip (DOTS)

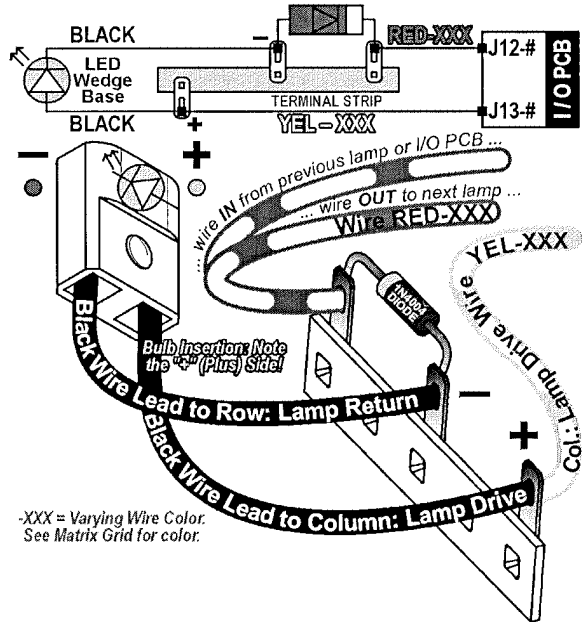
Usually when a #555 Bulb is used as a Controlled Lamp for a Spot Light.



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

## Typical Lamp Wiring & Schematic ... with Lamp Diode on a Terminal Strip (DOTS)

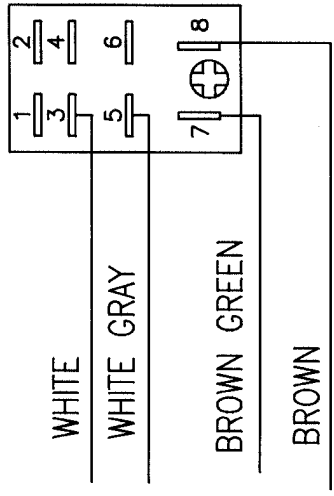
Usually when an LED Module is used as a Controlled Lamp for a Pop Bumper.



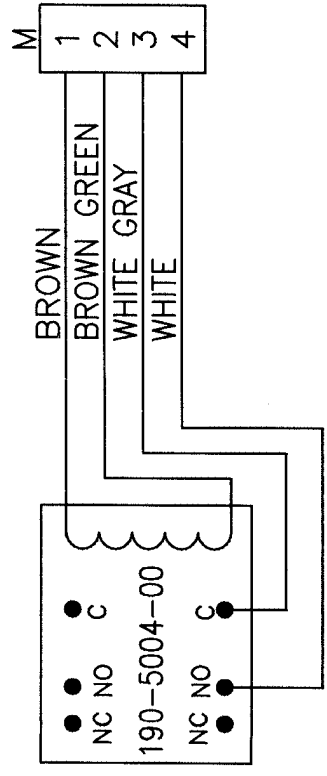
-XXX = Varying Wire Color. See Matrix Grid for color.

# RELAY ASSEMBLY #2-AVATAR

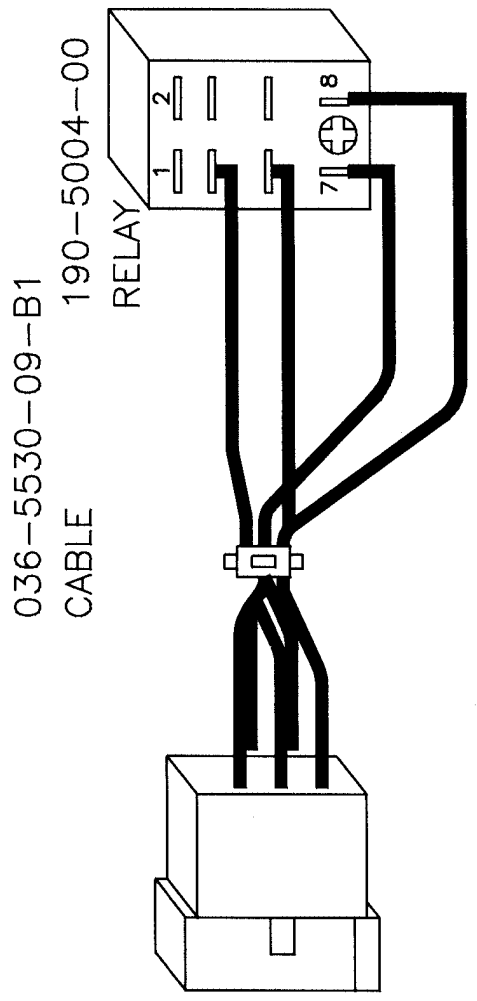
Y14



Relay Cable 036-5539-09-B1



**511-5249-01**



036-5530-09-B1  
CABLE  
190-5004-00  
RELAY

Rev	Description	Eng	Date
P1	Preliminary	Sheridan	06-03-10

Item	Part Number	Description	Qty
1	190-5004-00	Packard Relay	1
2	036-5539-09-B1	Relay Cable	1

DWN. Sheridan	DATE	TITLE	
	06-03-10	Relay and Cable Assembly 3-Bank	
1st USE	SCALE	REV	
AVATAR	N/S	P1	

# 511-5249-02

**Stern Pinball, Inc**  
2220 JANICE AVE., MELROSE PARK, IL. 60160  
PART NO. 511-5249-02



# AVATAR MOTOR & RELAY WIRING

## Operations Notes:

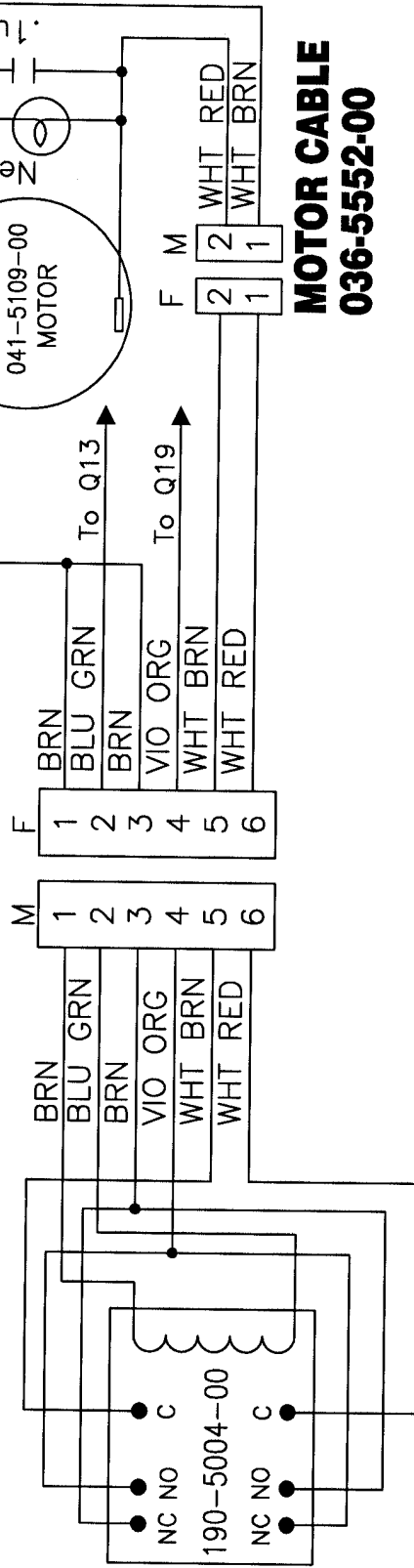
- \* Q13 controls the direction relay
- \* Q19 directly drives the motor

JUNE 21, 2010

# AMP SUIT

## Relay Assy 511-5249-00

Relay Cable 036-5539-07-B1

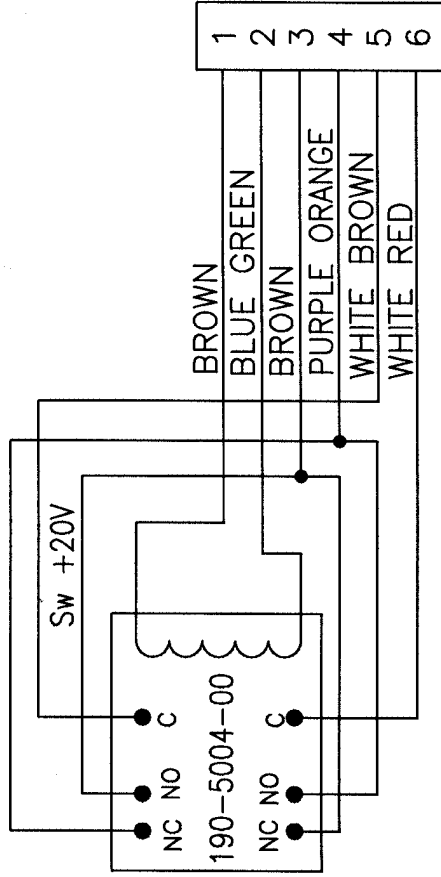
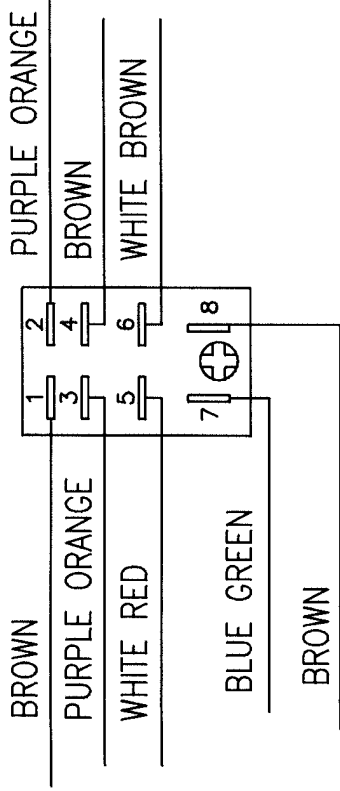


**AMP SUIT CABLE  
036-5539-05-10**

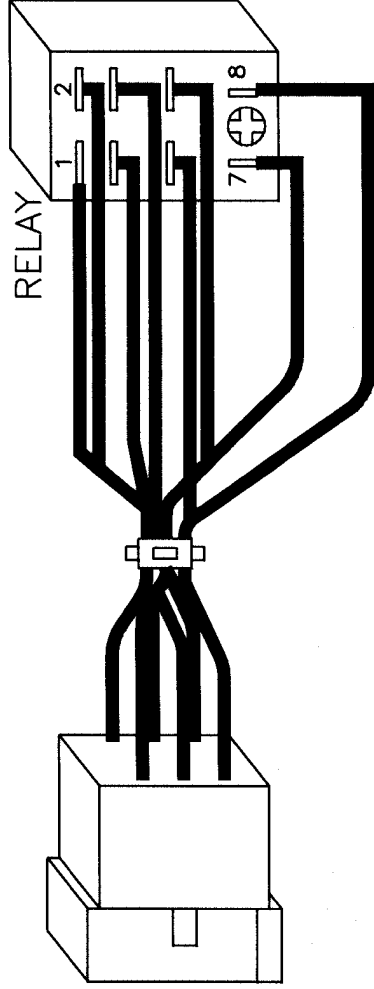
**MOTOR CABLE  
036-5552-00**

# RELAY ASSEMBLY #1- AVATAR

Y16



036-5539-07-B1  
CABLE  
RELAY  
190-5004-00



Rev	Description	Eng	Date
A	Released	Sheridan	07-22-10

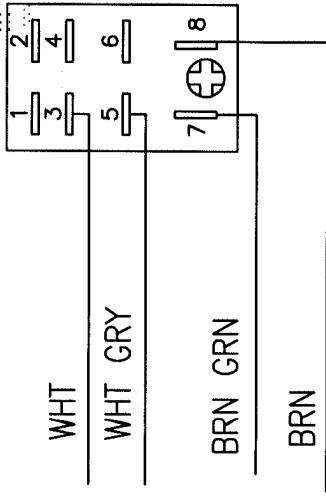
Item	Part Number	Description	Qty
1	190-5004-00	Packer Relay	1
2	036-5539-07-B1	Relay Cable	1

DWN.	DATE	TITLE
Sheridan	05-24-10	Relay and Cable Assembly AMP
1st USE	SCALE N/S	REV A

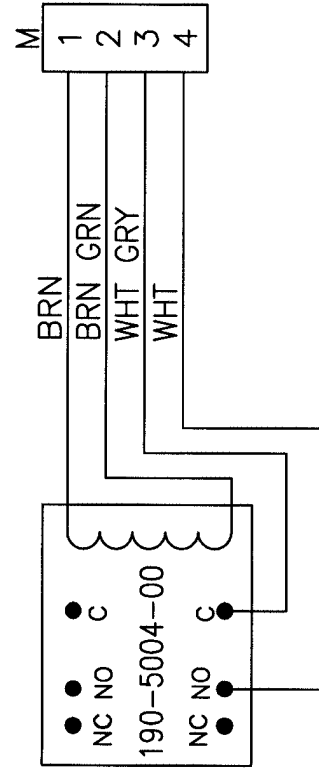
<b>Stern Pinball, Inc</b> 2220 JANICE AVE., MELROSE PARK, IL. 60160		PART NO. 511-5249-00
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# 511-5249-00

# RELAY ASSEMBLY #2 AVATAR PREMIUM



Relay Cable 036-5539-09-B1

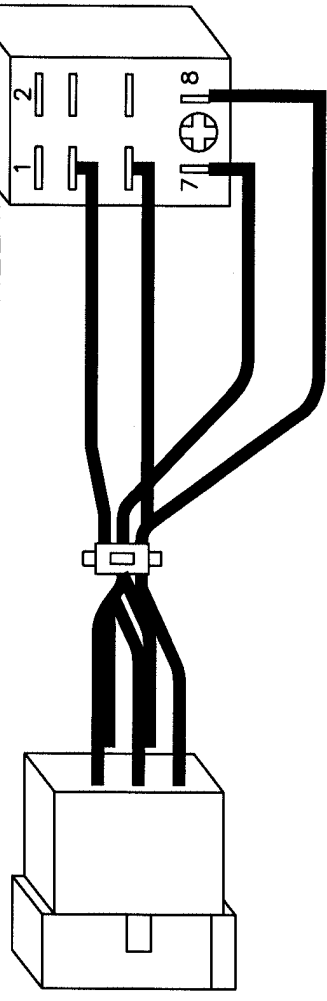


**511-5249-01**

Rev	Description	Eng	Date
A	Released	Sheridan	11-12-10

036-5530-09-B1  
CABLE

190-5004-00  
RELAY



Item	Part Number	Description	Qty
1	190-5004-00	Packard Relay	1
2	036-5539-09-B1	Relay Cable	1

DWN. Sheridan	DATE 06-03-10	TITLE
1st USE AVATAR	SCALE N/S	REV P1
Relay and Cable Assembly		

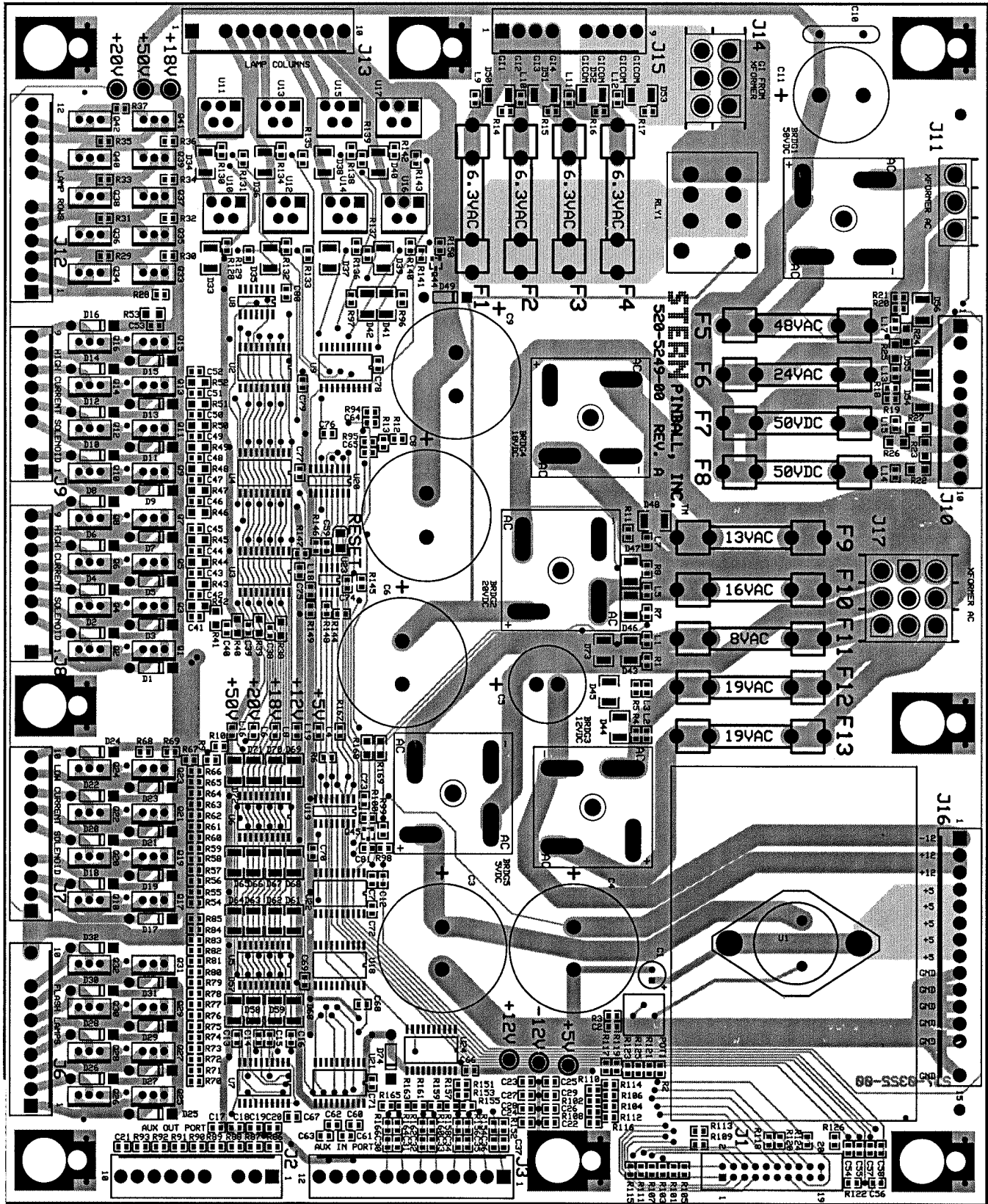
  

<b>Stern Pinball, Inc</b>		PART NO.
2220 JANICE AVE., MELROSE PARK, IL. 60160		511-5249-01

# 511-5249-01

Y17

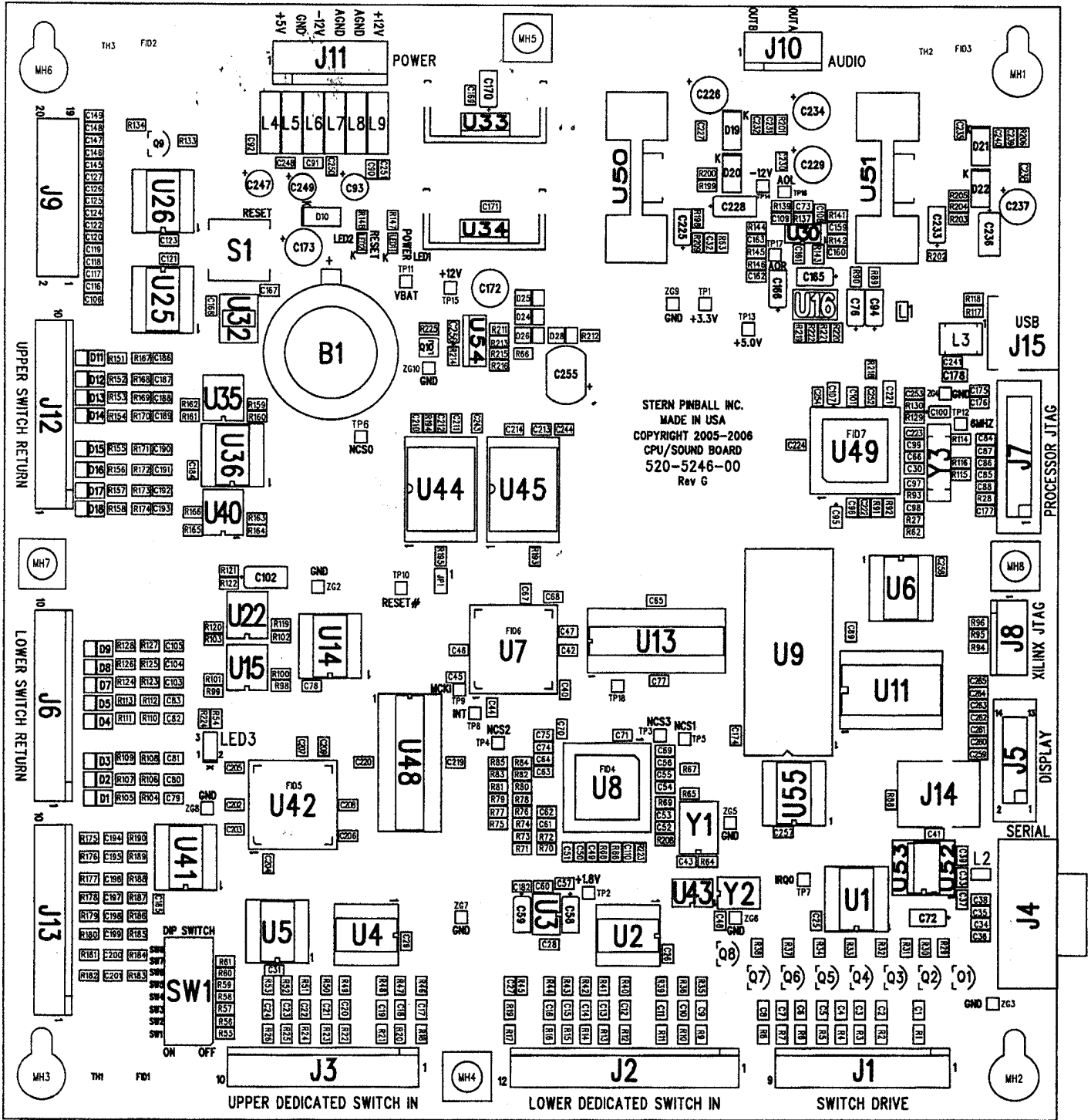
I/O POWER DRIVER PCB S.A.M. System (520-5249-00) Component Layout



## I/O POWER DRIVER PCB S.A.M. System (520-5249-00) Parts

ITEM	QTY.	SPI PART NUMBER	(MFG. P.N.)	REF-DESIGNATOR	DESCRIPTION (SM = Surface Mount)
—	1	520-5249-00		I/O Power Driver PCB (S.A.M. System), Rev. A	(includes Items 1-67)
1	1	121-6001-00	(101-0001807)	R9	Resistor SM 0805 Film 1.5KΩ 1/10W 5%
2	22	121-6002-00	(101-0001820)	R86, R87, R88, R89, R90, R91, R92, R93, R102, R104, R106, R108, R110, R112, R114, R116, R118, R120, R122, R124, R126, R146	Resistor SM 0805 Film 100Ω 1/10W 5%
3	12	121-6020-00	(101-0001827)	R21, R94, R95, R101, R103, R105, R107, R109, R111, R113, R115, R144	Resistor SM 0805 Film 10KΩ 1/10W 5%
4	1	121-6003-00	(101-0001845)	R2	Resistor SM 0805 Film 120Ω 1/10W 5%
5	20	121-6022-00	(101-0001905)	R7, R8, R10, R11, R12, R13, R18, R19, R98, R100, R150, R152, R154, R156, R158, R160, R162, R164, R166, R167	Resistor SM 0805 Film 1KΩ 1/10W 5%
6	2	121-6004-00	(101-0001943)	R6, R145	Resistor SM 0805 Film 220Ω 1/10W 5%
7	16	121-6005-00	(101-0001849)	R55, R57, R59, R61, R63, R65, R67, R69, R71, R73, R75, R77, R79, R81, R83, R85	Resistor SM 0805 Film 22KΩ 1/10W 5%
8	2	121-6006-00	(101-0002012)	R3, R149	Resistor SM 0805 Film 330Ω 1/10W 5%
9	3	121-6007-00	(101-0002031)	R1, R4, R5	Resistor SM 0805 Film 390Ω 1/10W 5%
10	8	121-6013-00	(101-0002035)	R151, R153, R155, R157, R159, R161, R163, R165	Resistor SM 0805 Film 39KΩ 1/10W 5%
11	9	121-6008-00	(101-0002046)	R96, R97, R99, R117, R119, R121, R123, R125, R148	Resistor SM 0805 Film 4.7KΩ 1/10W 5%
12	8	121-6014-00	(101-0002065)	R129, R131, R133, R135, R137, R139, R141, R143	Resistor SM 0805 Film 47Ω 1/10W 5%
13	1	121-6015-00	(101-0002071)	R20	Resistor SM 0805 Film 47KΩ 1/10W 5%
14	8	121-6009-00	(101-0002108)	R128, R130, R132, R134, R136, R138, R140, R142	Resistor SM 0805 Film 6.8KΩ 1/10W 5%
15	16	121-6010-00	(101-0002116)	R54, R56, R58, R60, R62, R64, R66, R68, R70, R72, R74, R76, R78, R80, R82, R84	Resistor SM 0805 Film 620Ω 1/10W 5%
16	4	121-6016-00	(101-0002126)	R14, R15, R16, R17	Resistor SM 0805 Film 680Ω 1/10W 5%
17	10	121-6011-00	(101-0002296)	R28, R29, R30, R31, R32, R33, R34, R35, R36, R37	Resistor SM 1206 Film 22KΩ 1/10W 5%
18	8	121-6012-00	(101-0002473)	R22, R23, R24, R25, R26, R27, R168, R169	Resistor SM 1206 Film 8.2KΩ 1/10W 5%
19	16	121-6013-01	(101-0002378)	R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53	Resistor SM 1206 Film 39KΩ 1/10W 5%
20	16	125-6001-00	(121-0000056)	C2, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80	Capacitor SM 0805 Cer. .1UF 50V 10% X7R
21	25	125-6002-00	(121-0000096)	C13, C14, C15, C16, C17, C18, C19, C20, C21, C30, C31, C32, C33, C34, C35, C36, C37, C59, C60, C61, C62, C63, C64, C65, C81	Capacitor SM 0805 Cer. 470PF 50V 5% NPO
22	18	125-6003-00	(121-0004236)	C7, C12, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C51, C52, C53	Capacitor SM 0805 Cer. .01UF 50V 10% X7R
23	13	125-6004-00	(121-0005318)	C22, C23, C24, C25, C26, C27, C28, C29, C54, C55, C56, C57, C58	Capacitor SM 0805 Cer. 22PF 100V 5% NPO
24	1	125-5032-00	(131-0003773)	C1	Capacitor Tht. Radial Alum. 100UF 25V 20%
25	1	125-5034-00	(131-0003864)	C5	Capacitor Tht. Radial Alum. 4700UF 35V 20%
26	1	125-5029-01	(133-0003741)	C10	Capacitor Tht. Disc Cer. .1UF 500V 20%
27	1	125-6022-00	(134-0003846)	C11	Capacitor Tht. Radial Alum. 330UF 160V 20%
28	5	125-5036-01	(134-0004000)	C3, C4, C6, C8, C9	Cap. Tht. Rad. Al. 1500UF 35V 20% Snap-In
29	34	112-6001-01	(183-0004374)	D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, D16, D17, D18, D19, D20, D21, D22, D23, D24, D25, D26, D27, D28, D29, D30, D31, D32, D49, D74	Diode Tht. DO-41 1N4004 400V 1A
30	5	112-5000-00	(187-0004700)	BRDG1, BRDG2, BRDG3, BRDG4, BRDG5	Bridge Tht. Fullwave 100V 35A MB-35
31	10	110-0088-01	(203-0003591)	Q33, Q34, Q35, Q36, Q37, Q38, Q39, Q40, Q41, Q42	Fet Tht. TO-220 STP20NE06L NFet 60V 20A
32	16	110-0106-00	(203-0003592)	Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16	Fet Tht. TO-220 20N10L NFet 100V 20A
33	8	110-0089-00	(203-0003597)	U10, U11, U12, U13, U14, U15, U16, U17	Fet Tht. PENTAWAT VN02N NFet HighSide 26V 6A
34	2	110-0069-01	(211-0003589)	Q44, Q45	Trans. SM SOT-23 MMST3904 NPN 40V 0.2A
35	16	110-0067-00	(213-0003565)	Q17, Q18, Q19, Q20, Q21, Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29, Q30, Q31, Q32	Transistor Tht. TO-220 TIP122 NPN 100V 5A
36	3	100-6003-00	(221-0000972)	U18, U22, U24	I.C. SM SOIC 74HC245 Oct. Bus. Xcvr.
37	1	100-6000-00	(221-0011253)	U23	I.C. SM SOIC DS1832S, SO-8
38	8	100-5056-00	(221-0001287)	U2, U3, U4, U5, U6, U7, U9, U21	I.C. SM SOIC 74HCT273 Oct. D F-F
39	2	100-6001-00	(221-0003728)	U19, U20	I.C. SM SO 74LS138D Hex Inverter; 3-8 DC/DMX
40	1	100-6002-00	(221-0011135)	U8	I.C. SM SOIC 74LS74AD SOIC-14
41	1	100-0356-00	(225-0003582)	U1	I.C. Tht. TO-3 LM338 5A Adjust. Voltage Reg.
42	5	045-	(315-0003427)	J2, J6, J7, J10, J13	Con. Tht. Hdr. 10 Pin, 1 Row .156"
43	1	045-	(315-0006910)	J1	Con. Tht. Hdr. 20 Pin, 2 Row .1"
44	2	045-	(315-0003430)	J3, J12	Con. Tht. Hdr. 12 Pin, 1 Row .156"
45	1	045-	(315-0003432)	J16	Con. Tht. Hdr. 15 Pin, 1 Row .156"
46	1	045-	(315-0003503)	J11	Con. Tht. Pwr. 3 Pin, 1 Row .25"
47	1	045-	(315-0003504)	J14	Con. Tht. Pwr. 6 Pin, 2 Row .25"
48	1	045-	(315-0003505)	J17	Con. Tht. Pwr. 9 Pin, 3 Row .25"
49	3	045-	(315-0003821)	J8, J9, J15	Con. Tht. Hdr. 9 Pin, 1 Row .156"
50	2	200-5000-08	(407-0003117)	F6, F8	Fuse 3 Amp 250V Slo-Blo (Glass, Tht. 3AG)
51	2	200-5000-06	(407-0003118)	F7, F11	Fuse 4 Amp 250V Slo-Blo (Glass, Tht. 3AG)
52	7	200-5000-01	(407-0003119)	F1, F2, F3, F4, F10, F12, F13	Fuse 5 Amp 250V Slo-Blo (Glass, Tht. 3AG)
53	1	200-5000-03	(407-0003121)	F5	Fuse 7 Amp 250V Slo-Blo (Glass, Tht. 3AG)
54	1	200-5000-05	(407-0003122)	F9	Fuse 8 Amp 250V Slo-Blo (Glass, Tht. 3AG)
55	1	121-5039-00	(415-0004788)	POT1	Potentiometer THT 50K Single Top Adjust. Trimr.
56	1	165-6000-00	(425-0006913)	L18	LED SM Yellow 0805 LED
57	5	165-6001-00	(425-0007753)	L4, L6, L8, L16, L19	LED SM Green Ultrabright Top
58	13	165-6002-00	(425-0007755)	L1, L2, L3, L5, L7, L9, L10, L11, L12, L15, L17	LED SM Red Ultrabright Top 0805 LED
59	1	190-5002-00	(448-0004778)	RLY1	Relay Tht. GW DPDT10A DC24 2400VA PC MNT
60	1	127-5001-00	(461-0003520)	for BRDG 4, BRDG 5	Heatsink Sq. Finned Ba TO-220 Avid 531102
61	1	127-5001-02	(461-0003534)	for U1	Heatsink All Large Finned Alum. TO-3
62	1	127-5001-04	(579103B00000G)	for U1 on TO-3 LM338 5A Adj. Volt. Reg.	Heatsink, Circular Finned (Mfg. Aavid)
63	4	240-5008-00	(503-0004469)	2 pcs. for U1 1 pc. each for BRDG 4 & 5	#6-32 Keps Nut
64	26	205-0004-00	(503-0004667)	2 pcs. each for F1 - F13	Fuseclip with End Stops (+ Ears)
65	4	237-5504-00	(504-0004610)	2 pcs. for U1 1 pc. each for BRDG 4 & 5	#6-32 X 3/4" FPH MS (Zinc) Screw
66	2	254-5007-02	(507-0004344)	for BRDG 4 & 5 (Mfg. .169" I.D. X 9/32" O.D. X 1/4")	1/4" Sif. Rtn. Spacer White
67	5	254-5007-05	(507-0004547)	for BRDG1, 2 & 3 and for Mounting Holes (Mfg. .169" I.D. X 9/32" O.D. X 5/16")	5/16" Sif. Rtn. Spacer White

# CPU / SOUND PCB S.A.M. System (520-5246-00) Component Layout



## CPU / SOUND PCB S.A.M. System (520-5246-00) Component Parts

ITEM	QTY.	SPI PART NUMBER (MFG. P.N.)	REF-DESIGNATOR	DESCRIPTION (SM = Surface Mount)
—	1	520-5246-00	CPU/Sound PCB (S.A.M. System), Rev. G	(includes Items 1-90)
1	3	121-6017-00	R27, R202, R212	Resistor SM 0805 0.0Ω 1/10W 5%
2	2	121-6108-00	R201, R206	Resistor SM 0805 1.0Ω 1/10W 5%
3	24	121-6001-00	R9, R10, R11, R12, R13, R14, R15, R16, R18, R20, R21, R22, R23, R24, R25, R26, R175, R176, R177, R178, R179, R180, R181, R182, R147, R148, R211	Resistor SM 0805 1.5KΩ 1/10W 5%
4	3	121-6002-00	R64, R66, R67, R68, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R89, R90, R92, R208	Resistor SM 0805 Film 100Ω 1/10W 5%
5	24	121-6019-00	R28, R65, R91, R98, R99, R100, R101, R102, R103, R119, R120, R134, R137, R139, R141, R142, R143, R144, R145, R146, R159, R160, R161, R162, R163, R164, R165, R166, R193, R194, R195, R223, R225	Resistor SM 0805 100KΩ 1/10W 5%
6	33	121-6020-00	R28, R65, R91, R98, R99, R100, R101, R102, R103, R119, R120, R134, R137, R139, R141, R142, R143, R144, R145, R146, R159, R160, R161, R162, R163, R164, R165, R166, R193, R194, R195, R223, R225	Resistor SM 0805 Film 10KΩ 1/10W 5%
7	2	121-6021-00	R117, R118	Resistor SM 0805 15KΩ 1/10W 5%

Parts List Continued Next Page.

Printed Circuit Boards (PCBs)

Y20

