

Optional Kits available through your Distributor:

Pinball Location Maintenance Standard Kit (for CSI Pinball) 502-6002-A2

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 CSI Pinball) 502-6003-A2

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 (3) FLIPPER REBUILD KITS ▲

Plastics*Kit (for CSI Pinball) 803-5000-A2

Plastics Kit includes: Plastic Sets (830-6071-XX)

Decals*Kit (for CSI Pinball) 802-5000-A2

Decals Kit includes: Decal Set (820-6408-XX) and T-Nut Cover (820-6380-00)

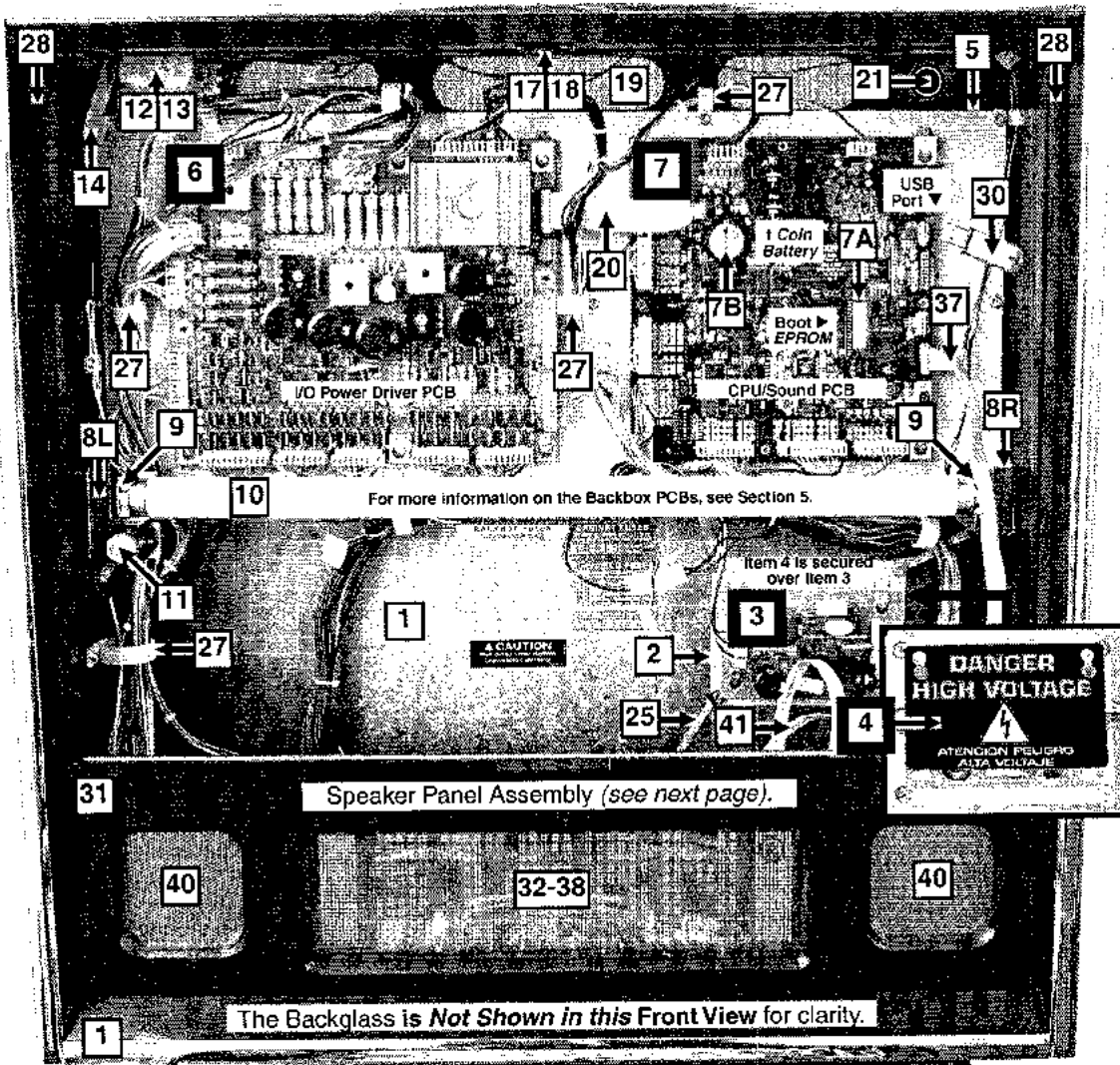
Mylar*Kit (for CSI Pinball) 802-5001-A2

Mylar Kit includes: Ball Drop (Square) (820-5815-00), Bumper Area (820-6438-00); Scoop Drop (820-6430-00) and Full Optional Mylar (820-5999-A2)

***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



Parts Identification

Nr.	BACKBOX PARTS	QTY.	SPI PART Nr.
1	Backbox CSI™ (No Parts)	1	525-5631-17-A2
<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 & -02) Decals.</i>			
2	PCB Metal Mounting Plate (Display)	1	535-9769-00
3	Display Power Supply PCB	1	520-5138-00
<i>Item 3 is secured to @ bottom by: #8-32 X 3/8" SHWH Swg. (Zinc) (Qty. 2) (237-5975-00)</i>			
4	Plastic Cover [DANGER HIGH VOLTAGE]	1	830-6053-00
<i>Items 3 & 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>			
5	PCB Metal Mounting Plate [I/O+CPU]	1	535-9664-00
<i>Items 2 & 5 are secured to Item 1 by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1/each) (234-5101-00) and #10 Washer 7/32" I.D. X .5" O.D. X 1/16" Thick (Qty. 1/each) (242-5003-00) Note: Where a Wire Clamp (Item 27) is mounted, a #10 Washer is not required.</i>			
6	I/O Power Driver PCB [S.A.M. Sys.]	1	520-5249-00
7	CPU/Sound PCB [S.A.M. System]	1	520-5246-00
<i>7A: 8MB EPROM #M27C801-100F1 (960-5016-00) Ordering Note: Programmed EPROM (965-B00T-SAM) 7B: Coin Cell Battery (CR2430 3V) (000-0644-01) For USB Memory Stick information, see Item 30 on the next page.</i>			
<i>Items 6 & 7 are secured to Item 5 by: #8-32 X 3/8" SHWH Swage (Zinc) (Qty. 10) (237-5975-00) and 1/4" Sil. Rtr. Spacer White (Qty. 5 [I/O] / Qty. 4 [CPU]) (254-5007-05)</i>			
8L	Fluorescent Light Bracket (Left Style)	1	535-7739-00
8R	Fluorescent Light Brkt. (Right Style)	1	535-7739-01
<i>Items 8L & 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>			
9	Fluorescent Lamp Holder (Socket)	2	077-5214-01
<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>			
10	Fluorescent Tube 24" (F20T9CW)	1	165-5061-00

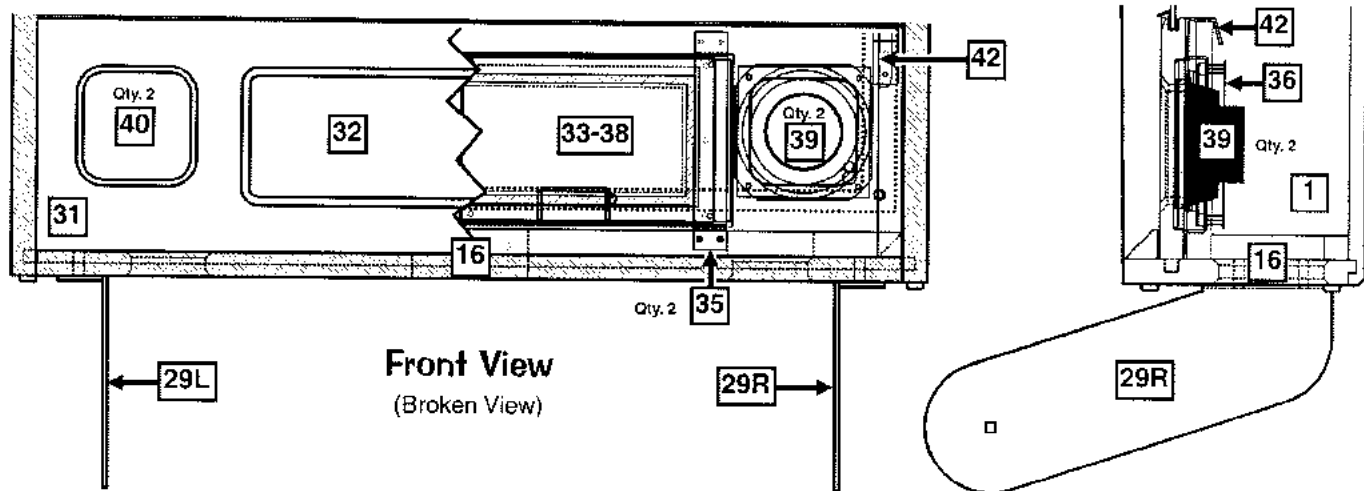
Nr.	BACKBOX PARTS	QTY.	SPI PART Nr.
11	Starter - Fluorescent (FS2 Light)	1	165-5011-01
	Starter Base (with leads) [on Item 8L]	1	077-5213-00
<i>Item 11 is secured to Item 8L by: #4-40 X 1/2" PPH MS (Sems) Zn. (Qty. 2) (237-5813-00)</i>			
12	Ballast Mounting Plate	1	535-8657-00
13	Ballast CU452-W 1/2" Core 120v 60 Hz 13W	1	010-5015-00
<i>Items 12 & 13 are secured to Item 1 by: #8 X 1/2" SHWH AB (Zinc) (Qty. 2) (234-5101-00) >>> CAUTION - VERY HOT! Decal (820-6266-00) EU / UK Only: Ballast, 5/8" Core 50/60 Hz (010-5015-01)</i>			
14	Ground Strap (5")	1	600-5006-05
15*	Roto Lock Male (on Cabinet)	1	355-5006-01
16	Roto Lock Female (R2-0002-02)	1	355-5006-02
<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>			
17	Lock Mounting Plate	1	535-0072-00
18	Lock 5/8" Barrel, 3/4" o, 1.5" Flat Cam	1	355-5055-00
<i>Items 17 & 18 are secured by: #8 X 1/2" TP Torx T20 Black (Qty. 2) (237-6173-05)</i>			
19	Back Vent Grill 2-1/2" X 18"	1	545-5072-02
20	Ribbon Cable, 20-Pin (3.5")	1	036-5000-350
<i>Item 20 connects the I/O Pwr. Dvr. PCB to the CPU/Sound PCB; For 14-Pin see next page.</i>			
21	Button Hole Plug (Blk) (Happ #52-6214-00)	1	500-6566-00
<i>Item 21 plugs the Access Hole required if using optional BETAbrite Sign or Data cables</i>			
22	Header Sign TOURNAMENT PINBALL	1	545-6133-00
23	Friction Hinge (Black) behind ▲▼	2	390-5053-00
24	Block / Sign & Hinge Stop (Black)	2	545-6174-00
<i>Item 22 is sandwiched between Items 23 & 24 through 2 holes on each side. Item 23 is secured to Item 1 by: #8-32 X 3/8" PPH MS Ext. Sems (Zinc) (Qty. 2/per) (232-5301-00) and Item 24 to Items 22-23 by: #8 X 5/8" PPH AB Black (Qty. 2/per) (232-5101-01)</i>			

PARTS TABLE & VIEWS CONTINUED ON THE NEXT PAGE. ►

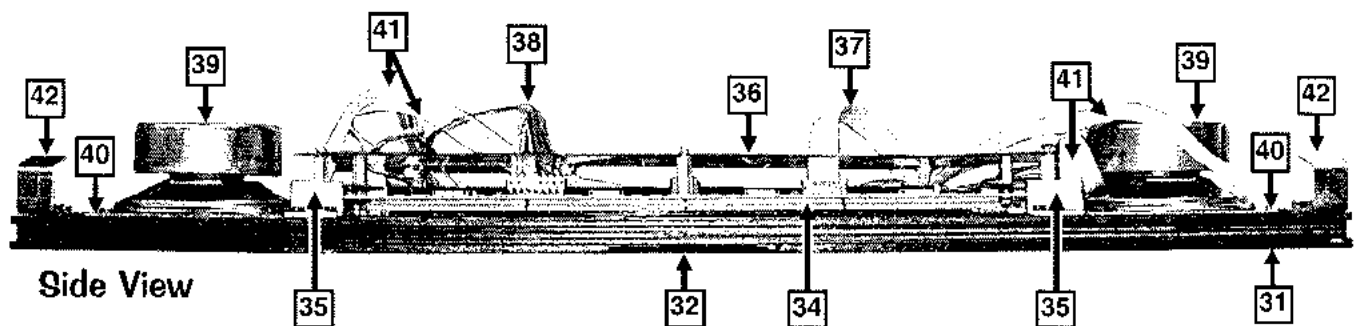
CSI:

CRIME SCENE INVESTIGATION

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.
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4 PARTS TABLE & VIEWS CONTINUED FROM THE PREVIOUS PAGE.

25 Braided Wire (1-1/2 Feet) 1 600-5001-00

Item 25 is secured by: Staple 5/16" (Qty. 23) (631-5000-00)

26* Zip Cable Tie (Screw Down Style) 2 040-5005-00

Item 26 is secured @ inside bot. by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1/per) (234-5101-00)

27 Clamps [Multiple Sizes] 15 040-5000-XX

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)

28 Foam 3/16" Thick X 1/4" Wide X 12" 3 626-5026-00

Above Item 28 is self-adhesive. 17.5" strip on each side. Sold in 12" Lengths only.

29L Pivot Hinge (Left Style) 1 535-7999-00

29R Pivot Hinge (Right Style) 1 535-7999-01

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)

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)

30* Memory Stick USB 1.1+ [Generic] 64MB 970-0064-00

Memory Stick USB 1.1+ [Generic] 128MB 970-0128-00

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). Nor 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 your 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])

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.
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i* Glass (Tempered) 25.906" X 19.187" X .125" 1 660-5038-02

ii* CSI™ Film Art (#A2) 1 830-52A2-00

iii* Top Plastic Channel - 26" 1 545-5018-15

iv* Bottom Plastic Lift Channel - 26" 1 545-6313-01

v* Plastic Edging (Left/Right) - 18-1/8" 2 545-5018-14

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-A2, Items i-v)

31 Speaker Panel (Black Wood) 1 525-5515-00

32 Plastic Shield (Display Front Cover) 1 545-5884-00

Item 33 is secured to inside Item 31 by: #6 X 3/8" SHWH AB (Zinc) (Qty. 8) (234-5000-00)

33* Foam 3/16" Thick X 1/4" Wide X 12" 3 626-5026-00

Above Item 33 is self-adhesive. Located between Items 32-34. Sold in 12" Lengths only.

128 X 32 Dot Matrix Display PCB 1 520-5052-00

34 // EURO ONLY RoHS // 128 X 32 DM CES PCB 520-5052-05

// EURO ONLY RoHS // Dot Matrix Bezel 545-6281-00

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)

35 Dot Matrix Display Mounting Bracket 2 535-8368-01

Item 35 is secured to Item 31 by: #8 X 1/2" SHWH AB (Zinc) (Qty. 4/per) (234-5101-00)

36 Plastic Shield (Display Back Cover) 1 830-6040-00

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), #8-32 X 1/4" PPH

MS (Serr) Zinc (Qty. 2) (232-5200-00) and #6-32 X 3/8" PPH (Qty. 6) (232-5201-00)

37 Ribbon Cable, 14-Pin (33") 1 036-5260-33

// EURO ONLY RoHS // LED Ribbon Cable Filter PCB 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 036-5520-02

39 Speaker (Shield) 4" 8Ω #MG ELE 4060SH 2 031-5004-02

40 Speaker Grill (Chrome w/no Artwork) 2 535-8081-04

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

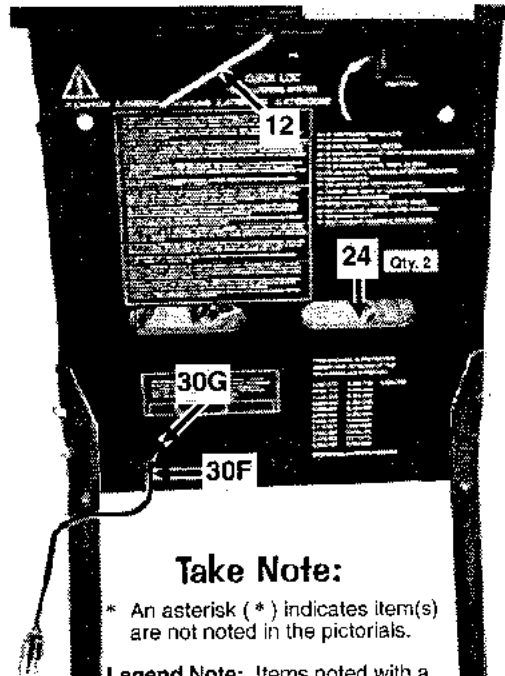
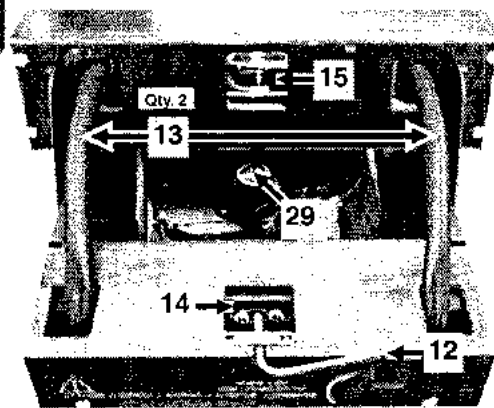
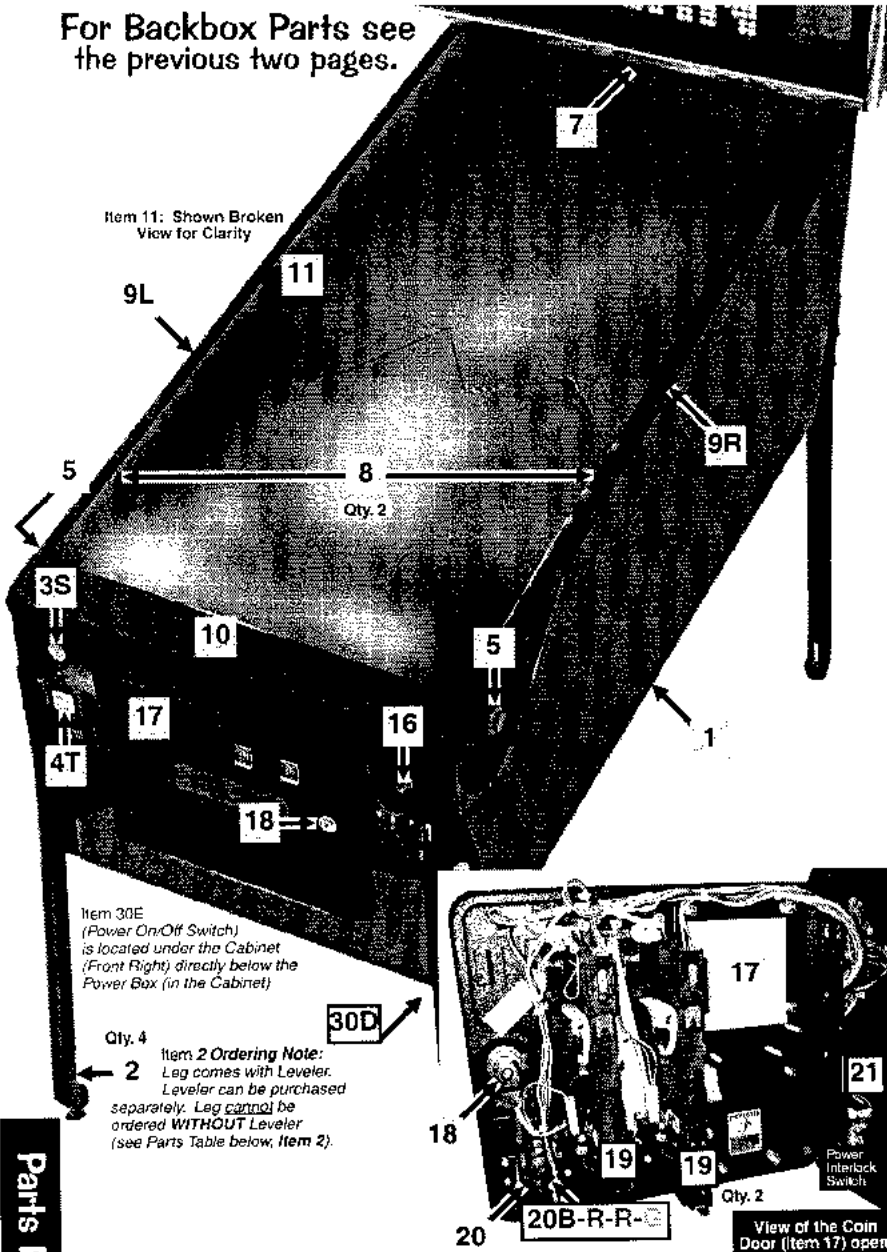
Item 42 is secured by: #8 X 1/2" SHWH AB (Zinc) (Qty. 2/per) (234-5101-00)

(ASM. REF. 515-6888-95, Items 31-42 Only [includes wiring])



Cabinet - Parts & Switches ☐

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

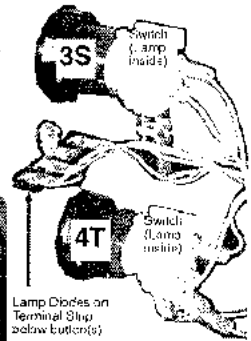
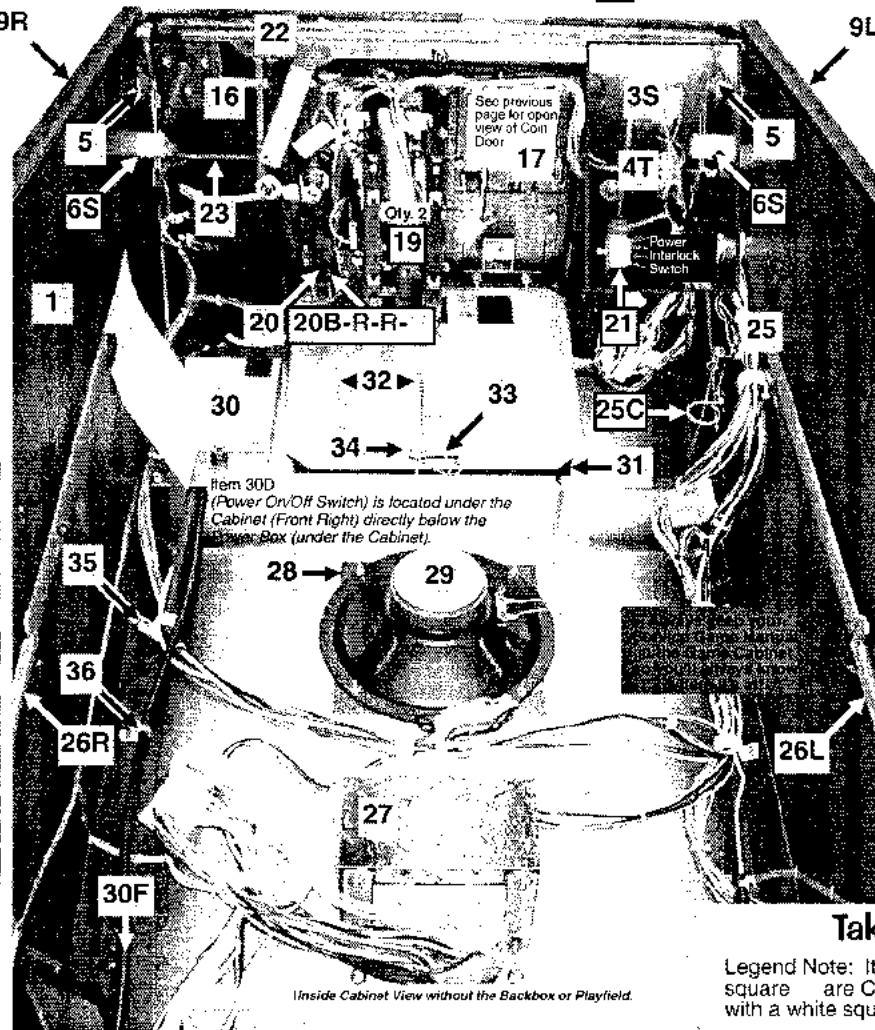
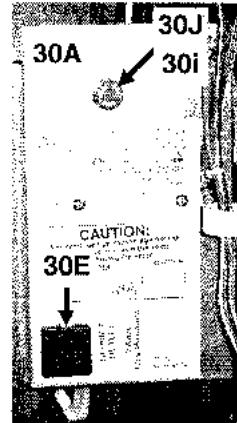
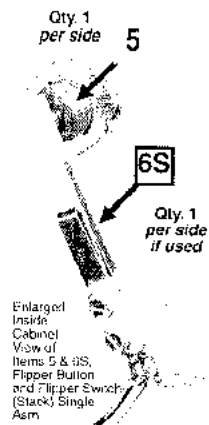
Nr.	CAB. PARTS & SWITCHES	QTY.	SPI PART Nr.	Nr.	CAB. PARTS & SWITCHES	QTY.	SPI PART Nr.
1	Screened Cabinet CSI™ (No Parts)		525-5395-15P-A2	7	Rear Glass Channel 20-3/8" Length	1	545-5038-00
2	Black Leg with Leveler Asm.	4	500-5921-50	8	Plastic Channel 42-5/8" Lg. (Left/Rt.)	2	545-5017-00
Item 2 is secured by: Leg Bolt Back Plate (535-5703-00) and Leg Bolt 3/8" X 16 X 2-1/2" Hex 5/8" Hd. (2/per) (231-5001-01) Leg Leveler ONLY (3/8"-16 X 3") (500-5017-00).				9L	Side Armor (Left) with Button Guard	1	535-9596-00
3S	Start Button (Green Round) with Sw. + Lamp	1	500-6388-44-TL	9R	Side Armor (Right) with Button Guard	1	535-9596-01
4T	Tournament Button (Yel. Sq.) w/Sw. + Lamp	1	500-6587-06-TL	Items 9L & 9R are secured by: Perm 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 Carg. 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	500-6882-02-00
5	Flipper Button (Red) Assembly (No Switch)	2	500-5026-32	Item 10 includes: Self-Adhesive Foam Rubber 3/8" X 3/16" X 20-3/8" (3") (626-5001-00) Items 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	1	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)				13	Corrugated Tubing Black 1" x 2.6" Lg.	1	605-5008-03
Item 6S/6D are secured to Cab. by: #6 X 1-1/4 SHWH AB (Zinc) (Qty. 2/per) (237-5959-00)				Above Item 13 covers the Cable Wiring Harnesses going into the Backbox from the Cabinet.			
6D	Flipper Switch Double Assembly	1	500-6890-01	14	Roto Lock Male (R2-0055-02)	1	355-5006-01
Assembly Parts Included: Flipper Switch Stack Double (Paliney Contact) (180-5164-01) and Capacitor - Ceramic .05 Mfd 25 volt (130-5001-00)				Item 14 is secured by: #10-24 X 1-3/4" Cargame 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)			
Item 6S/6D are secured to Cab. by: #6 X 1-1/4 SHWH AB (Zinc) (Qty. 2/per) (237-5959-00)				15	Roto Lock Female (on Backbox)	1	355-5006-02
				16	Ball Shooter (Plunger) Assembly	1	500-6146-00-04

FOR A BREAKDOWN OF PARTS SEE: Sec. 4, Chp. 2, Drawings for ... Assemblies...

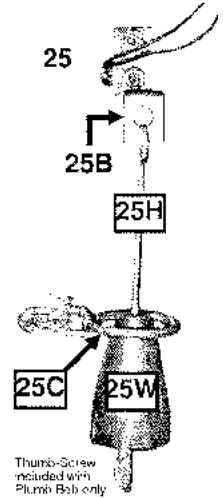
PARTS TABLE & VIEWS CONTINUED ON THE NEXT PAGE. ►

CSI:
CRIME SCENE INVESTIGATION

Cabinet - Parts & Switches ☐ Continued



Enlarged Inside Cabinet View of items 3S, 4T and 25 (25A, 25B, 25C & 25W). Power Box (30A) Switch.



Take Note:

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

Nr.	CAB. PARTS & SWITCHES	QTY.	SPI PART Nr.
17	Coin Door 2-Cht \$V Up Stk. 4-Button Bracket	1	501-5018-172
Item 17 is secured by: 1/4" 20 X 1-1/4" Carriage Bolt Square Neck (Qty. 4) (231-5003-00) 1/4" 20 Flange Nut (Qty. 4) (240-5300-00) and Fend Washer 1/4" I.D. X 1" O.D. (Qty. 3) (242-5009-00). Note: For Coin Door other than USA call Technical Support for SPI Part Nr.			
18	Lock 7/8" Barrel, 435X, Offset Cam	1	355-5021-03K
	Coin Door Switch (USA) (Happ)	2	180-5024-01
19	ALT. SW.: 19C: Coin Door Switch (USA) (Coin Control) (180-5024-00) ALT. SW.: 19J: Coin Door Switch (Japan) (180-5091-00)		
20	4-Button Bracket (for Service Menu Buttons)	1	535-6860-04
	SWITCH: 20B: Push-Button Service Switch (Black) (180-5192-00) SWITCH: 20R: Push-Button Service Switch (Red) (Qty. 2) (180-5192-02) SWITCH: 20G: Push-Button Service Switch (Green) (180-5192-04)		
Ordering Note: Securing hardware for switches included. Decal in kit sold separately.			
21	Power Interlock-Memory Protect Switch Asm.	1	500-5808-05
Assembly Parts Included: Mounting Bracket (535-9794-00), Power Interlock (Playfield) Switch (180-5136-00) and secured by: #8 X 1/2" SHWH AB (Zinc) (Qty. 2) (234-5101-00)			
22	Front Molding Lockdown Asm.	1	500-6881-00
Item 22 is secured by: #10-24 X 1-1/4" Carr. Bolt (Qty. 2) (231-5012-00) and #10-24 Keps Nut (Qty. 2) (240-5207-00)			
23	Lockdown Spring (connected to handle)	1	265-5008-00
Item 23 is secured by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1) (234-5101-00) and #10 Washer, 7/32" ID X 1/2" OD X 1/16" Thick (Qty. 1) (242-5003-00)			
24	Grills 2-1/2" X 18" (on Back & Bottom)	2	545-5072-02
	Plumb Bob Tilt Switch Individual Parts Only		Ind. Parts Only
25	SWITCH: 25B: Bracket for Hanger Wire (535-5221-00) 25C: Contact Wire Form (535-7563-01) 25H: Hanger Wire (535-5319-02) 25W: Plumb Bob Weight (535-5029-00) (includes Thumb-Screw)		
Item 25B is secured to Cabinet by: #6 X 5/8" SHWH AB (Zinc) (Qty. 4) (234-5002-00)			
26L	Slide & Pivot Support Bracket (Left)	1	535-5989-00
26R	Slide & Pivot Support Bracket (Right)	1	535-5990-00
Items 26L & 26R are secured by: #10-24 X 1-1/4" Carriage Bolt Square Neck Black (3/per) (231-5012-00) and #10-24 KEPS Nut (3/per) (240-5207-00)			

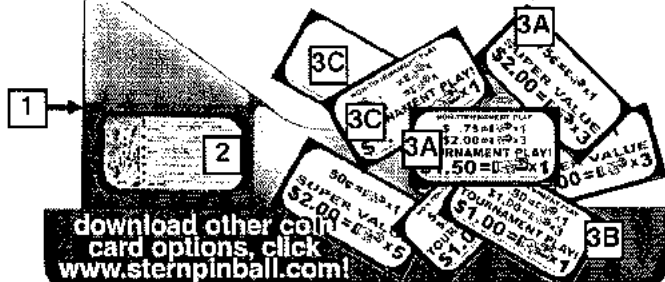
Nr.	CAB. PARTS & SWITCHES	QTY.	SPI PART Nr.
27	Transformer 5.7VAC (with Ballast Winding)	1	010-5012-01
Item 27 is secured by: 1/4" 20 X 5/8" PPH MS (Zinc) (Qty. 4) (237-5854-00) and 1/4" Split Lock Washer (Qty. 4) (244-5000-00)			
28	Woofers (Speaker) Grill 7" X 7"	1	545-5072-03
29	Woofers 8" ø Round 8010 4Ω	1	031-5007-01
Items 28 & 29 are secured by: #6-32 X 1-1/4" Fin Shank Screw (Qty. 4) (237-5883-00) and #6-32 Keps Nut (Qty. 4) (240-5008-00)			
	Power Input Box Asm. + Univ. Cable	1	515-5360-08
30A: Power Box (No Parts) Mounting Frame (535-5932-00) 30B*: Line Filter (150-5000-00) 30C*: Varistor TNR159211KM (Domestic) (150-5001-00) or Varistor TRM15G431KM (Euro) (150-5002-00) SWITCH: 30D: On/Off Rocker Switch + Bracket Assembly (515-7085-00) 30D incl.: Switch, APEM R2101CSNB (180-5001-03) + Bracket (535-8318-00) 30E: Service Outlet (3-Prong / US) (180-5008-01) / International N/A 30F: Line Cord 10' ROJ 3" + Ring Terminal Asm. (515-6566-00) 30G: Recessed (Black) Cup (rear of Cabinet) (545-5122-00) 30H*: Snap Bushing 9/16" (White) (280-5001-01) 30I: Fuse 8 Amp 250V Slo-Blo (Domestic) (200-5000-05) or Fuse 5 Amp 250V Slo-Blo (International) (Qty. 2) (200-5003-00) 30J: Fuse Holder (205-5001-00)			
Universal Cable & Jumper Caps (all voltage variations). See the Yellow Pages, Page y 10.			
31	Cash Box Plastic Bottom	1	545-5090-00
32	Cash Box Cover (Validator)	1	535-5013-03
33	Cash Box Lock Bracket (U-Wire)	1	535-7562-00
Item 33 is secured by: #8 X 5/8" SHWH AB (Green) (Qty. 2) (234-5102-04)			
34	Large Hair-Pin Clip	1	535-7772-00
35	Clamps [Multiple Sizes]	12	040-5000-XX
Item 35 is secured to Item 1 by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1/per) (234-5101-00) For following sizes, replace -XX with: 3/4" Single = -08 (Qty. 9); 1-1/2" Single = -10 (Qty. 3)			
36	Zip Cable Tie (Screw Down Style)	3	040-5005-00
Item 36 is secured by: #8 X 1/2" SHWH AB (Zinc) (Qty. 1/per) (234-5101-00)			
37†	Meter +12VDC with Bracket Optional	opt.	G-0053-013-102
† Meters (Diode included) are optional and were not included in this Pinball Machine. Order without the bracket use G-0053-013-102A. More information or Qs? Call Technical Support.			

Parts Identification

Main Playfield Top - Miscellaneous Parts ☐ and Brackets

Nr.	THE PLAYFIELD	QTY.	SPI PART Nr.
Main	P/F Screened w/ Inserts & NO Parts	1	830-5100-A2
P/F	P/F Complete w/ Inserts & ALL Parts	1	505-6004-A2-A2

Nr.	MISC. PARTS (ABOVE)	QTY.	SPI PART Nr.
1	Arch (Black Metal) [no Forks]	1	535-8392-01
Item 1 is secured to Item 9 below by: #10-32 X 5/16" PFH U/C MS (Zinc) (Qty. 2) (237-6013-00) Usage Note: When replacing the Arch, order new replacement Nelson Protect Strips 7-5/8" (not included) (Qty. 2) (545-5212-04, use -02 for 8-9/16" size) For Decals, see Playfield Top - Plastics Kit, Decals & Mylar Kits.			
2	Inst. Card [Eng./Spanish] CSI	1	755-51A2-12-Y
Note: Visit www.sternpinball.com for a PDF copy of the Game Instruction Card which will also have any translated Instruction Cards made for this game. Find Game Link or Archives. Spanish 755-51A2-12-Y; German 755-51A2-03-Y; Italian 755-51A2-04-Y; French 755-51A2-05-Y.			
3A	Coin Card (2-Sided) USA 10 Default	1	755-5400-11-Y
3B	Coin Card (2-Sided) USA 5	1	755-5400-08-Y
3C	Coin Card (2-Sided) Blank for Custom	1	755-5400-04-Y
For Coin Card views, see below or online: http://www.sternpinball.com/coinagecards.shtml Ordering Note: If this is a non-US Game, Coin Card(s) Part Numbers provided will differ.			

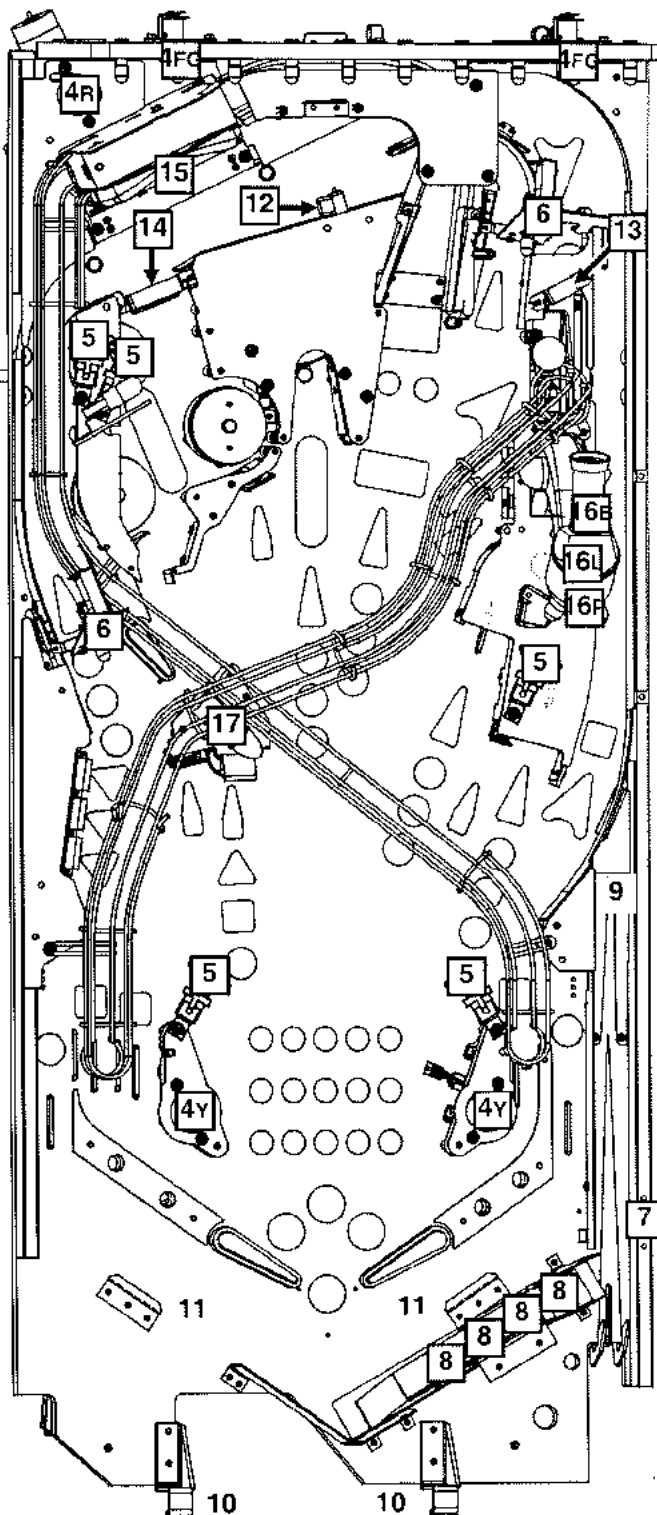


4R	Light Cover w/ tabs (Red)	1	550-5031-02
4Y	Light Cover w/ tabs (Yellow)	2	550-5031-06
4FG	Light Cover w/ tabs (Fluor. Green)	2	550-5031-11
Item 4R (Red) Located on Plastic upper left corner; Item 4Y (Yellow) Located on Plastics over Slingshots; Item 4FG (Fluorescent Green) Located on the Backpanel.			
Items 4R & 4Y (on plastics) are secured by: #6-32 X 1/2" PPH Sems (Zinc) (Qty. 2/per) (232-5202-00) and #8-32 Nylon Stop Nut (Qty. 2) (240-5005-00)			
5	Light Reflector (Silver Plst.) REF540N	5	545-5409-01
Ordering Note: #555 Wedge Base Bulb (165-5002-00) (Qty. 1/per); Wedge Base Socket (Laydown) (077-5026-01) (Qty. 1/per) (views on Page 62)			
6	Light Hats w/ tabs (Amber)	2	550-5032-03
Item 6 Located on Plastics over the Left & Right Spinners. See Pink Page p8 for details.			
7	Bubble Level Assembly	1	500-6815-00
Assembly Parts Included: Level .8mm Empire #0224 (545-6001-01) or Level Mount (545-6066-00). Flange secured by: #6-32 X 1/4" PPH MS (no Sems) Zinc (237-5500-00) and #6-32 Keps Nut (240-5008-00). Item 7 is secured to the Wood Rail by: #6 X 1-3/4" PPH AB (Zinc) (Qty. 2) (232-5009-00)			
8	Pinball (Steel) 1-1/16" ø	4	260-5000-00

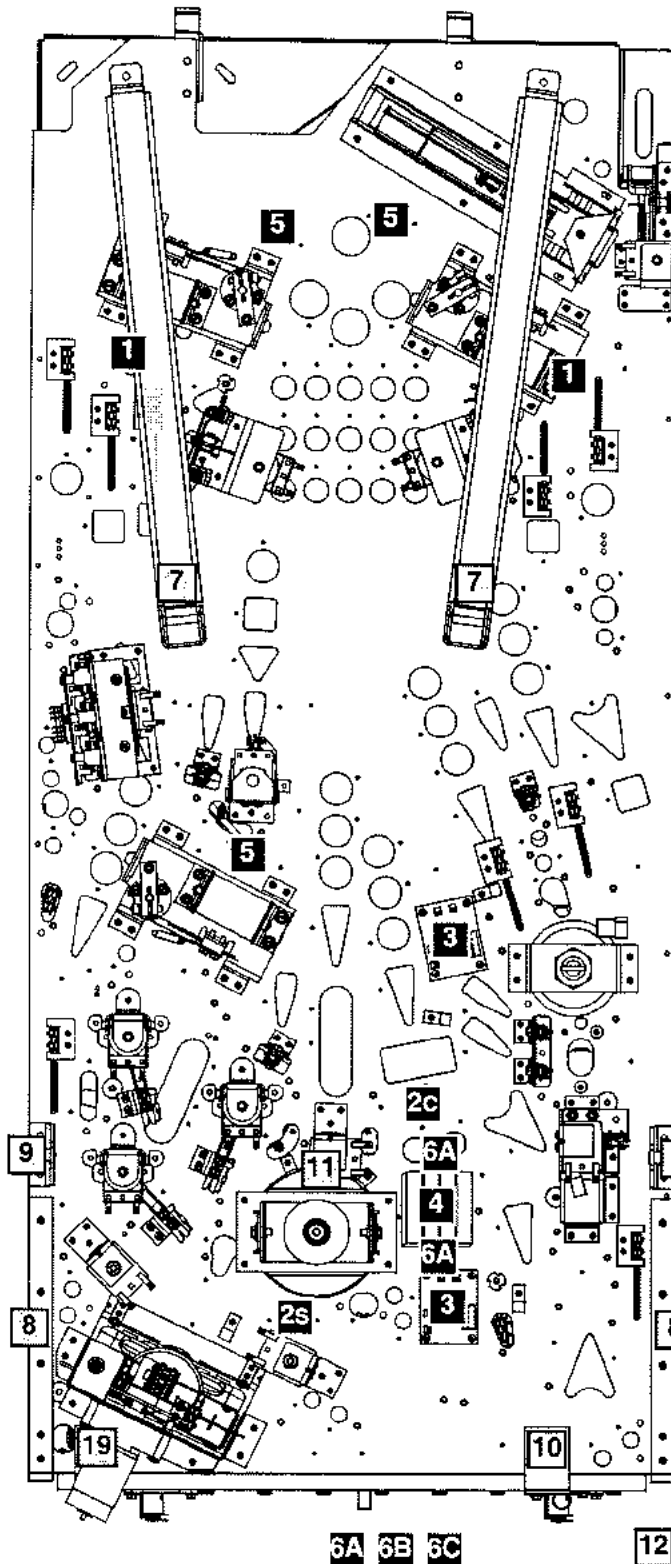
Nr.	MISC. BRACKETS (ABOVE)	QTY.	SPI PART Nr.
9	Shooter Ramp (Shooter Lane)	1	535-9881-00
Item 9 is secured to the Playfield (P/F) by: #4 X 1/2" PFH (Zinc) (Qty. 2) (237-5840-00)			
10	Bracket, Playfield Hanger	2	535-8385-00
Item 10 is secured to the Playfield (P/F) by: #8-32 X 7/8" Unslotted HWH MS Zinc (Qty. 2/per) (237-5890-00) and #8-32 T-Nut (Qty. 2/per) (240-5101-00)			
11	Bracket, Arch Retaining (Hold-Down)	2	535-8394-00
Item 11 is secured to the P/F by: #8 X 1/2" SHWH AB (Zinc) (Qty. 3/per) (234-5101-00)			
12	Bracket, Gate 1-Way Short (Top Loop)	1	535-0018-00
Item 12 is secured by: #6 X 1/4" PFH MS B2" U-Cut (Zinc) (Qty. 2) (237-5871-01)			
13	Bracket, Gate 1-Way Med. (Top VUK)	1	535-5269-09
Item 13 is secured by: #6-32 X 3/8" PPH (Qty. 2) (232-5201-00)			
14	Bracket, Gate 1-Way (To Bumpers)	1	535-9079-00
Item 14 is secured by: #6-32 X 3/8" PPH (Qty. 1) (232-5201-00)			

Nr.	MISC. MOLDED PARTS	QTY.	SPI PART Nr.
15	Skull Sculpture	1	880-5107-00
16B	Microscope Body	1	880-5107-01
16L	Microscope Lens	1	880-5107-02
16P	PCB, LED X3 (Red, Green & Blue)	1	520-5297-00
17	Bullet (Molded Plastic)	1	880-5107-03

For securing hardware on Items 14 - 16,
see Blue Pages b19, b 20 & b 25 for details.



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-A2
P/F	P/F Complete w/ Inserts & ALL Parts	1	505-6004-A2-A2

Nr.	MISC. PARTS (BELOW)	QTY.	SPI PART Nr.
1	Insulation Fiche Paper (under Lower Flippers)	2	545-5721-00
2c	Relay + Conn. Asm.	1	511-5181-00
2s	Relay + Conn. Asm.	1	511-5181-01

Item 2 is secured by: #6 X 1/2" SHWH AB (Zinc) Red (Qty. 2/per) (234-5001-02)

For more details on Items 2C & 2S, see the Yellow Pages, Backbox Wiring, Page y 3.

Individual Part Reference Only: Relay Picker #PC113-2C-C1-24D-LD-X (190-5004-00)

3 PCB, OPTO Transceiver Amplifier 2 520-5239-01

Item 3 is secured by: #6 X 3/4" SHWH AB (Zinc) (Qty. 4) (234-5003-03)

Application Note: Required for OPTO Transceiver Parts (500-6775-01) listed on the next page (... Switches). See the Yellow Pages, PCBs, Pages y 42 - y 43.

4 Resistor, 10W 5Ω RJ X4 RCD K5-451 4 121-5000-00

Item 4 are soldered to Item 4A (Qty. 2). For more details on Item 4, see the Yellow Pages, Backbox Wiring, Page y 3. To order Item 4 X4 soldered to Terminal Strip, use 511-5200-00.

5 3A 250v Slo-Blo Fuse 3 200-5000-08

Fuse Clip Holder (Socket) 3 205-5000-01

Item 5 is secured by: #6 X 1/2" PPH AB (Qty. 1/per) (237-5805-00)

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).

6A Diode Terminal Strip 2-Lug (810) Isolated 4 055-5203-00

6B Diode Terminal Strip 3-Lug (813) Isolated 2 055-5204-03

6C Diode Terminal Strip 5-Lug (824) Isolated 1 055-5204-05

Items 6A-6C are secured by: #6 X 3/8 SHWH AB Zinc (Qty. 1-2/per) (234-5000-00)

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.

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" JIWHI 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) 1 535-0289-00

Item 11 secured under the playfield by: #8 X 1/2" SHWH AB (Zinc) (Qty. 2) (234-5101-00)

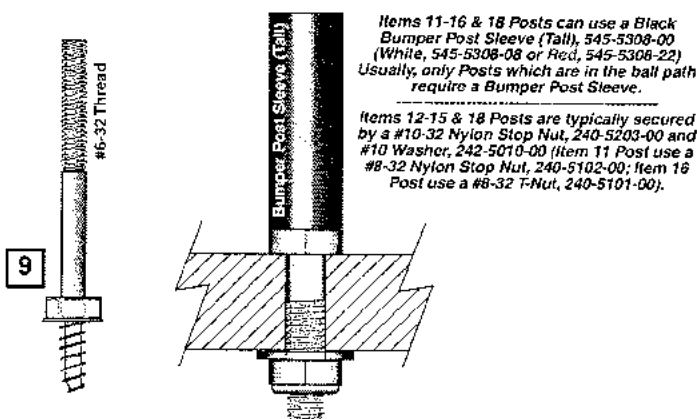
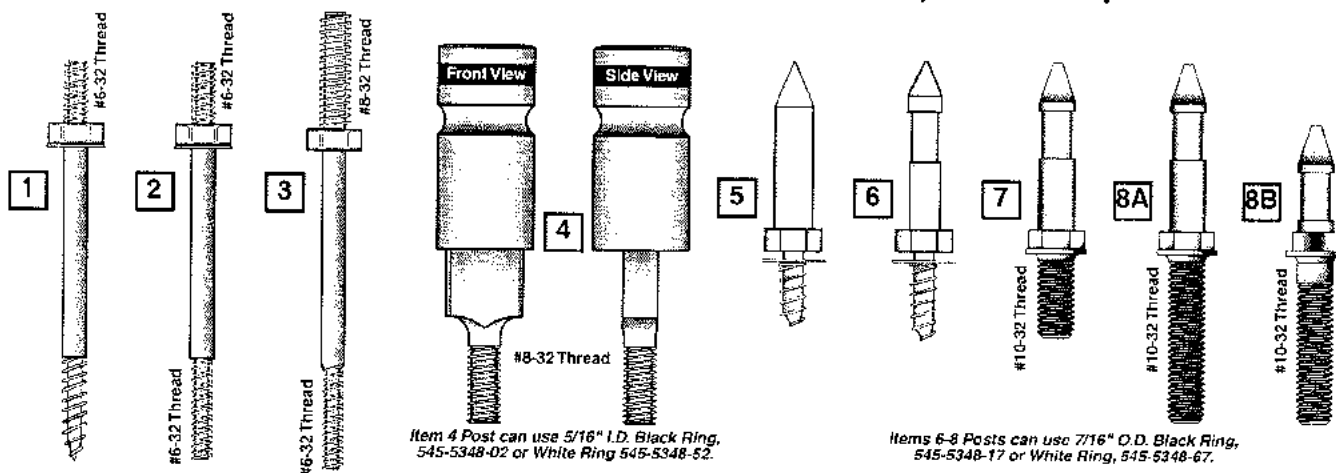
12 Tie Post (White Nylon) 3-1/2" 9 545-5253-01

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) †

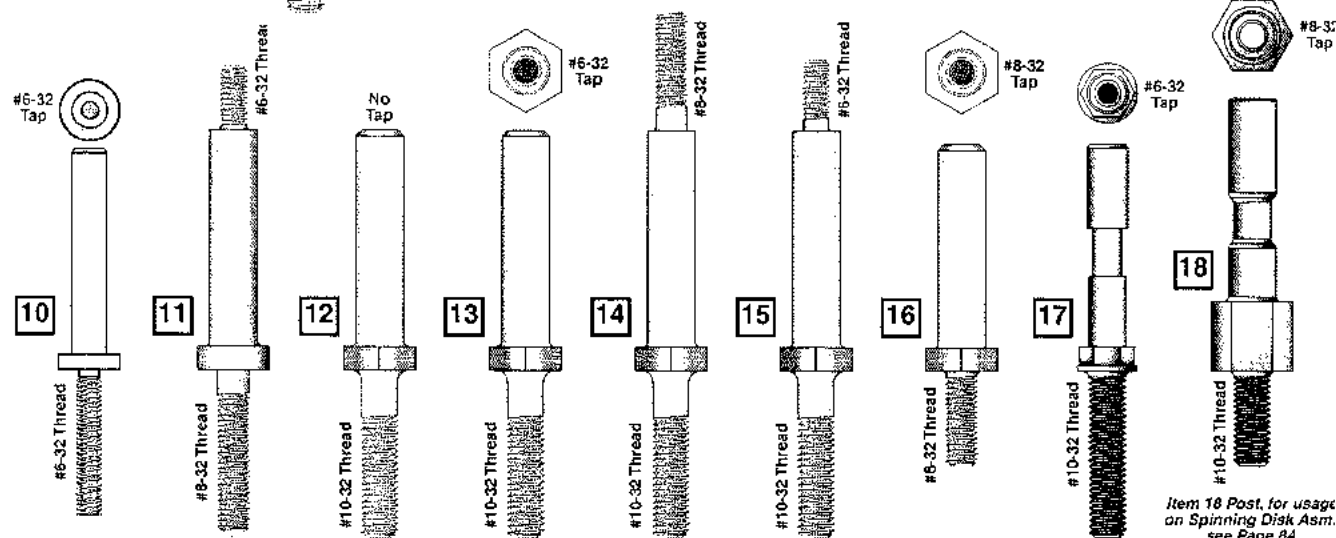
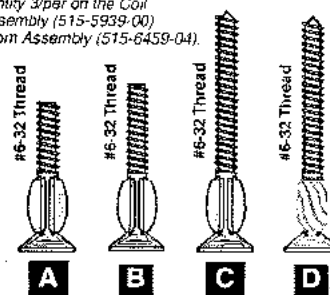


A & B Items A & B Note: Typically used to secure Hex Spacers onto the Playfield Wood or Back Panel.

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



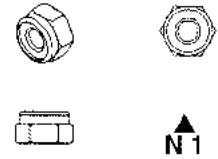
Parts Identification

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	Nr.	FIN SHANK SCREWS	SPI PART Nr.
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

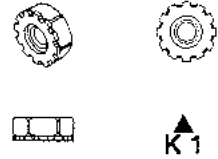
NOT ALL PARTS LISTED ABOVE ARE USED ON THIS GAME (QUANTITIES PER GAME WILL DIFFER).
COMPARE ACTUAL PART ON GAME TO ABOVE DRAWINGS TO IDENTIFY THE PART NUMBER REQUIRED.

Playfield - Nylon Stop, KEPS, Hex, T-, Flange, Pal* & Wing Nuts* (Actual Size) †

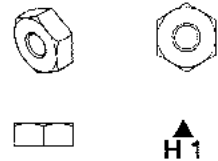
Nr.	NYLON STOP NUTS*	SPI PART Nr.
N1	#6-32 Nylon Stop Nut	240-5005-00
N2	#6-32 N.S. Nut (with 1/4" Hex Body)	240-5010-00
N3	#8-32 Nylon Stop Nut	240-5102-00
N4	#10-32 Nylon Stop Nut	240-5203-00
N5	#10-24 Nylon Stop Nut	240-5206-00
<i>Item N5 used with #10-24 X 1-3/4" Carriage Bolt Square Neck Black (231-5022-00)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



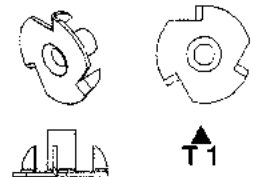
Nr.	KEPS NUTS*	SPI PART Nr.
K1	#6-32 Keps Nut (with Star Washer)	240-5008-00
K2	#6-32 Keps Nut (with 1/4" Hex Body)	240-5011-00
K3	#8-32 Keps Nut	240-5104-00
K4	#10-32 Keps Nut	240-5208-00
K5	#10-24 Keps Nut	240-5207-00
K6	#4-40 Keps Nut	240-5318-00



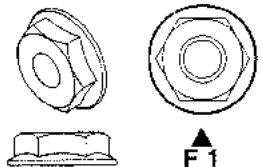
Nr.	HEX NUTS*	SPI PART Nr.
H1	#6-32 Hex Nut (No Star Washer)	240-5004-00
H2	#8-32 Hex Nut	240-5103-00
H3	#10-32 Hex Nut	240-5201-00
H4	#10-24 Hex Nut	240-5202-00
<i>Item H4 used with #10-24 X 1" Carriage Bolt Square Neck Black (231-5021-00) located in the Cabinet for the Side Armor Rear (towards Backbox).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



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



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



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

* Not Shown

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

* Not Shown

Parts Identification

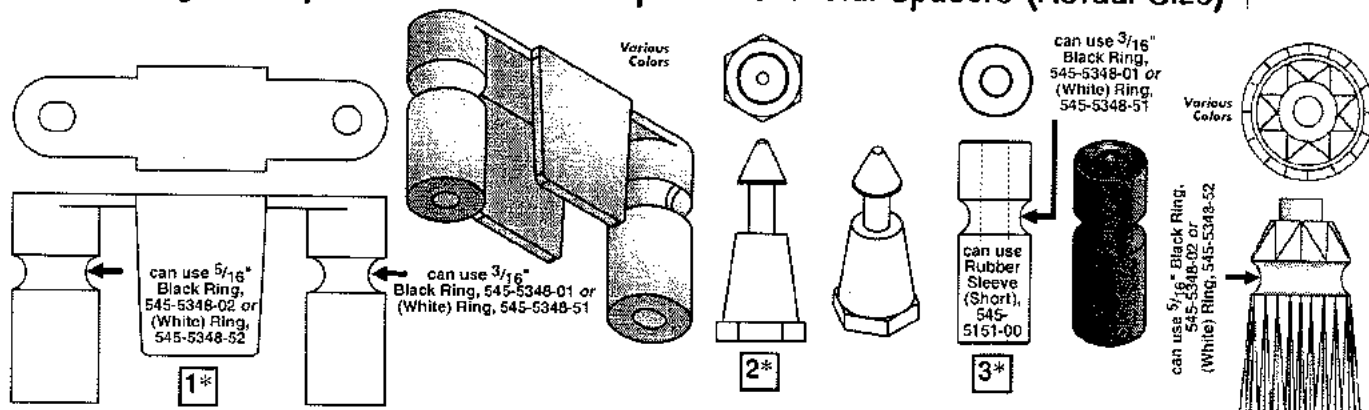
NOT ALL PARTS LISTED ABOVE ARE USED ON THIS GAME (QUANTITIES PER GAME WILL DIFFER).
COMPARE ACTUAL PART ON GAME TO ABOVE DRAWINGS TO IDENTIFY THE PART NUMBER REQUIRED.

Tap



**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) †



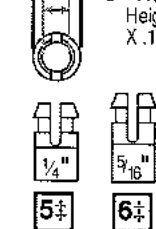
PLASTIC PART COLOR CHART

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.

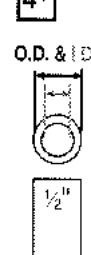
O.D. & I.D.

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

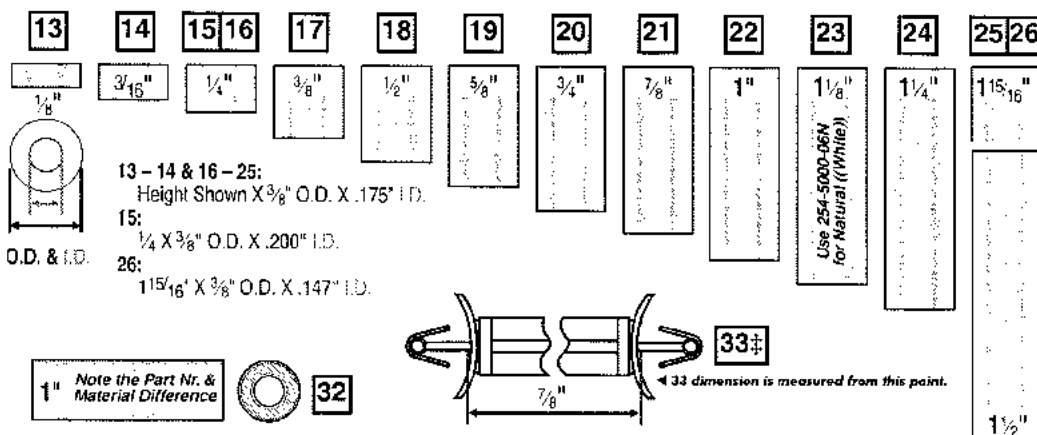


† Items 5 through 11 dimensions are measured from bottom to just under the cut-away. Item 33 dimension is measured from top-to-top of curve. See pictorials with Items 11 & 33.

O.D. & I.D.



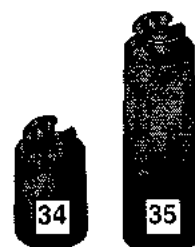
12: 1/2" X 1/4" O.D.
X .147" I.D.



1" Note the Part Nr. & Material Difference

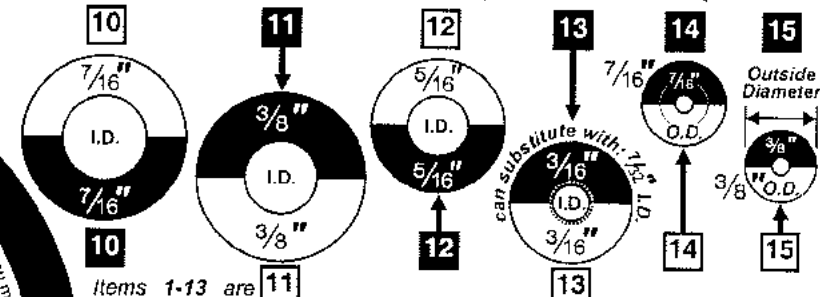
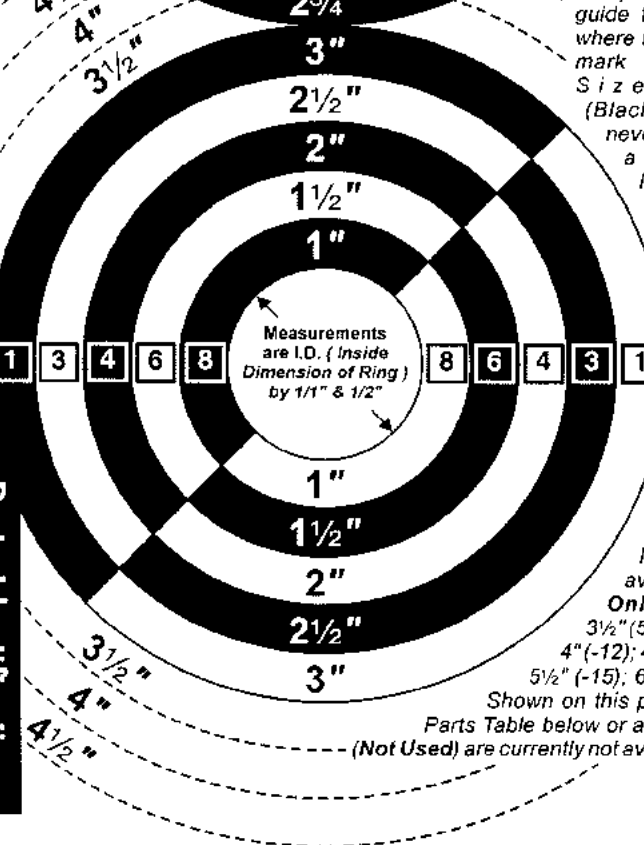
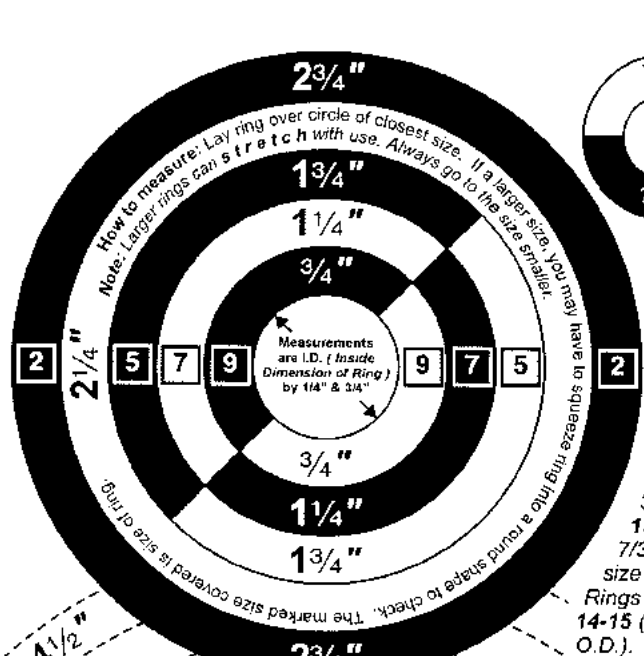
Nr.	PLASTIC POSTS & SPACERS	SPI PART Nr.	Nr.	PLASTIC POSTS & SPACERS	SPI PART Nr.
1**	Top Lane Plastic Mini-Lite Hood (XX-Color)	550-5061-XX	21	7/8" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)	254-5000-11
2**	Mini-Jewel Plastic Post (XX-Color)	550-5052-XX	22	1" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)	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 5/16" X 3/8" O.D. X .147" I.D. Plastic Spacer (Gray)	254-5000-15
5 ‡	1/4" Self Retain. Plastic Spacer (White)	254-5007-02	Items 13-26 Only: Spacers may also be Black in color (random from vendor).		
6 ‡	3/8" Self Retain. Plastic Spacer (White)	254-5007-05	Not Shown and listed for reference only: 254-5000-13: 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.		
7 ‡	3/8" Self Retain. Plastic Spacer (White)	254-5007-01	27	1/4" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5014-03
8 ‡	1/2" Self Retain. Plastic Spacer (White)	254-5007-04	28	1/2" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5014-00
9 ‡	5/8" Self Retain. Plastic Spacer (White)	254-5007-00	29	9/16" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5014-04
10 ‡	3/4" Self Retain. Plastic Spacer (White)	254-5007-03	30	3/4" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5014-01
11 ‡	1" Self Retain. Plastic Spacer (White)	254-5007-06	31	1 1/8" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5014-02
12	1/2" X 1/4" O.D. X .147" I.D. Pls. Spacer (White)	254-5000-03	32	1" X 5/16" O.D. X .144" I.D. Metal Spacer	254-5001-00
13	3/8" X 3/8" O.D. X .175" I.D. Pls. Spacer (Gray)	254-5000-19	33 ‡	7/8" Plastic Spacer Support (Dual-Locking)	254-5039-14
14	3/16" X 3/8" O.D. X .175" I.D. Pls. Spcr. (Gray)	254-5000-18	34	Plastic Spacer, .5"	254-5054-00
15	1/4" X 3/8" O.D. X .200" I.D. Pls. Spcr. (Gray)	254-5000-02	35	Plastic Spacer, 1.13" Plastic Mounting	254-5054-01
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 DRAWINGS 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.

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

Nr.	RUBBER RINGS	QTY.	SPI PART Nr.
1	3" I.D. Rubber Ring BLACK		545-5348-10
	3" I.D. Rubber Ring WHITE		545-5348-60
2	2 3/4" I.D. Rubber Ring BLK		545-5348-20
	N/U		
3	2 1/2" I.D. Rubber Ring BLK		545-5348-09
	2 1/2" I.D. Rubber Ring WHT		545-5348-59
4	2" I.D. Rubber Ring BLACK	2	545-5348-08
	2" I.D. Rubber Ring WHITE		545-5348-58
5	1 3/4" I.D. Rubber Ring BLK	1	545-5348-21
	N/U		
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	1	545-5348-05
	1" I.D. Rubber Ring WHITE		545-5348-55
9	3/4" I.D. Rubber Ring BLACK	4	545-5348-04
	3/4" I.D. Rubber Ring WHITE		545-5348-54
10	7/16" I.D. Rubber Ring BLK		545-5348-18
	7/16" I.D. Rubber Ring WHT		545-5348-68
11	3/8" I.D. Rubber Ring BLACK		545-5348-03
	N/U		
12	5/16" I.D. Rubber Ring BLK		545-5348-02
	5/16" I.D. Rubber Ring WHT		545-5348-52
13	3/16" I.D. Rubber Ring BLK	4	545-5348-01
	3/16" I.D. Rubber Ring WHT		545-5348-51
14	7/16" O.D. Rubber Ring BLK	43	545-5348-17
	7/16" O.D. Rubber Ring WHT		545-5348-67
	Note: Item 14, 7/16" O.D. Black Rings (Qty. 44 of 49) are used to cushion the Bayonet Sockets under the playfield (between bracket & playfield).		
15	3/8" O.D. Rubber Ring BLK		545-5348-19
	3/8" O.D. Rubber Ring WHT		545-5348-69
16	Small Flipper BLACK Ring (Soft Duro)	1	545-5207-00
	Small Flipper RED Ring (Soft Duro)		545-5207-22
	Large Flipper BLACK Ring (50 Duro)	2	545-5277-00
	Large Flipper YELLOW Ring (50 Duro) (use -06 40 Duro)		545-5277-04
17	Large Flipper WHITE Ring (50 Duro)		545-5277-08
	Large Flipper RED Ring (Soft Duro)		545-5277-22

Take Note:

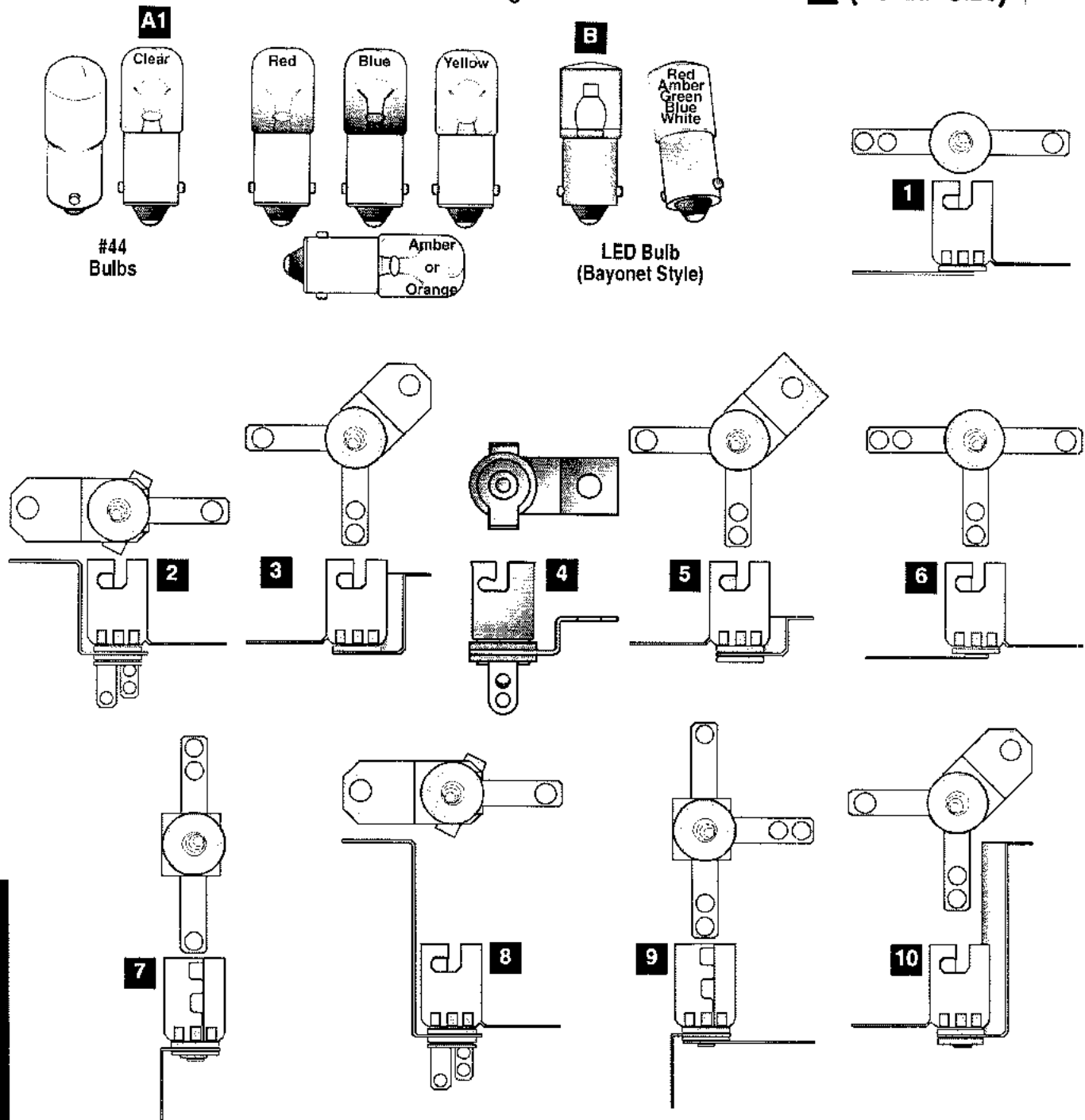
For Blue Rubber Pads, see the next page and/or the Blue Pages for the assembly the pads are found on for the part number.

Nr.	RUBBER BUMPER PADS	QTY.	SPI PART Nr.	Nr.	RBR. BUMPER POST SLVS.	QTY.	SPI PART Nr.
A*	Bumper BLK Pad (Lg. w/ grommet)		545-5428-00	D*	Bumper BLACK Post Sleeve (Tall)	7	545-5308-00
	Item A are located on Flipper Assemblies. See next page for location.				Item D in RED use 545-5308-22; Item D in WHITE use 545-5308-08.		
B*	Bumper BLK Pad (Sm. w/ grommet)	3	545-5105-00	E*	Bumper Post Sleeve (Short)		545-5151-00
	Item B are located on multiple assemblies. See next page for location.						

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



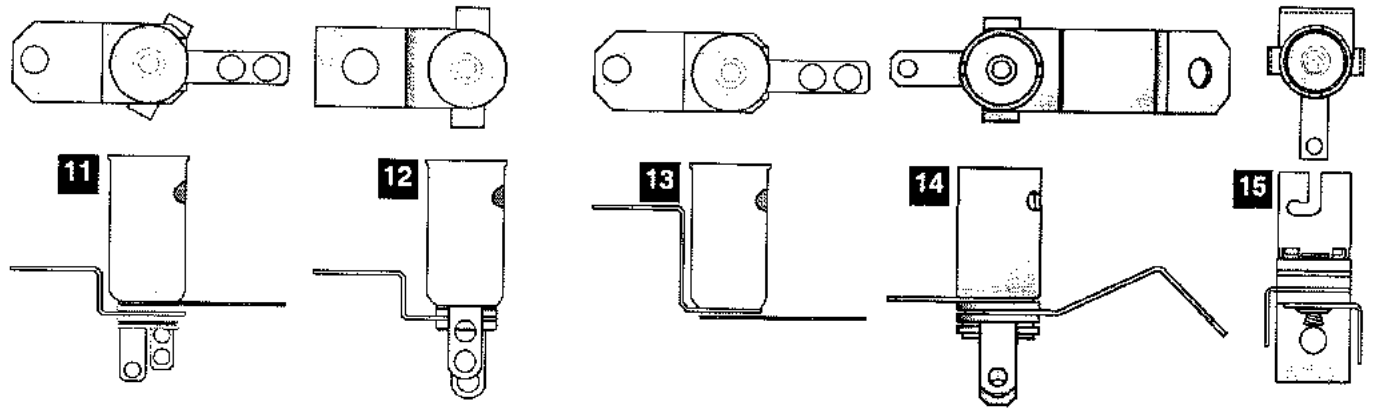
Parts Identification

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		Item B Note: Different Colors may be available --	
	Item A Note: Amber (165-5053-03-HF); Green (165-5053-04-HF); Yellow (165-5053-06-HF); Red (165-5053-02-HF); Blue (165-5053-05-HF); Orange (165-5053-07-HF)			Red (112-5023-02); Amber (112-5023-03); Green (112-5023-04); Blue (112-5023-05);	

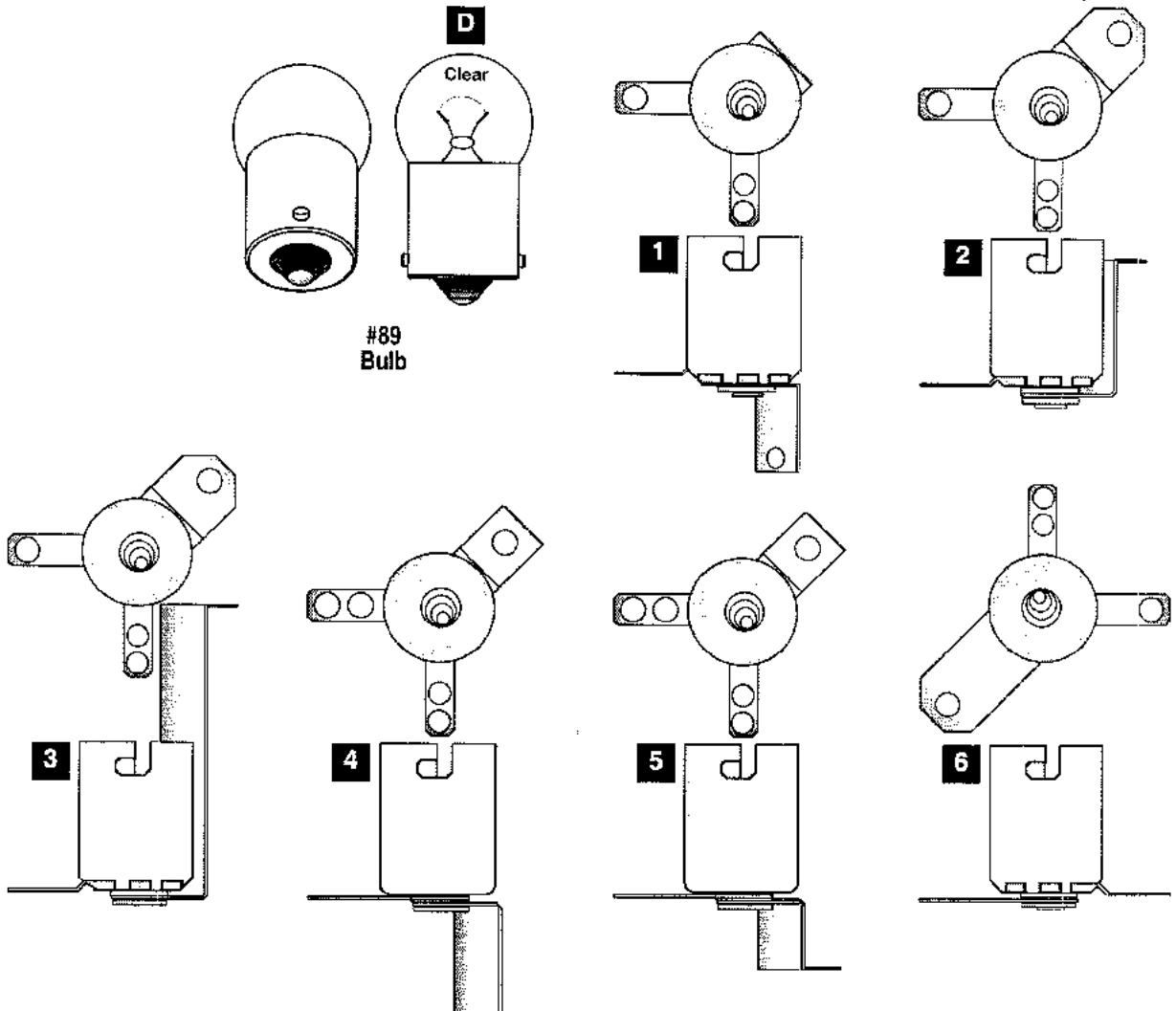
Nr.	SMALL BAYONET SOCKETS	SPI PART Nr.	Nr.	SMALL BAYONET SOCKETS	SPI PART Nr.
1	2-Lug Staple Down Socket	077-5000-00	9	3-Lug Laydown Socket (3 Lugs Flat)	077-5006-00
2	3-Lug Stand-Up Socket (Med. Brkt.)	077-5008-00	10	2-Lug Stand-Up Socket (Tall Bracket)	077-5005-00
3	2-Lug Stand-Up Socket (Med. Brkt.)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

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) †

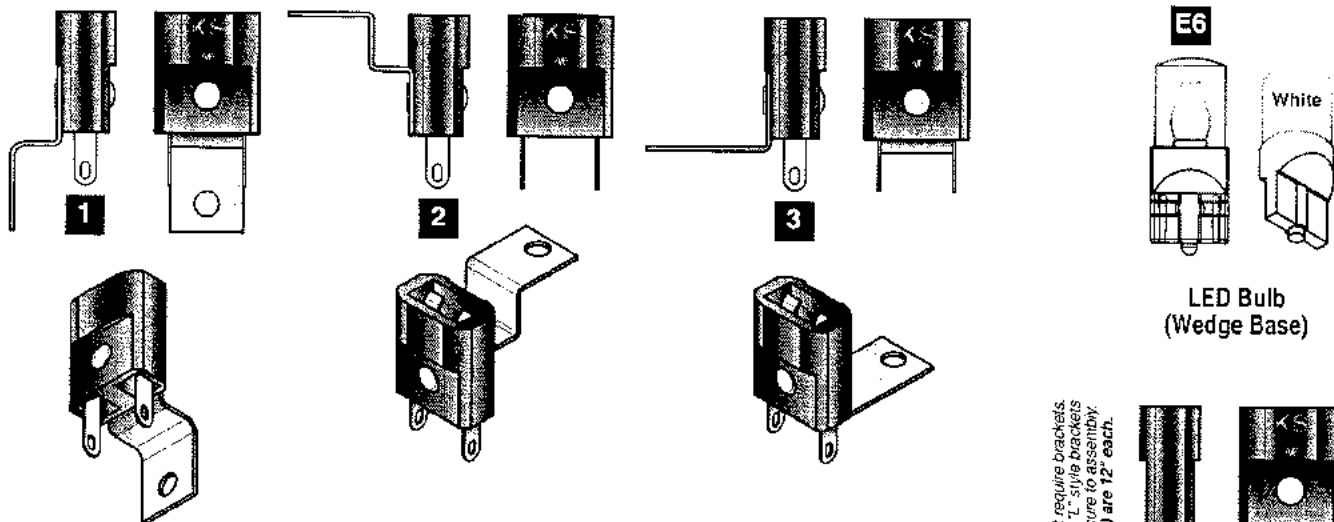
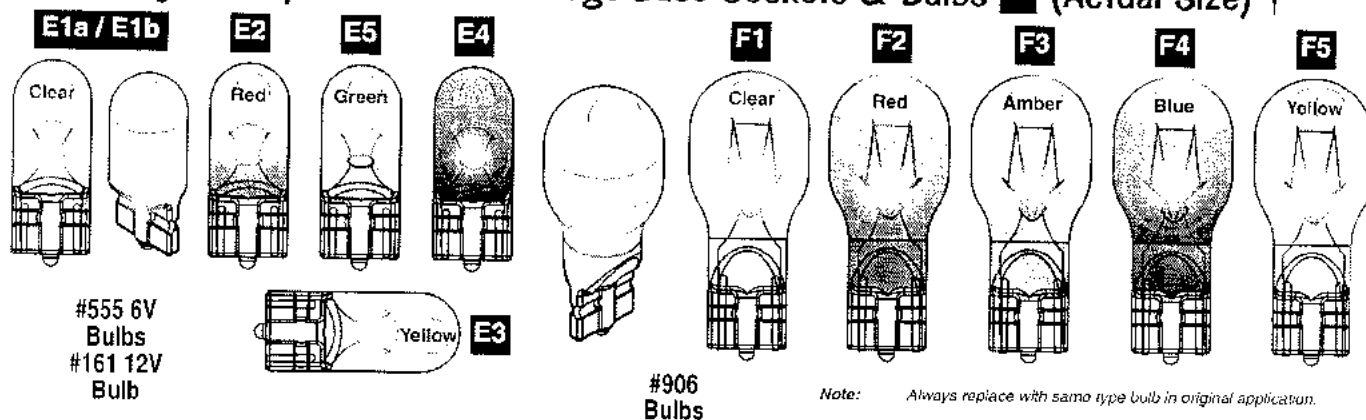


Parts Identification

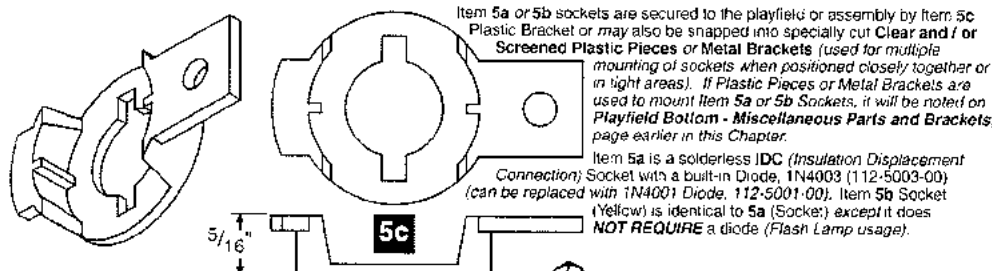
Nr.	BULBS (#89)	SPI PART Nr.	Nr.	LARGE BAYONET SOCKETS	SPI PART Nr.
D	#89 Bulb Heavy Filament	165-5000-89-HF	1	2-Lug Laydown Standard Socket	077-5100-00
			2	2-Lug Stand-Up Short Socket	077-5101-00
			3	2-Lug Stand-Up Long Socket	077-5102-00
			4	2-Lug Stand-Up Rev. Mount Socket	077-5103-00
			5	2-Lug Stand-Up Rv. Mnt. Short Socket	077-5106-00
			6	2-Lug Straight Leg Socket	077-5107-00

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 & Bottom - Wedge Base Sockets & Bulbs (Actual Size) †



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



Just squeeze the "side arms" of the socket together and pull away from the plastic or bracket for easy Bulb replacement.

Parts Identification

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

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

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

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.

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 CSI Pinball) 502-6002-A2

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: Quantities, sizes and contents subject to change without notice.

Pinball Location Maintenance Deluxe Kit (for CSI Pinball) 502-6003-A2

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 (3) FLIPPER REBUILD KITS ▲

Plastics*Kit (for CSI Pinball) 803-5000-A2

Plastics Kit includes: Plastic Sets (830-6071-XX)

Decals*Kit (for CSI Pinball) 802-5000-A2

Decals Kit includes: Decal Set (820-6408-XX) & 2X T-Nut Cover (820-6380-00)

Mylar*Kit (for CSI Pinball) 802-5001-A2

Mylar Kit includes: Bumper Area (820-6438-00); Scoop Drop (820-6430-00) and Full Optional Mylar (820-5999-A2)

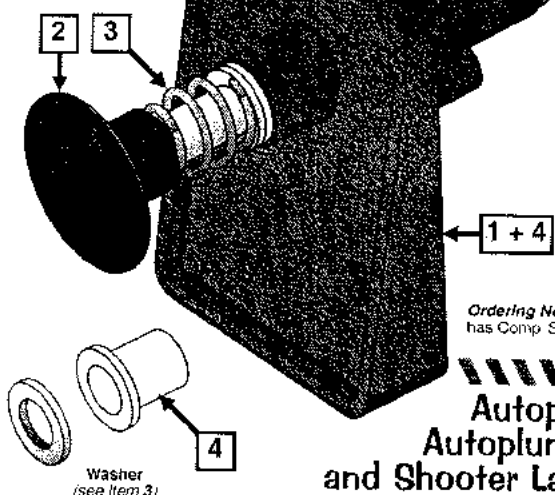
***Attention:** No individual Plastic or Decal can be ordered separately, unless noted otherwise. Plastics & Decals are subject to change without notice during and / or after production. Key Fobs subject to availability and may or may not be included in the plastic set. All designs, shapes & pieces used 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.



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

Assemble into Housing in the following order:

Rod Assembly (see Item 2),
Short Spring (see Item 3),
Washer (see Item 4),
Bushing (see Item 5),
and then ...



and then ...

Bushing (see Item 4),
Washer (see Item 5),
Long Spring (see Item 5),
Washer (see Item 5),
Retaining Ring (see Item 5),
Plunger Tip (see Item 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" FPH (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 Black Knob)	1	515-6557-00
3	Comp. Spring (Short) (Knob Side)	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) [.035" ø]	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" ø 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" ø) (266-5001-07) or 500-6146-00-05 has Comp. Spring (Blue, .031" ø) (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" ø 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	1	511-5183-00
Item 4 is secured to Item 1 by: Retaining Ring, 1/4" ø 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" ø x 5/8" Lg. (251-5008-00)			
5	Compression (Return) Spring	1	266-5020-00
(ASM. REF. 500-6091-00, Items 1-5)			

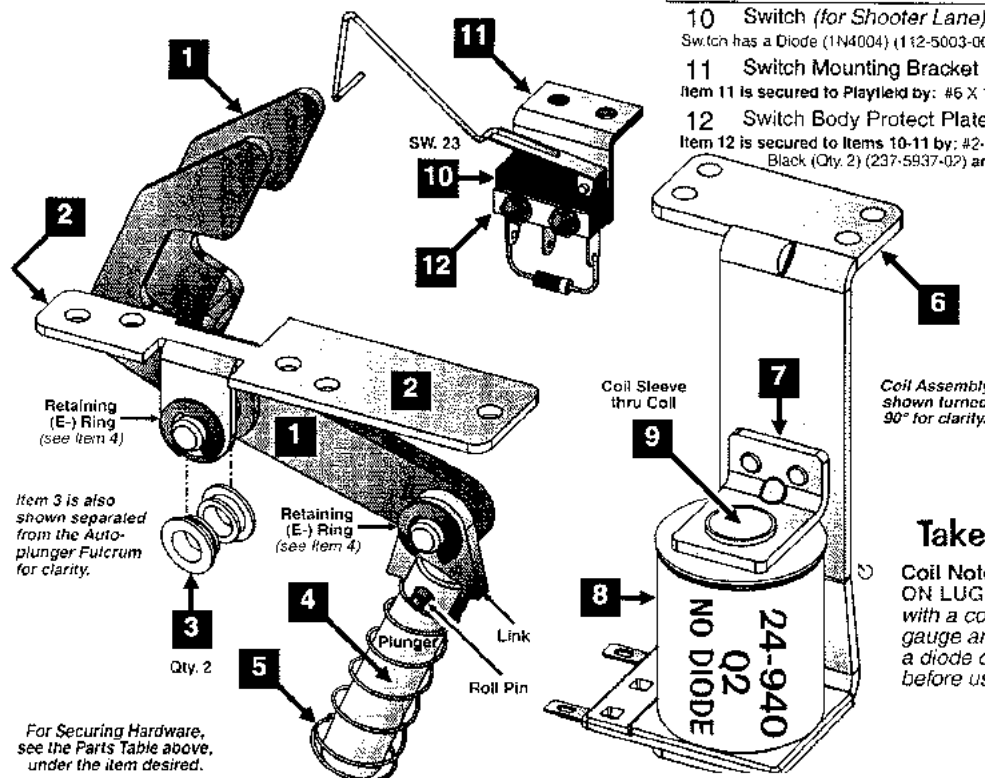
Nr.	AUTOPLNGR. COIL PARTS	QTY.	SPI PART Nr.
6	Autoplunger Coil Bracket Assembly	1	515-6527-00
Items 1 & 6 are secured below the P/F by: #8 X 1/2" SHWH AB (Znc) (Qty. 9) (234-5101-00)			
7	Coil Retainer Bracket	1	535-5203-03
Item 7 is secured to Item 6 by: #8-32 X 1/4" PPH MS (Sems) Zinc (Qty. 2) (232-5300-00)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

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

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.



Item 3 is also shown separated from the Autoplunger Fulcrum for clarity.

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

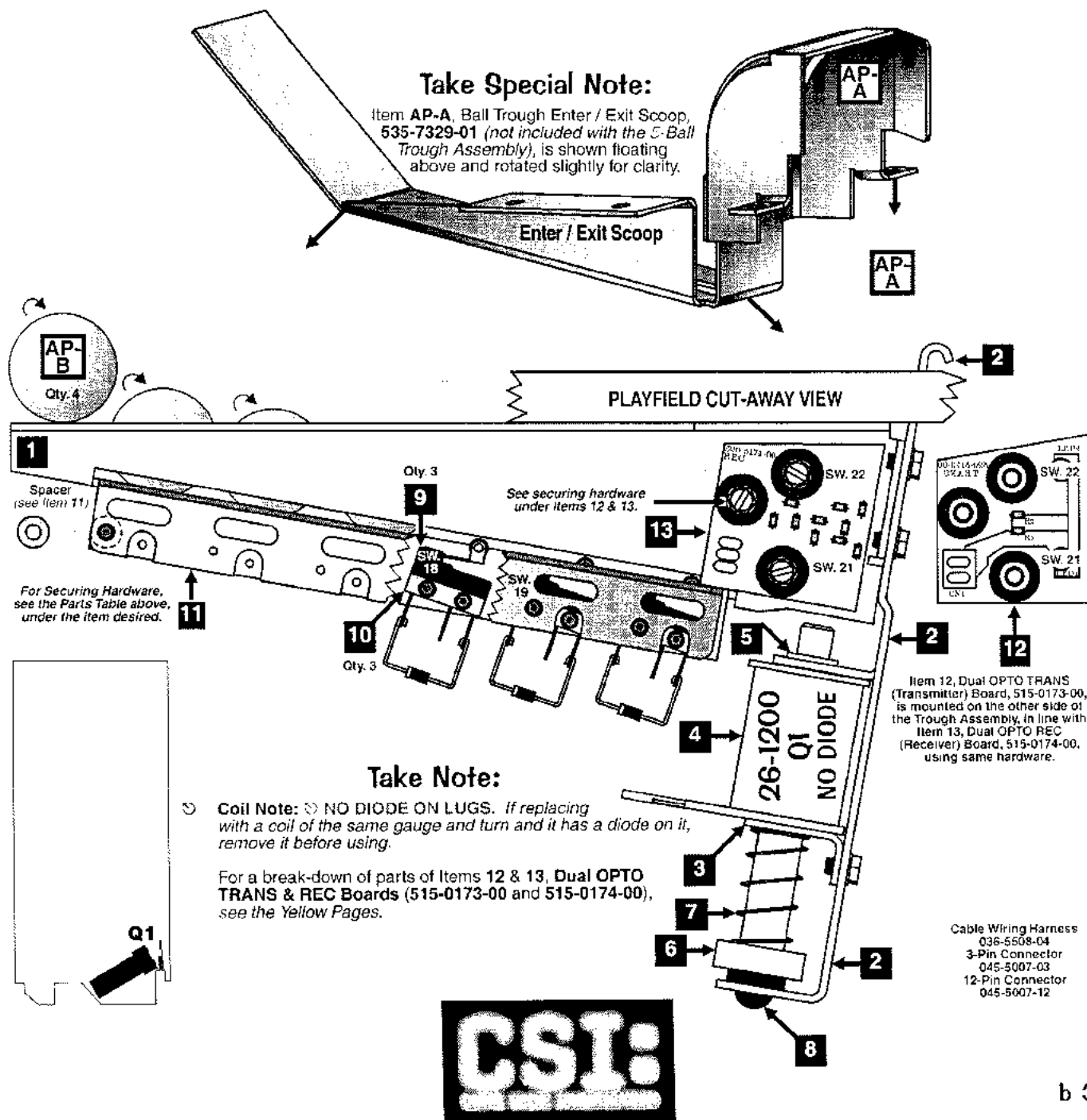
Coil Assembly shown turned 90° for clarity.

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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).

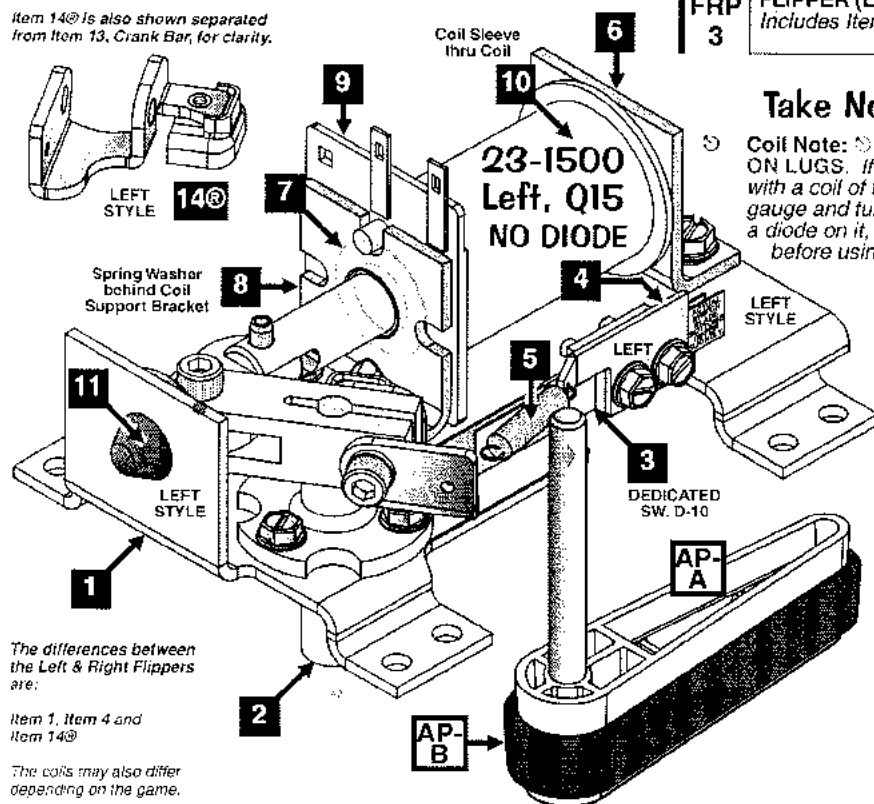
Nr.	4-BALL TROUGH PARTS	QTY.	SPI PART Nr.	Nr.	4-BALL TROUGH PARTS	QTY.	SPI PART Nr.
1	Ball Trough Outhole Mounting Bracket	1	515-6580-01	11	Trough Ball Guide Plate	1	535-7801-00
Item 1 is secured below the playfield by: #8 X 1/2" SHWH AB (Zc.) (Qty. 4) (234-5101-00)				Item 11 is secured to Item 1 by: 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)				13	Dual OPTO REC Board Assembly	1	515-0174-00
3	Coil Retaining Bracket	1	535-5203-03	Items 12 & 13 are secured by: #6-32 X 5/8" HWH Swg (Ser) Zn (Qty. 3/per) (237-5976-04)			
Item 3 is secured to Item 2 by: #8-32 X 1/4" SHWH (Ser) 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) (530-5309-02) and OPTO PCB Rubber Grommet (Qty. 3/per) (545-5518-00)			
4	Coil, 26-1200 [NO DIODE]	1	090-5044-ND	Ordering Note: If 500-6318-24-ND is unavailable, order the individual part(s) actually required. This assembly is identical to 500-6318-14-ND, -15 or -25 except for the quantity of Items 9 & 10 (Qty. 4 per on 5-Ball Trough) and Item 11, required when a Magnet Mech. is used in the game. -ND means no diode on Item 4, Coil, 26-1200.			
COIL DOES NOT REQUIRE A DIODE. SEE COIL NOTE BELOW FOR DETAILS.				ASSOCIATED PARTS ARE NOT INCLUDED WITH THE ABOVE ASSEMBLY.			
5	Coil Sleeve (Short) (Formost #10-7077)	1	545-5076-01	Nr.	ASSOCIATED PART(S)	QTY.	SPI PART Nr.
6	Steel & Nylon Plunger Asm. (3.57")	1	515-7309-01	AP-A	Ball Trough Enter / Exit Scoop	1	535-7329-01
7	Compression (Return) Spring	1	266-5020-00	Item AP-A secured to the playfield by: #8 X 1/2" SHWH AB (Zinc) (Qty. 4) (234-5101-00).			
8	Rubber Bumper (Grommet)	1	545-5105-00	AP-B	Steel Balls (1-1/16" ø)	4	260-5000-00
9	Micro Switch (Roller Actuator, Lite-Force)	3	180-5119-02				
Item 9 requires: Heat Shrink Tubing 1/8" ø PUI-24 (Qty. 1/per) (605-5006-00)							
Switch has a Diode (1N4004) (112-5003-00). Can be replaced with (1N4001) (112-5001-00).							
10	Switch Body Protect Plate	3	535-6539-00				



Flipper (Left) Assembly, 500-6543-15-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" ID	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	Spring Return Spring	1	265-5035-00
6	Coil Stop Bracket Sub-Assembly	1	515-6308-01
Item 6 is secured to Item 1 by: #10-32 X 3/8" SHWH Swage (Ser.) Zinc (Qty. 2) (237-5985-00) and #10 Split Lock Washer (Qty. 2) (244-5003-00)			
7	Spring Washer (17/32" ID X 3/4" X 1")	1	269-5002-00
8	Coil Support Bracket	1	535-7356-00
Item 8 is secured to Item 1 by: #8-32 X 3/8" HWH Swage (Ser.) Zc. (Qty. 2) (237-5975-00)			
9	Coil, 23-1500 [NO DIODE] BLUE	1	090-5062-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" ID X .281" ID X .187" (Qty. 1) (530-5532-00) and Spiral Pin (Qty. 1) (251-5015-02)			
13	Crank Bar (Pawl)	1	530-5070-02
Item 13 requires: Bushing, .192" ID X .312" ID 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" 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®

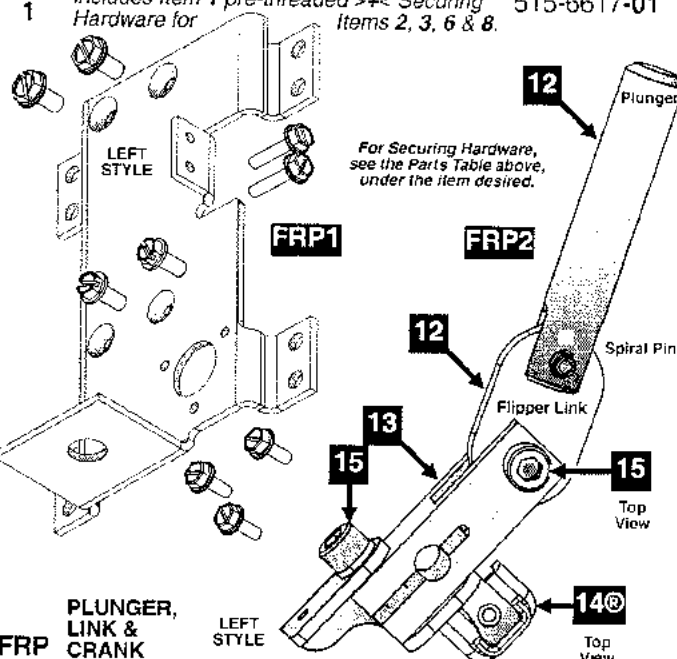
The coils may also differ depending on the game.

ASSOCIATED PARTS ARE NOT INCLUDED WITH THE ABOVE ASSEMBLY.

Nr.	ASSOCIATED PART(S)	QTY.	SPI PART Nr.
AP-A	YELLOW Flipper Bat & Shaft Asm. (Non-Knurled End) without Rubber Ring	1	515-5133-06-06
AP-B	Large Flipper BLACK Rubber Ring	1	545-5277-00

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

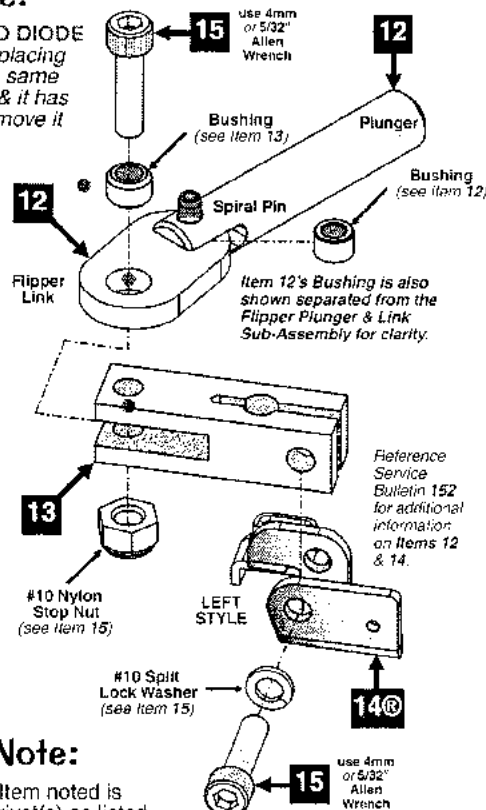


FRP 2 PLUNGER, LINK & CRANK (LEFT STYLE) ASSEMBLY: Includes Items 12, 13, 14 & 15 (comes assembled). 515-7203-01

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:

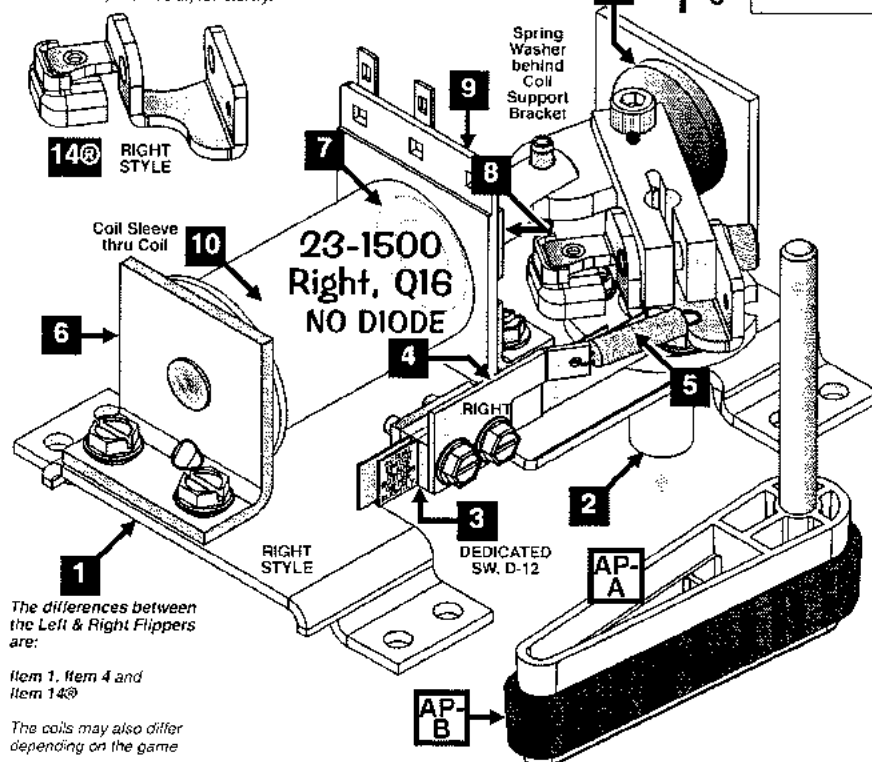
® "R" indicates Item noted is secured with rivet(s) as listed.

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Flipper (Right) Assembly, 500-6543-05-ND (Items 1-15) and Associated Parts: Yellow Flipper Bat & Shaft Asm., 515-5133-06-06 (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" o 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: #6-32 X 3/8" HWH Swage (Ser.) Zc. (Qty. 2) (237-5976-00)			
9	Coil, 23-1500 [NO DIODE] BLUE	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" o ID X .281" o OD X .187" (Qty. 1) (530-5532-00) and Spiral Pin o 5/32" X 3/4" Lg. (Qty. 1) (251-5015-02)			
13	Crank Bar (Pawl)	1	530-5070-02
Item 13 requires: Bushing, .192" o ID X .312" o 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" o 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®

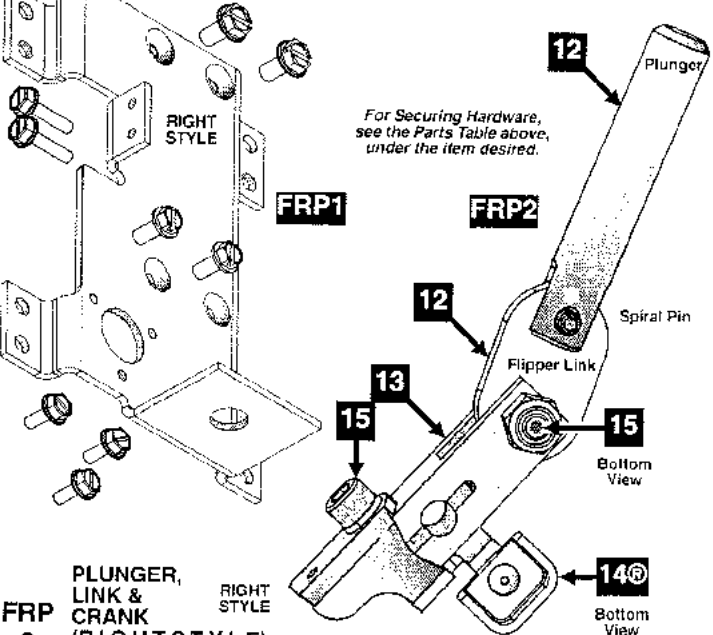
The coils may also differ depending on the game

ASSOCIATED PARTS ARE NOT INCLUDED WITH THE ABOVE ASSEMBLY.

Nr.	ASSOCIATED PART(S)	QTY.	SPI PART Nr.
AP-A	YELLOW Flipper Bat & Shaft Asm. (Non-Knurled End) <u>without Rubber Ring</u>	1	515-5133-06-06
AP-B	Large Flipper BLACK Rubber Ring	1	545-5277-00

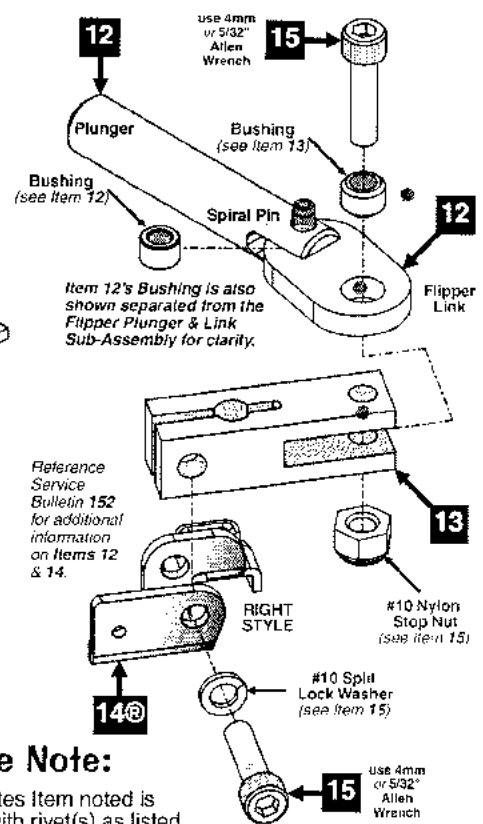
Flipper Rebuild Parts for Easier Installation, Save \$:

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



Item 12's Bushing is also shown separated from the Flipper Plunger & Link Sub-Assembly for clarity.

Reference Service Bulletin 152 for additional information on Items 12 & 14.

Take Note:

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

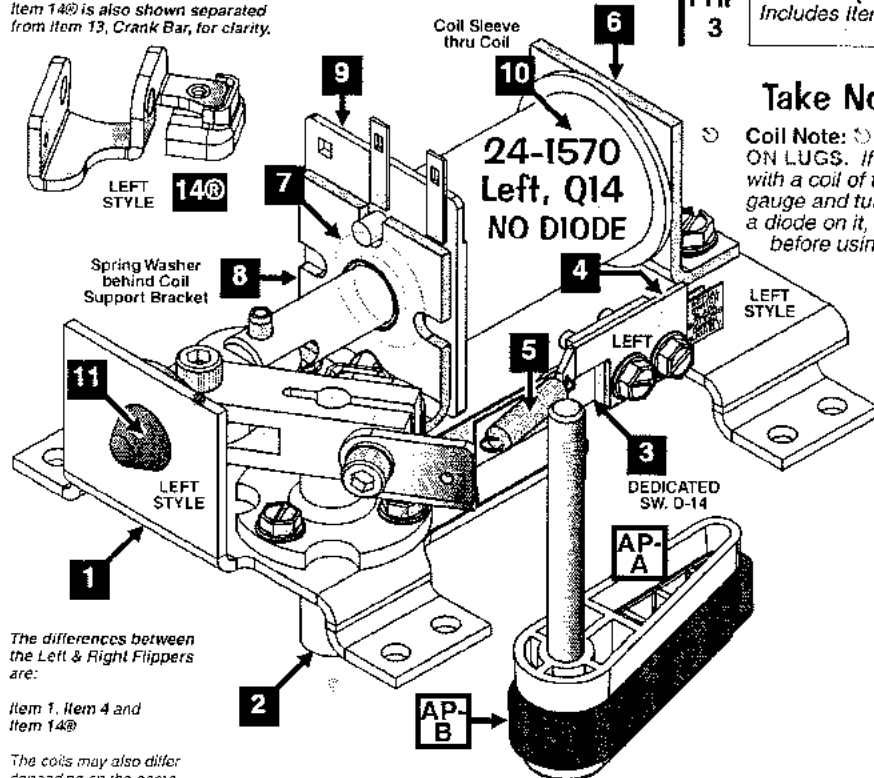


Assemblies & Ramps

Flipper (Upper Left) Assembly, 500-6543-16-ND (Items 1-15) and Assoc. Parts: Yellow Mini-Flipper Bat & Shaft Asm., 515-6275-06 (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" o I.D.	1	545-5070-00
Item 2 is secured to item 1 by: #6-32 X 3/8" HWH Swage (Ser.) Zc. (Qty. 3) (237-5976-02)			
3	Power (EOS / End-of-Stroke) Switch	1	180-5149-00
Item 3 is secured to item 1 by: #6-32 X 5/8" HWH Swage (Ser.) Zc. (Qty. 2) (237-5976-04)			
4	Sw. Plate/Spring Return Brkt. (LEFT)	1	535-7354-01
5	Flipper Return Spring	1	265-5035-00
6	Coil Stop Bracket Sub-Assembly	1	515-6308-01
Item 6 is secured to item 1 by: #10-32 X 3/8" SHWH Swage (Ser.) Zinc (Qty. 2) (237-5985-00) and #10 Split Lock Washer (Qty. 2) (244-5003-00)			
7	Spring Washer (17/32" ID X 3/4" X 1")	1	269-5002-00
8	Coil Support Bracket	1	535-7356-00
Item 8 is secured to item 1 by: #8-32 X 3/8" HWH Swage (Ser.) Zc. (Qty. 2) (237-5975-00)			
9	Coil, 24-1570 [NO DIODE] BLUE	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" o I.D. X .281" o O.D. X .187" (Qty. 1) (530-5532-00) and Spiral Pin o 5/32" X 3/4" Lg. (Qty. 1) (251-5015-02)			
13	Crank Bar (Pawl)	1	530-5070-02
Item 13 requires: Bushing, .192" o I.D. X .312" o O.D. 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" o 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®

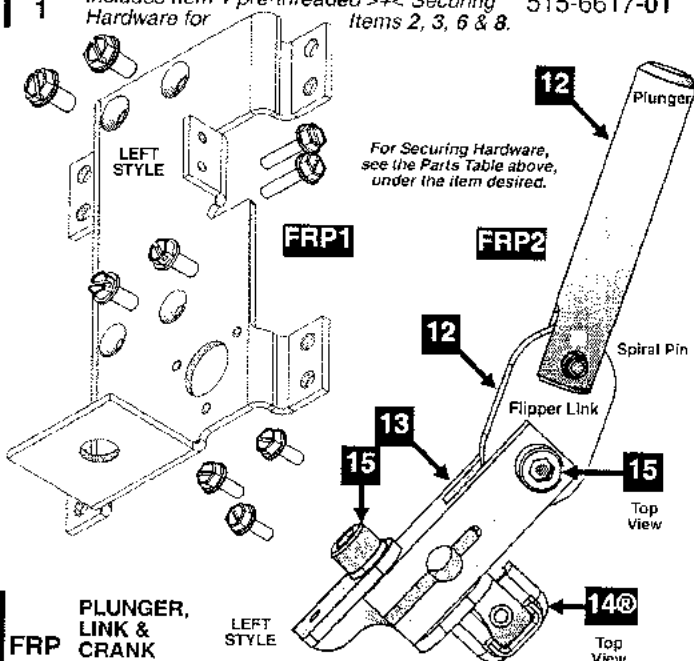
The coils may also differ depending on the game.

ASSOCIATED PARTS ARE NOT INCLUDED WITH THE ABOVE ASSEMBLY.

Nr.	ASSOCIATED PART(S)	QTY.	SPI PART Nr.
AP-A	YEL. Mini-Flipper Bat & Shaft Asm. (Non-Knurled End) without Rubber Ring	1	515-6275-06
AP-B	Mini-Flipper BLACK Rubber Ring	1	545-5207-00

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

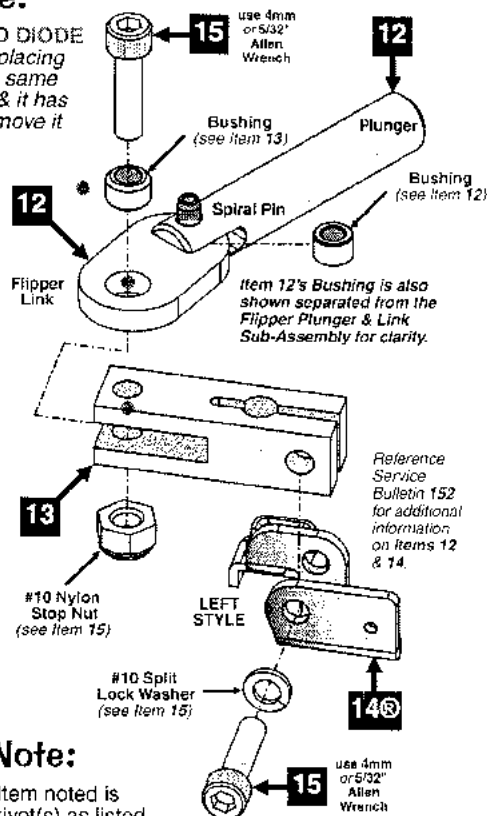


FRP 2 PLUNGER, LINK & CRANK (LEFT STYLE) ASSEMBLY: Includes Items 12, 13, 14 & 15 (comes assembled). 515-7203-01

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.

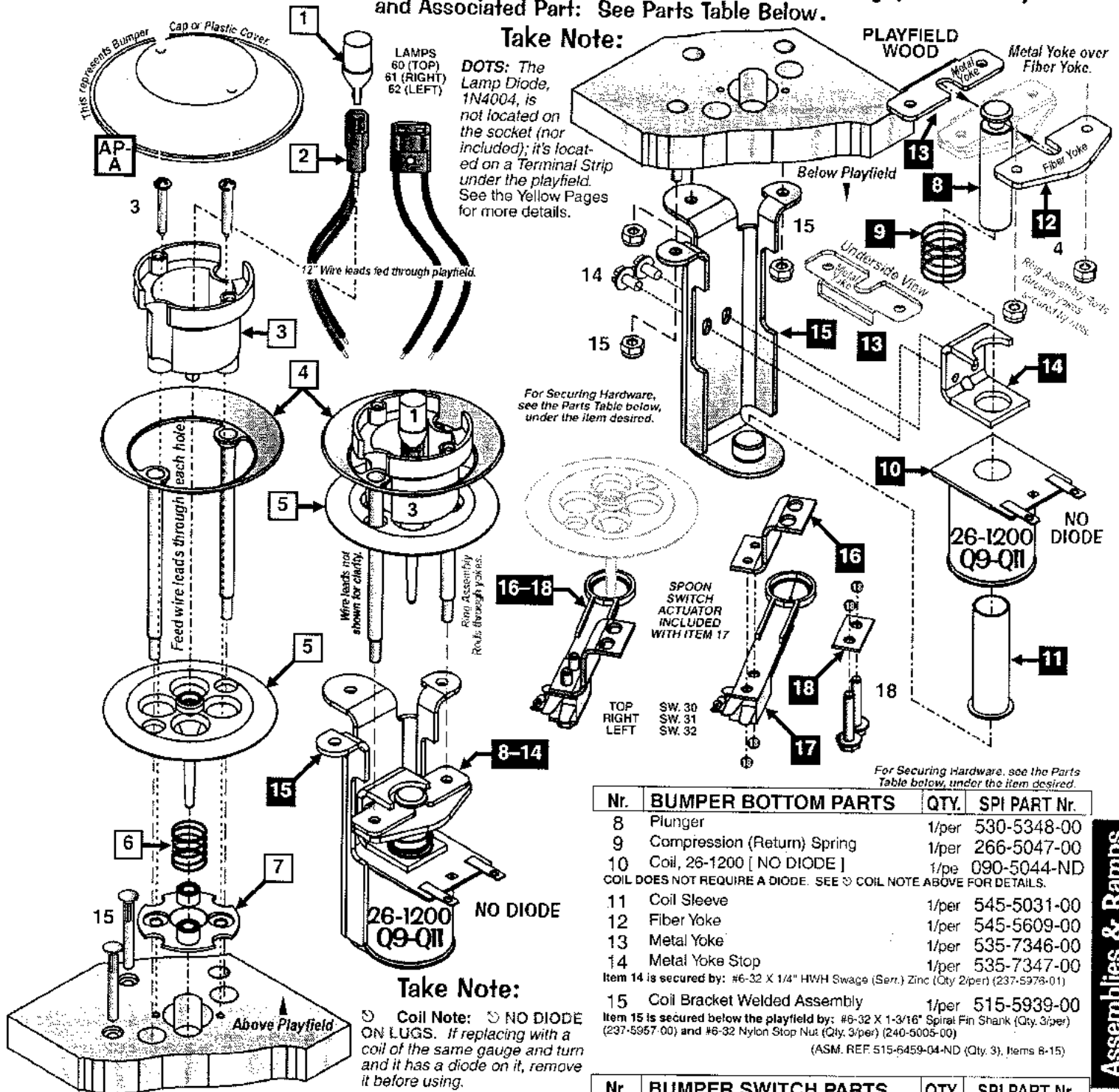
CSI:
CRIME SCENE INVESTIGATION

Left, Right & Bottom Bumper & 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 the Yellow Pages 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 TOP PARTS	QTY.	SPI PART Nr.
1	LED Module (WHT) (6.3v) Wedge Base	1/per	112-5024-08
2	Wedge Base Socket	1/per	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

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

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) (237-5978-01)			
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)			

(ASM. REF. 515-6459-04-ND (Qty. 3), Items 8-15)

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) (237-5976-03). 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	Kit: Plastics (includes -10, -11 & -12)	1	803-5000-A2

Note: Individual Plastics (830-6071-XX) are not available individually; ordering of kit is required.

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

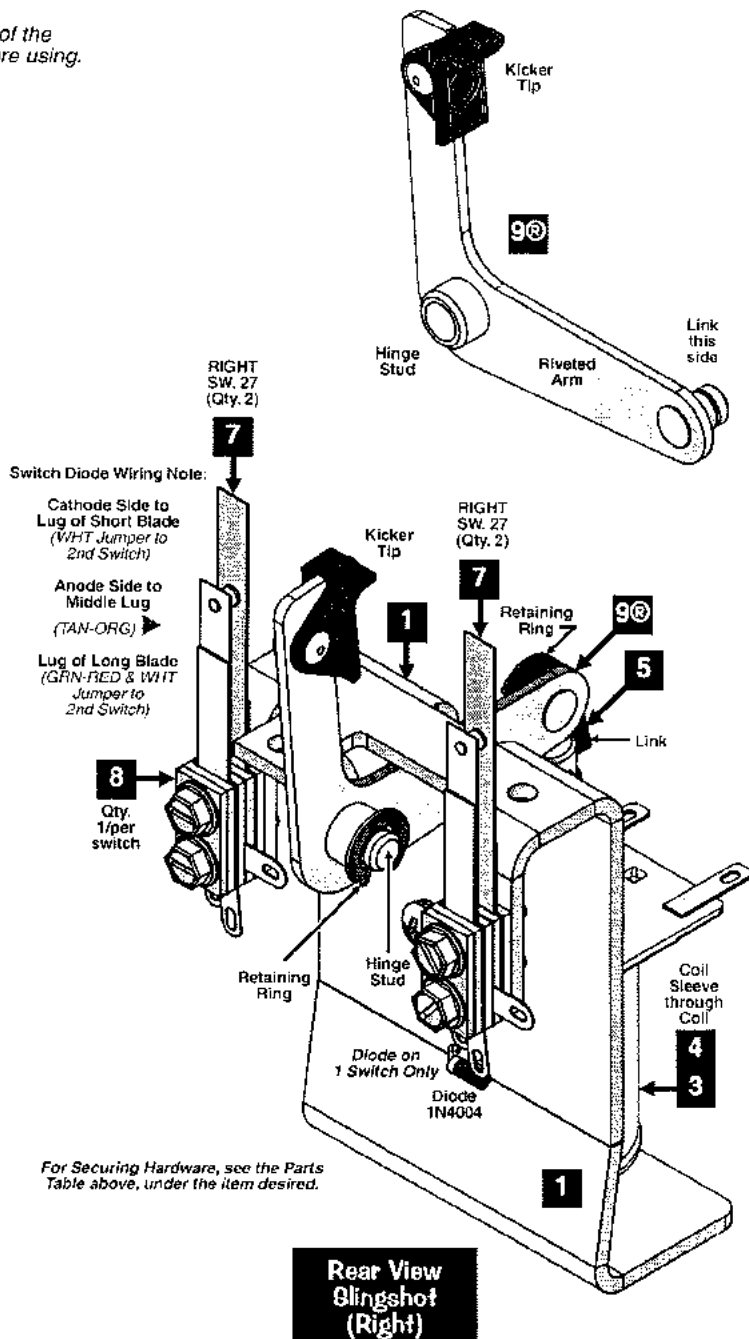
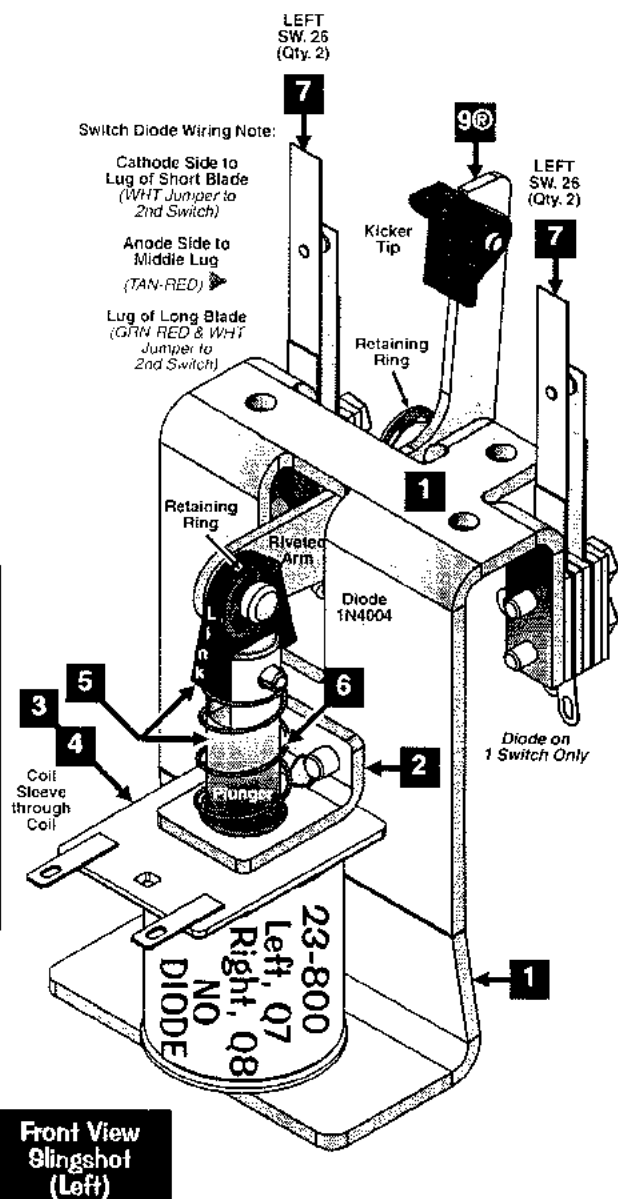


Slingshot (Left & Right) Assemblies, 500-5849-00-ND (Qty. 2) (Items 1-9)

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).			
3	Coil, 23-800 [NO DIODE]	1/per	090-5001-ND	8	Switch Body Protect Plate	2/per	535-5045-00
Item 2 is secured to Item 1 by: #8-32 X 3/8" PPH MS (Sems) (Qty. 2) (232-5301-00)				Items 7 & 8 are secured to Item 1 by: #6-32 X 5/8" HWH Swage (Qty. 4) (237-5876-04)			
4	Coil Sleeve	1/per	545-5031-00	9Ⓡ	Riveted Arm & Tip Assembly	1/per	515-5340-01
5	Plunger & Link Assembly	1/per	515-5338-00	For Individual Parts use (requires drilling out rivet & re-riveting): Arm (515-5341-01), Kicker Tip (545-5216-01) and Rivet, 1/8" x 1/4" Lg. (249-5003-00). The Riv. Arm is secured to Item 1 by: Retaining Ring, 1/4" x 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" x 5/8" Lg. (251-5008-00) The Plunger Link is secured to the Riveted Arm by: Retaining Ring, 1/4" x 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 500-5849-02-ND with the exception of Item 3, which uses a Coil, 27-1500 [NO DIODE] (090-5004-ND) instead.			

Take Note:

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



Vertical Up-Kicker (VUK) Assembly & Trough, Individual Parts Only (Items 1-10)

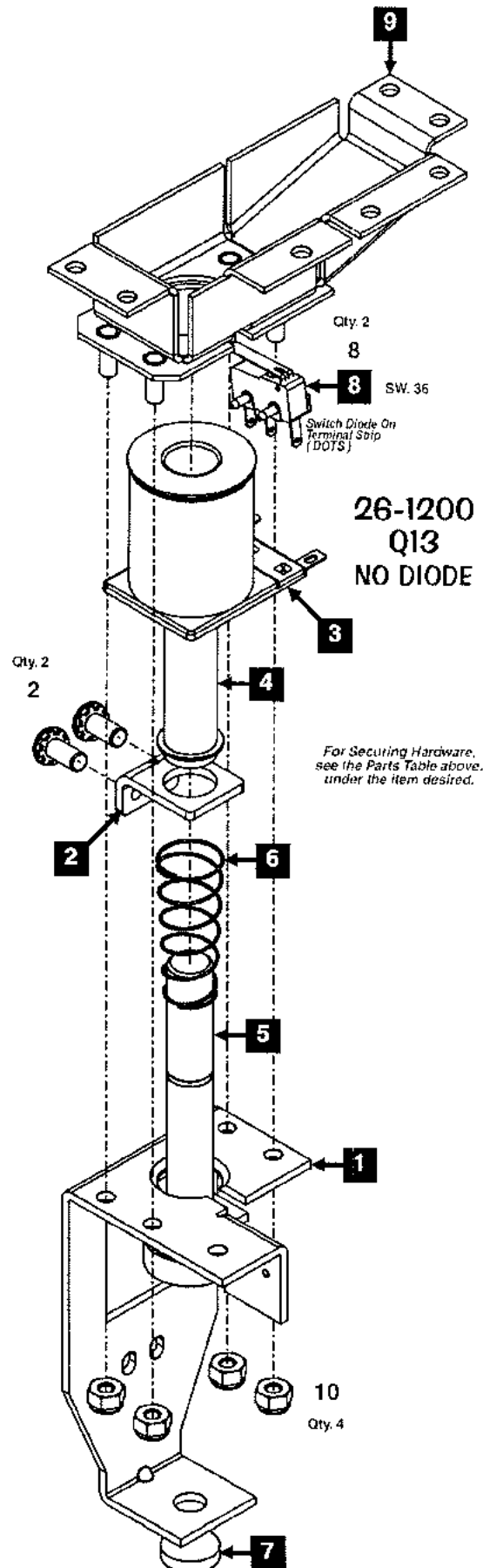
Nr.	VUK PARTS	QTY.	SPI PART Nr.
1	Bracket, VUK (Left Style) <i>No Actuator</i>	1	535-9590-02
2	Coil Retaining Bracket	1	535-5203-03
Item 2 is secured to Item 1 by: #8-32 X 1/4" PPH MS (Sems) (Qty. 2) (232-5300-00)			
3	Coil, 26-1200 [NO DIODE]	1	090-5044-ND
COIL DOES NOT REQUIRE A DIODE. SEE COIL NOTE BELOW FOR DETAILS.			
4	Coil Sleeve (Short) (Formost #10-7077)	1	545-5076-01
5	Plunger Assembly	1	515-7309-00
6	Compression (Return) Spring	1	266-5020-00
7	Rubber Bumper (Grommet)	1	545-5105-00
8	Switch (100M OMRON SS01GL1373FT)	1	180-5209-00
Switch has a Diode (1N4004) on a Terminal Strip. See Section 5, Chapter 2, Playfield Wiring, Pages 104-105.			
Item 8 is secured to Item 1 by: Switch Body Protect Plate (Qty. 1/per) (535-6539-00) and #2-56 X 1/2" Uns. Serr. HWH #4 Head TR3 Black (Qty. 2/per) (237-5937-02)			
9	Bracket, Trough Weldment	1	515-7701-00
Item 9 is secured to Item 1 by: #8-32 Nylon Stop Nut (Qty. 4) (240-5102-00) and is secured below the playfield by: #8 X 1/2" SHWH AB (Zinc) (Qty. 7) (234-5101-00)			
10*	1/2" Clamp (Single)	1	040-5000-06
(ASM. REF. ONLY 500-5136-00, Items 1-10)			

Take Note:

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

☉ **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.

DOTS: The Switch Diode, 1N4001, is not located on either VUK Assembly (nor included); it's located on a Terminal Strip under the playfield near this assembly.

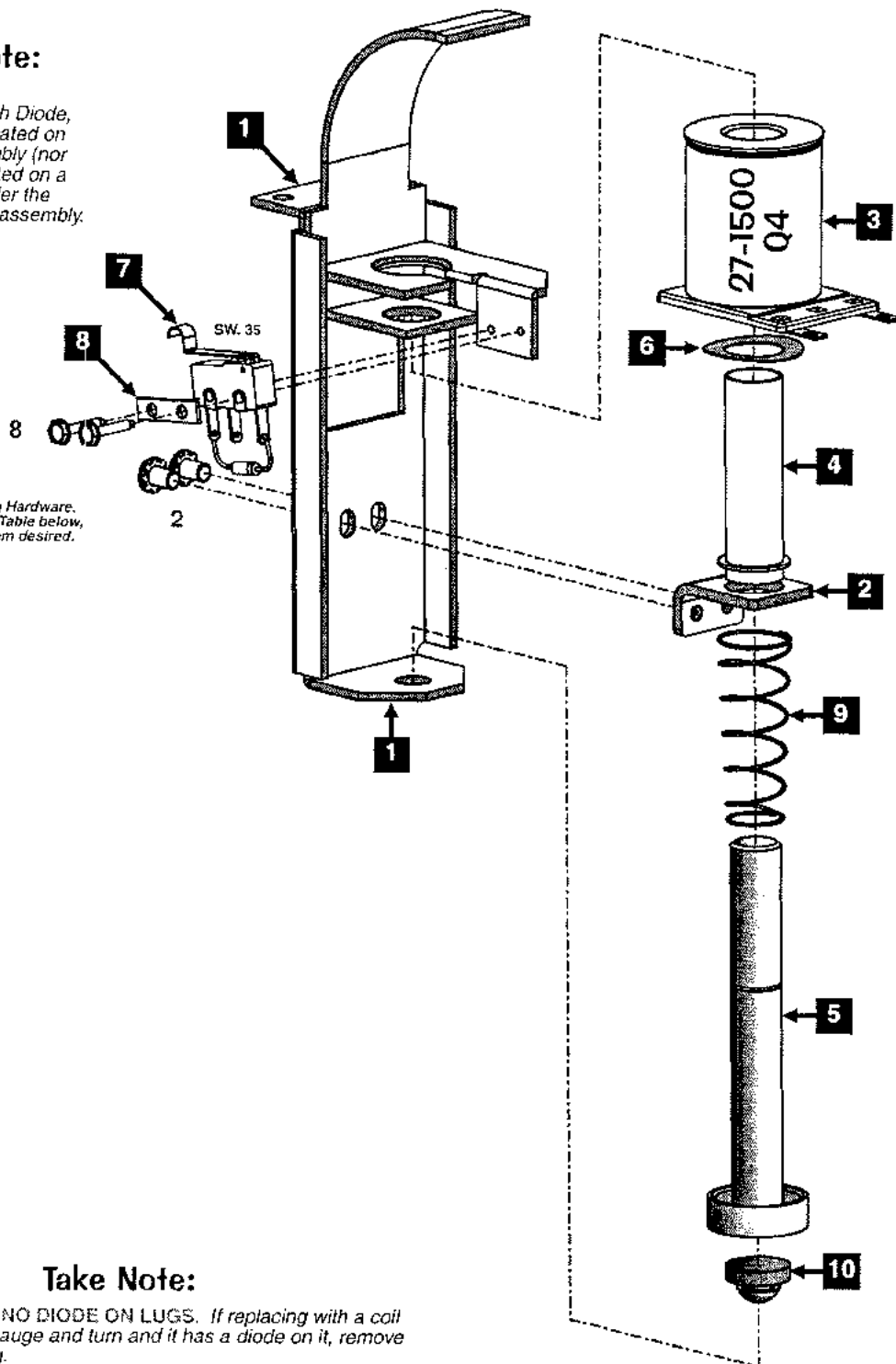


Eject / Vertical Up-Kicker (VUK) Assembly, 500-6846-01 (Items 1-10)

Take Note:

DOTS: The Switch Diode, 1N4004, is not located on either VUK Assembly (nor included); it's located on a Terminal Strip under the playfield near this assembly.

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



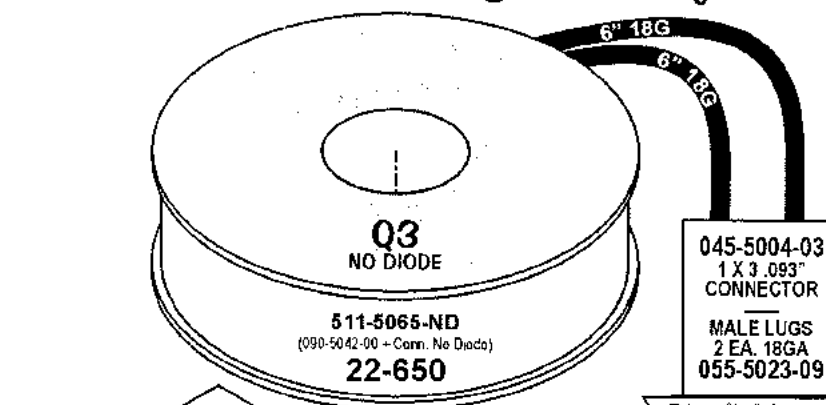
Take Note:

⊙ **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.

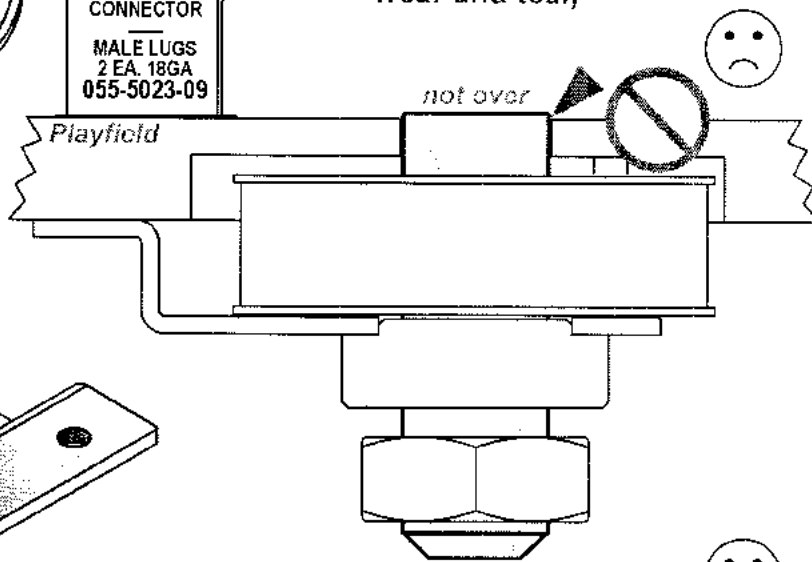
Nr.	SCOOP & VUK PARTS	QTY.	SPI PART Nr.	Nr.	SCOOP & VUK PARTS	QTY.	SPI PART Nr.
1	Bracket, Eject VUK Housing	1	535-9637-01	7	Switch, Actuator Simulated Roller	1	180-5209-00
Item 1 is secured below the playfield by: #8 X 5/8" PPH AB (Zinc) (Qty: 3) (232-5101-00)				Switch [Omron 100MA SS01GL1373FT] has a Diode (1N4004) (112-5003-00). Can be replaced with (1N4001) (112-5001-00).			
2	Coil Retaining Bracket	1	535-5203-03	8	Switch Body Protect Plate	1	535-6539-00
Item 2 is secured by: #8-32 X 1/4" PPH MS Ext. (Zinc) (Qty: 2) (232-5300-00)				Item 8 is secured to Items 1 & 7 by: #2-56 X 1/2" Unslotted Ser. HWH #4 Head TR3 Black (Qty: 2) (237-5937-02)			
3	Coil, 27-1500 [NO DIODE]	1	090-5004-ND	9	Compression (Relay) Spring	1	266-5020-00
COIL DOES NOT REQUIRE A DIODE. SEE ⊙ COIL NOTE ABOVE FOR DETAILS.				10	Rubber Bumper (Grommet)	1	545-5105-00
4	Coil Sleeve (Formost #10-7077)	1	545-5076-01	Ordering Note: If 500-6846-01 is unavailable, order the individual part(s) actually required (for cable wiring (036-5536-05-A2) to be included with 500-6846-01 Asm., add -A2 to Part #).			
5	Steel & Nylon Plunger Assembly	1	515-5941-01				
6	Spring Washer [17/32" ID X 7/8" X 1/64"]	1	269-5002-00				

CSI:
CRIME SCENE INVESTIGATION

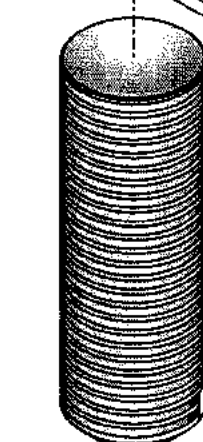
Magnet Assembly, Individual Parts Only



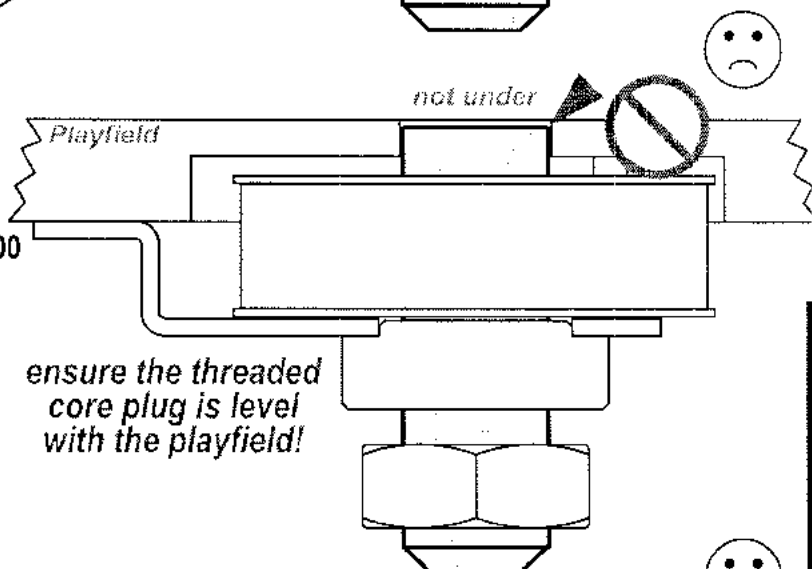
**THREADED CORE
PLUG ADJUSTMENT**
*To prevent playfield
wear and tear,*



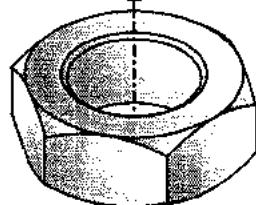
515-6141-01
THREADED
BUSHING WELD
ASSEMBLY



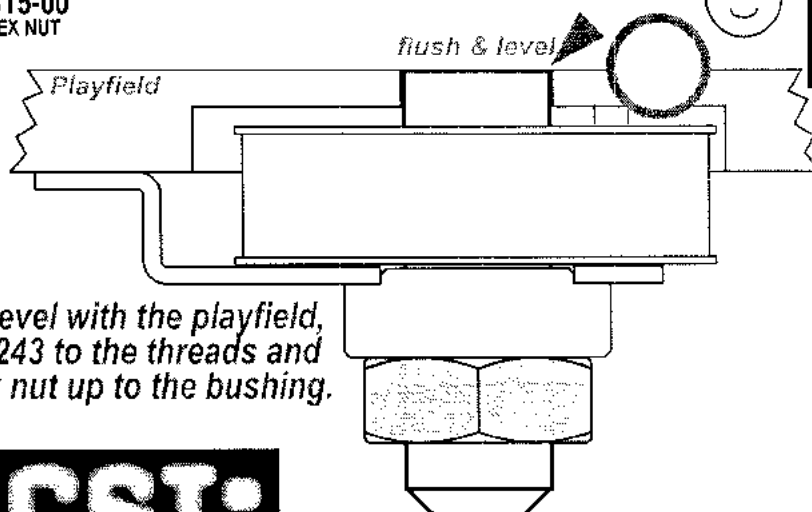
530-5320-00
THREADED
CORE PLUG



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



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



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

Assemblies & Ramps



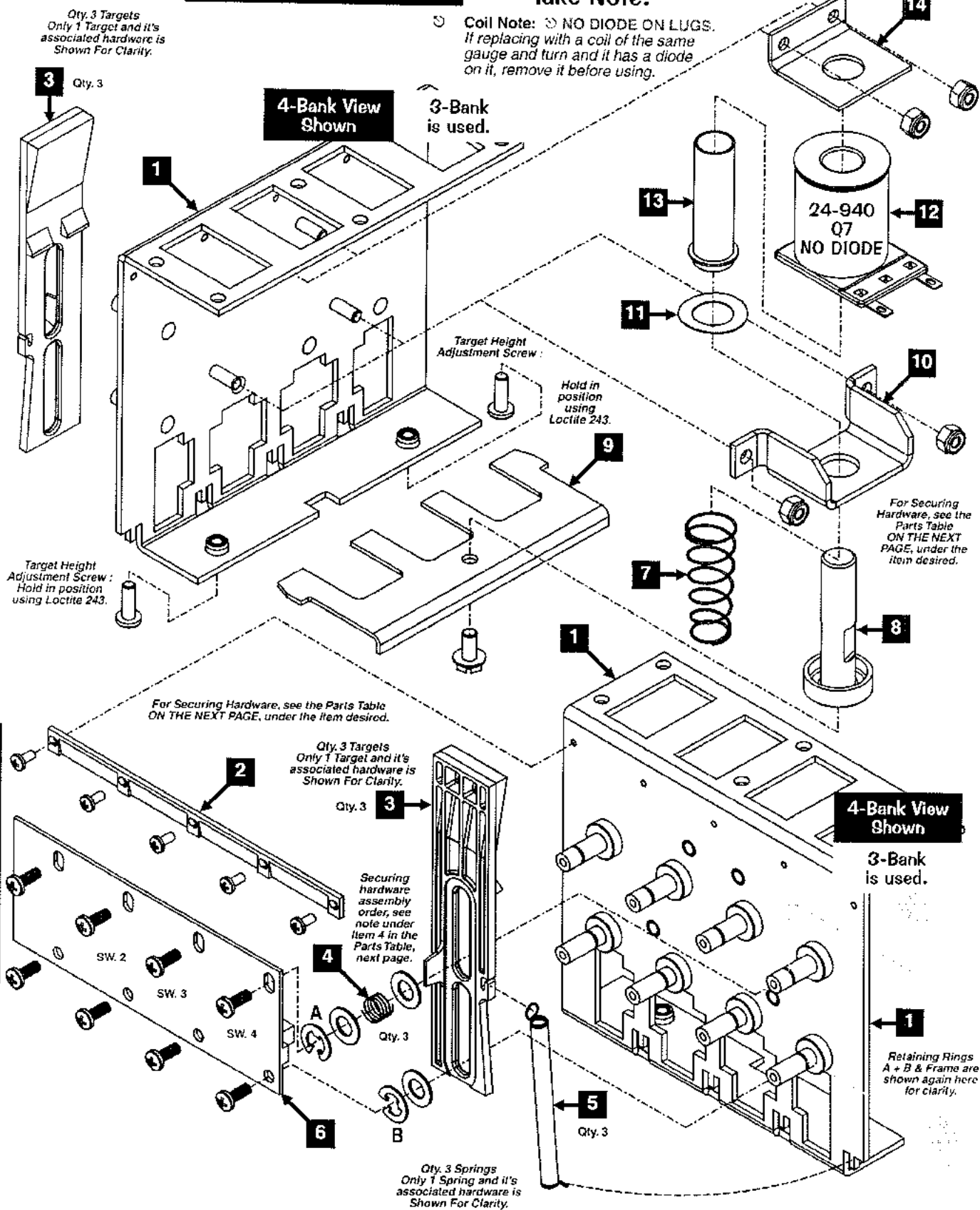
3-Bank Drop Target Assembly, 500-7029-03-00 (Items 1-14)

[Different Views & Parts Table on the next page.]

Coil Side Exploded View

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.



TARGET/PCB Side Exploded View

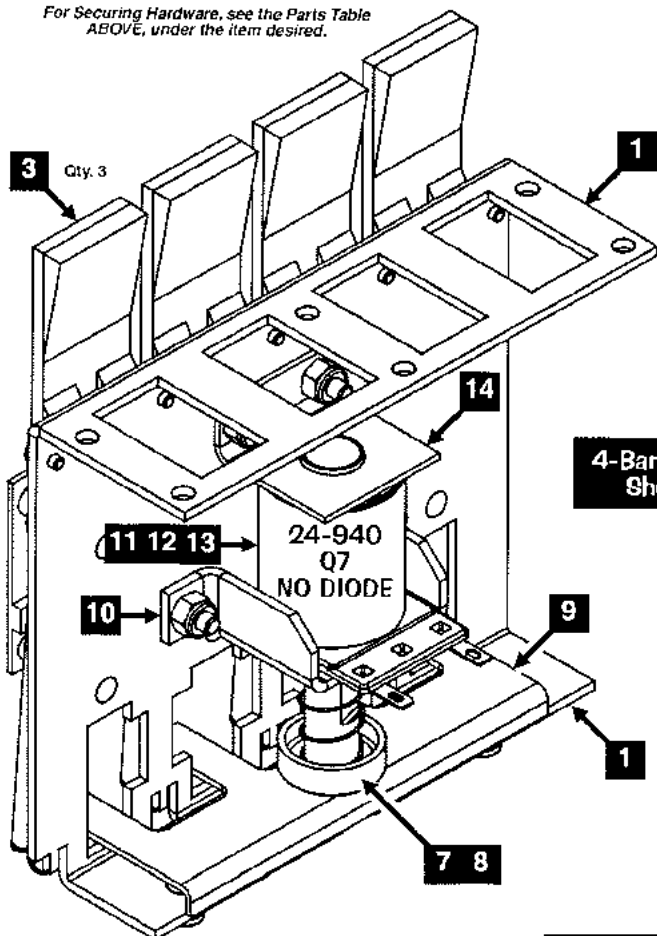
CSI:
CRIME SCENE INVESTIGATION

3-Bank Drop Target Assembly, 500-7029-03-00 (Items 1-14) Continued [Different Views on the previous page.]

Nr.	4-BANK DROP TRGT. PARTS	QTY.	SPI PART Nr.
1	Frame & Perm Weldment, 4-Bank D/T	1	515-7604-03
Item 1 is secured under the playfield by: #8 X 1/2" SHWH AB (Zc.) (Qty. 6) (234-5101-00)			
2	Target Rest Ledge (Blk.), 4-Bank D/T	1	545-6163-03
Item 2 is secured to Item 1 by: #4-40 X 1/4" PPH MS (Zinc) (Qty. 6) (237-6169-00)			
3	Drop Target (Black Plastic) Rollover	3	545-6305-00
4	Compression (Short) Spring	3	266-5089-00
Items 3 & 4 are secured to Item 1 @ top by: Washer, 1/2" X 17/64" X .03" (Qty. 2/per) (242-5091-00) and Retaining Ring, 1/4" o (Qty. 3) (270-5002-00) FRAME PEM --> WASHER --> SPRING --> WASHER --> RETAINING RING --> OPTO PCB --> SCREW Item 3 is secured to Item 1 @ bottom by: Washer, 1/2" X 17/64" X .03" (Qty. 3) (242-5091-00) and Retaining Ring, 1/4" o (Qty. 3) (270-5002-00)			
5	Reset (Long) Spring (Red Dipped)	3	265-5003-02
6	PCB, Slotted OPTO X3	1	520-5252-03
Item 6 is secured to Item 1 by: #6-32 X 3/8" PPH MS (Zinc) (Qty. 6) (237-5501-00)			
7	Compression (Return) Spring	1	266-5020-00
8	Steel Plunger with End Cap	1	530-5757-00
9	Bracket, Target Lift (4-Bank)	1	535-9996-03
Item 9 is secured to Item 8 Plunger by: #10-32 X 3/8" SHWH Swage (Zinc) Wax (Qty. 1) (237-5985-00) TARGET HEIGHT ADJUSTMENT: Item 9 is adjusted through Item 1 by: #8-32 X 1/2" PPH MS (Zinc) (Qty. 2) (237-5502-00)			
10	Coil Mounting Bracket [2+ Bank Style]	1	535-9995-01
Item 10 is secured to Item 1 by: #8-32 Nylon Stop Nut (Qty. 2) (240-5102-00)			
11	Spring Washer (17/32" ID X 3/4" X 1")	1	269-5002-00
12	Coil, 24-940 [NO DIODE]	1	090-5036-ND
COIL DOES NOT REQUIRE A DIODE. SEE COIL NOTE ABOVE FOR DETAILS.			
13	Coil Sleeve (Formost #10-7077)	1	545-5076-01
14	Bracket, Plunger Stop	1	535-9959-00
Item 14 is secured to Item 1 by: #8-32 Nylon Stop Nut (Qty. 2) (240-5102-00)			
Ordering Note: If 500-7029-03-00 is unavailable, order the individual part(s) actually required (for cable wiring, use Part Number 036-5536 09-A2)			

Coil Side Assembled View

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



4-Bank View
Shown

3-Bank
is used.

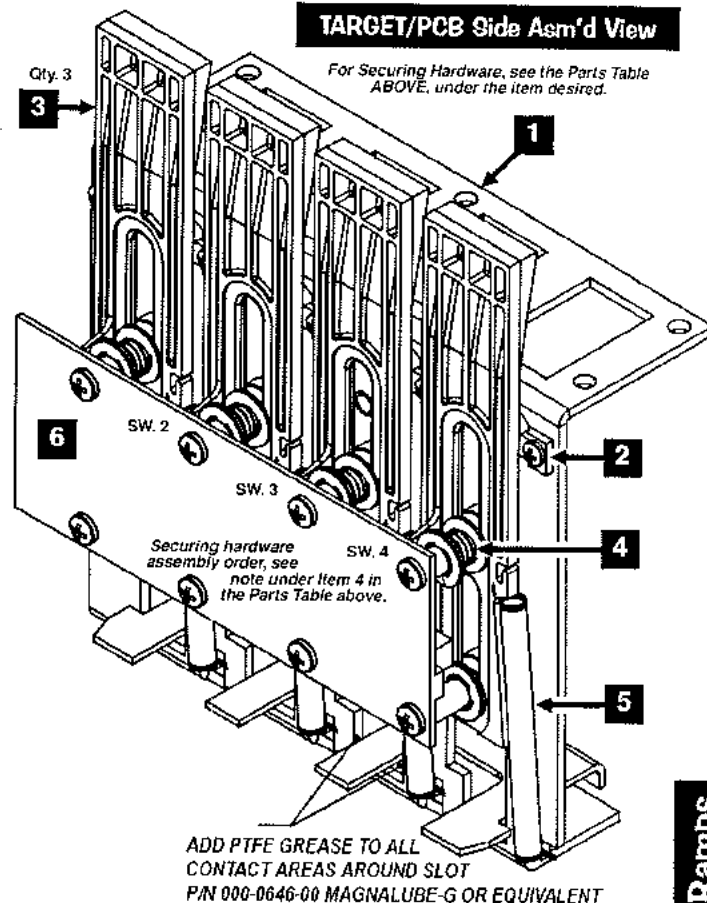
4-Bank View
Shown

3-Bank
is used.

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.

TARGET/PCB Side Asm'd View



ADD PTFE GREASE TO ALL
CONTACT AREAS AROUND SLOT
P/N 000-0646-00 MAGNALUBE-G OR EQUIVALENT

Assemblies & Ramps



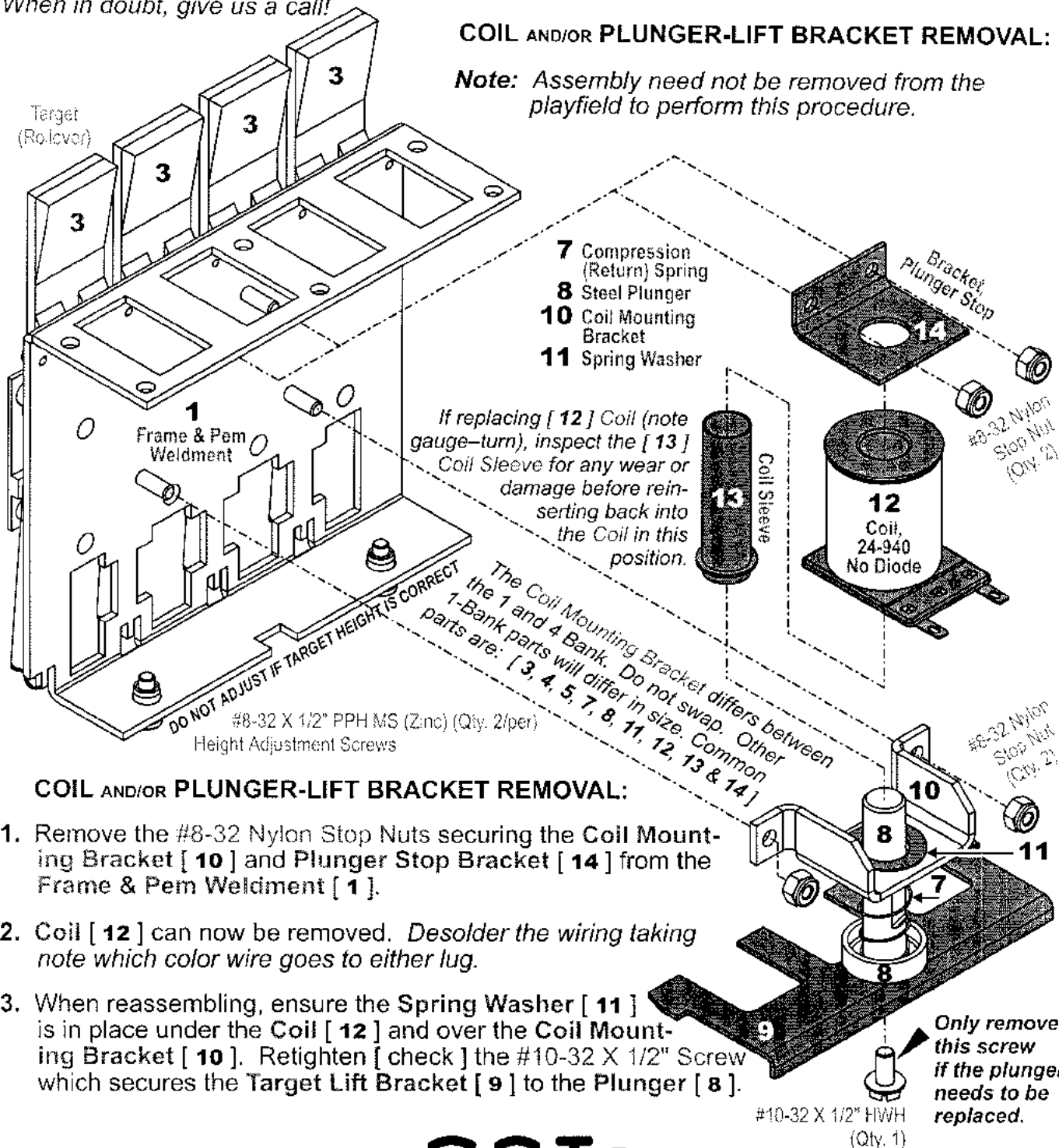
3-Bank Drop Target (500-7029-03-00)

Coil Side Disassembly Procedure (4-Bank Drop Target Shown)

Technicians Remember the Basics: All Service should be done by qualified personnel. **ALWAYS REMOVE POWER BEFORE SERVICING.** Service assemblies which are below the playfield, with the playfield in its most upright position (leaning against the Backbox). Raise it carefully! Ensure the bottom edge (back) of the playfield is still resting on the Cabinet Side Support Rails and is forward enough to allow the Playfield to lean against the backbox at an angle so it does not fall forward. **When lowering, rest on the support brackets first, then continue to place in cabinet.** Re-assembly is the reverse of disassembly (removal). Keep track of securing hardware (which are referenced under the items in the Parts Table) Use **Loctite Blue 243** on the threads of all screws to ensure the screws will not loosen in play. When in doubt, give us a call!

COIL AND/OR PLUNGER-LIFT BRACKET REMOVAL:

Note: Assembly need not be removed from the playfield to perform this procedure.



COIL AND/OR PLUNGER-LIFT BRACKET REMOVAL:

1. Remove the #8-32 Nylon Stop Nuts securing the Coil Mounting Bracket [10] and Plunger Stop Bracket [14] from the Frame & Pem Weldment [1].
2. Coil [12] can now be removed. Desolder the wiring taking note which color wire goes to either lug.
3. When reassembling, ensure the Spring Washer [11] is in place under the Coil [12] and over the Coil Mounting Bracket [10]. Retighten [check] the #10-32 X 1/2" Screw which secures the Target Lift Bracket [9] to the Plunger [8].

3-Bank Drop Target (500-7029-03-00)

Target & PCB Side Disassembly Procedure (4-Bank Drop Target Shown)

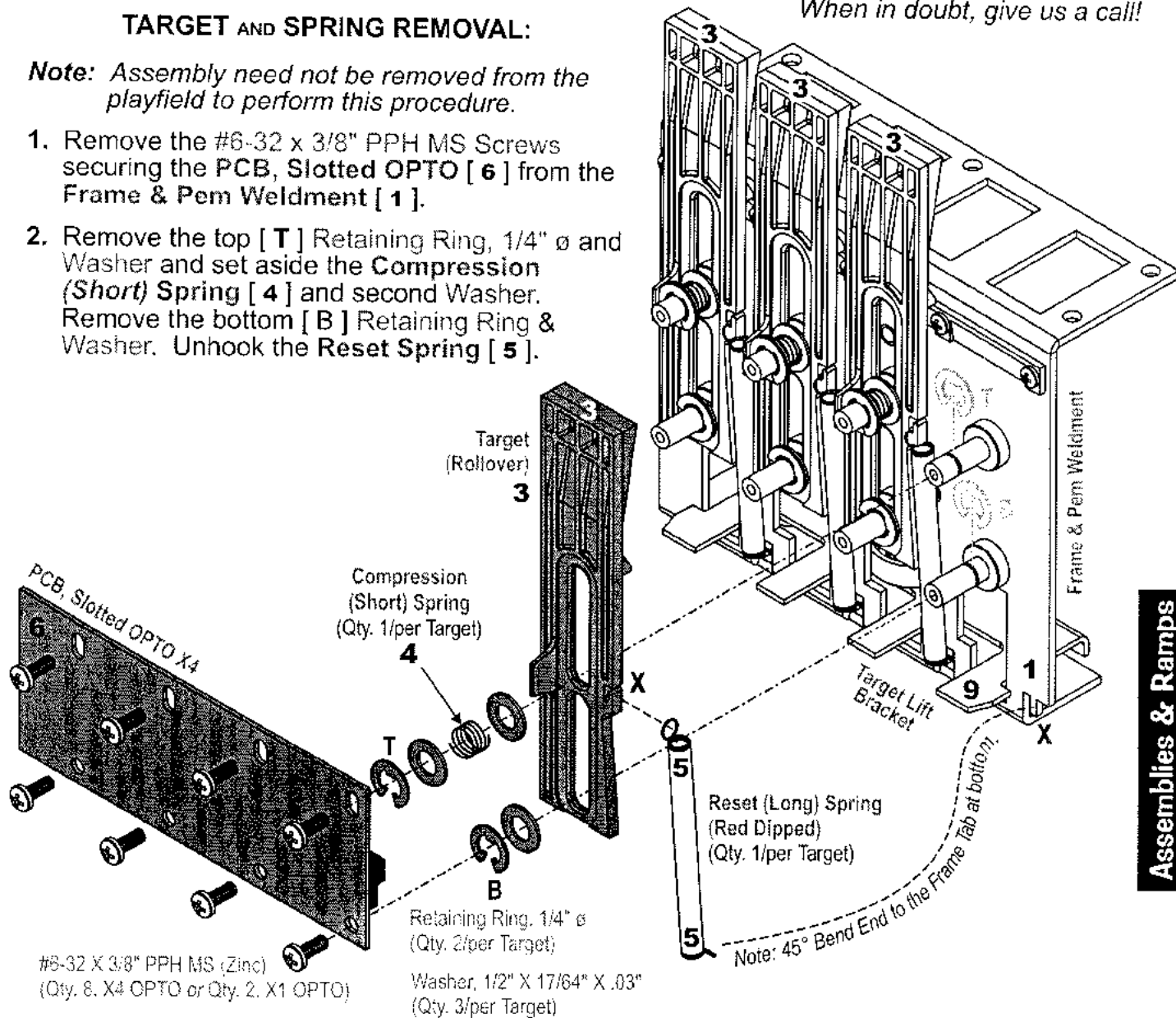
*Technicians Remember the Basics: All Service should be done by qualified personnel. **ALWAYS REMOVE POWER BEFORE SERVICING.** Service assemblies which are below the playfield, with the playfield in its' most upright position (leaning against the Backbox). Raise it carefully! Ensure the bottom edge (back) of the playfield is still resting on the Cabinet Side Support Rails and is forward enough to allow the Playfield to lean against the backbox at an angle so it does not fall forward. **When lowering, rest on the support brackets first, then continue to place in cabinet.** Re-assembly is the reverse of disassembly (removal). Keep track of securing hardware (which are referenced under the items in the Parts Table) Use **Loctite Blue 243** on the threads of all screws to ensure the screws will not loosen in play.*

When in doubt, give us a call!

TARGET AND SPRING REMOVAL:

Note: Assembly need not be removed from the playfield to perform this procedure.

1. Remove the #6-32 x 3/8" PPH MS Screws securing the PCB, Slotted OPTO [6] from the Frame & Pem Weldment [1].
2. Remove the top [T] Retaining Ring, 1/4" ϕ and Washer and set aside the **Compression (Short) Spring [4]** and second Washer. Remove the bottom [B] Retaining Ring & Washer. Unhook the **Reset Spring [5]**.

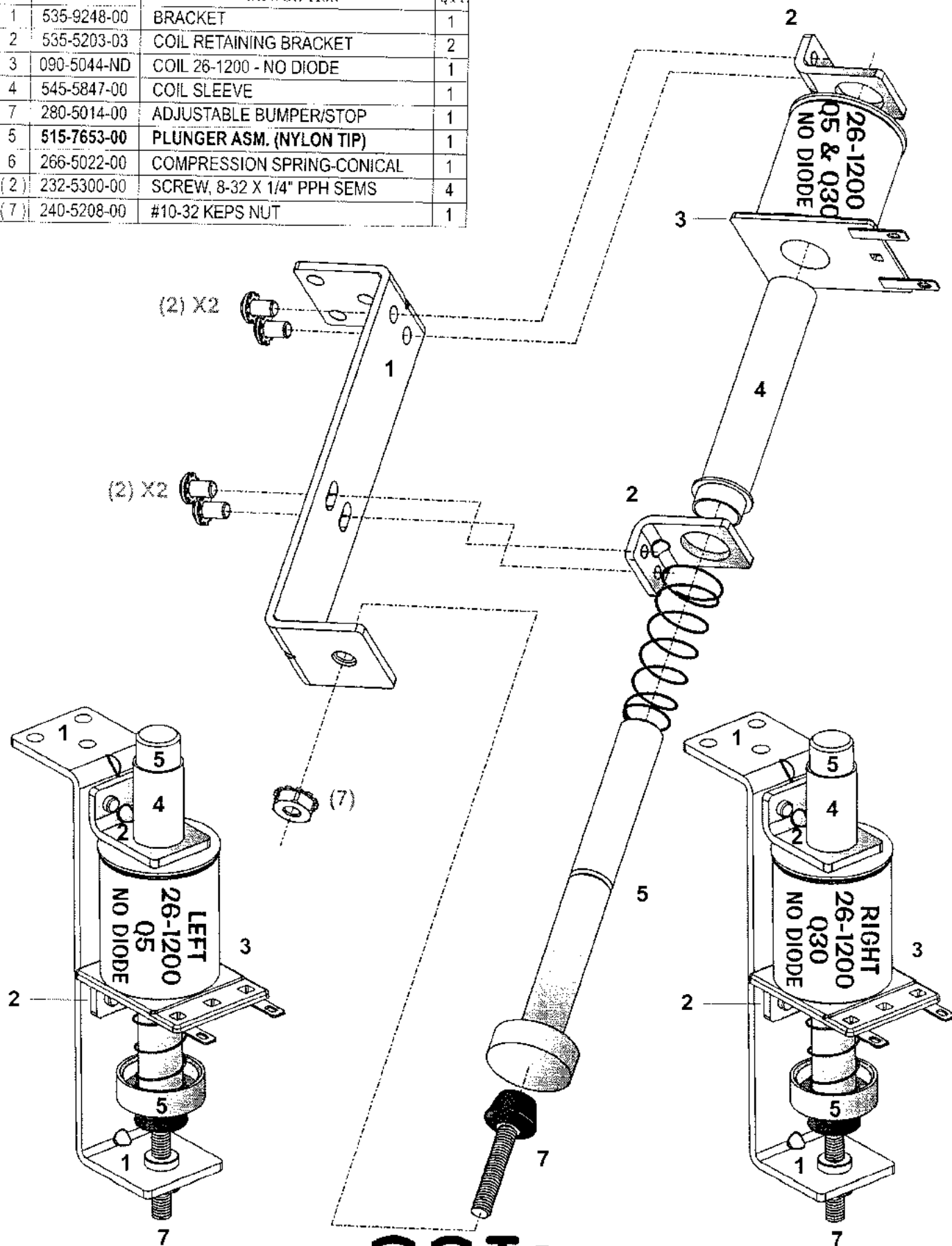


3. The Target [3] can now be removed. When reassembling, note the other targets. The **Compression Spring [4]** is at the top between the two Washers, secure with the top [T] Retaining Ring. When replacing the **Reset (Long) Spring [5]**, hook one end to the Target tab [X] and the other **45°** end to the tab [X] on the Frame & Pem Weldment [1].



Up/Down Post (Ball Deflector) Assemblies, 500-7081-00 (Qty. 2) (Items 1-7)
 Left & Right located in the Top Orbit (Loop) to deflect ball into bumpers or top VUK.

NO.	PART NUMBER	DESCRIPTION	QTY
1	535-9248-00	BRACKET	1
2	535-5203-03	COIL RETAINING BRACKET	2
3	090-5044-ND	COIL 26-1200 - NO DIODE	1
4	545-5847-00	COIL SLEEVE	1
7	280-5014-00	ADJUSTABLE BUMPER/STOP	1
5	515-7653-00	PLUNGER ASM. (NYLON TIP)	1
6	266-5022-00	COMPRESSION SPRING-CONICAL	1
(2)	232-5300-00	SCREW, 8-32 X 1/4" PPH SEMS	4
(7)	240-5208-00	#10-32 KEPS NUT	1

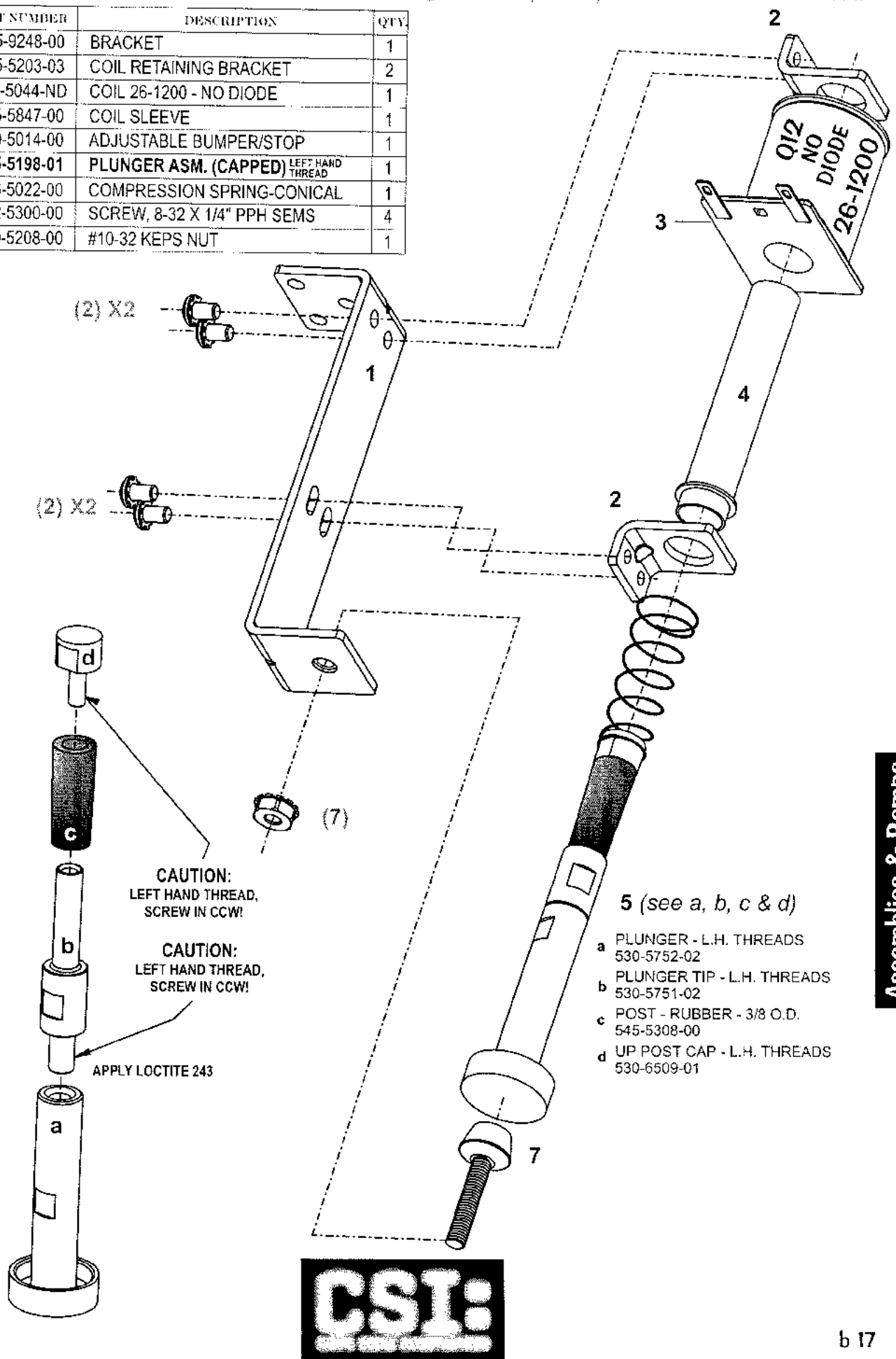


Assemblies & Ramps

Up/Down Post Assembly, 500-7153-04 (Items 1-7)

Center Post located in front of the Centrifuge to keep the pinball in while actuated.

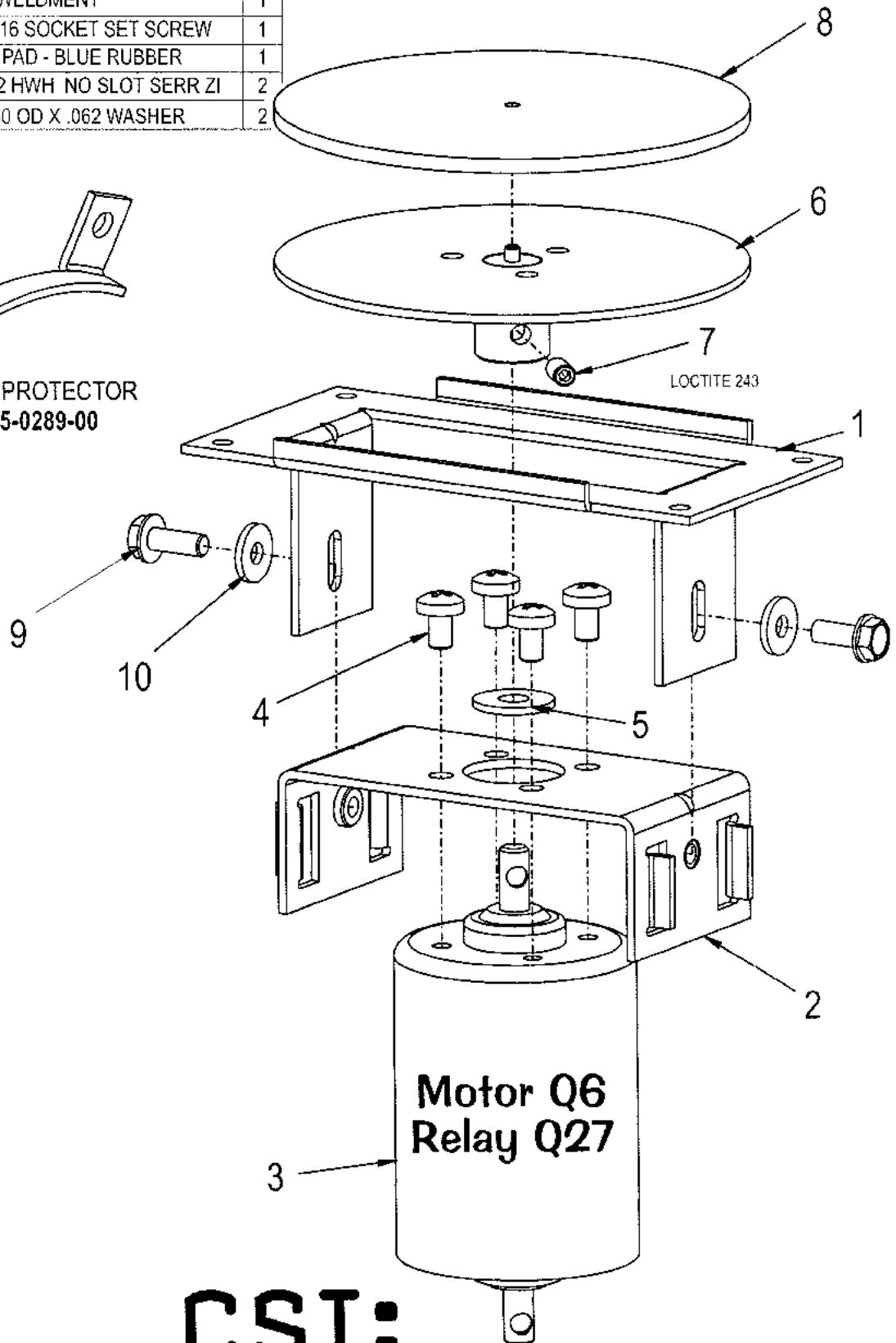
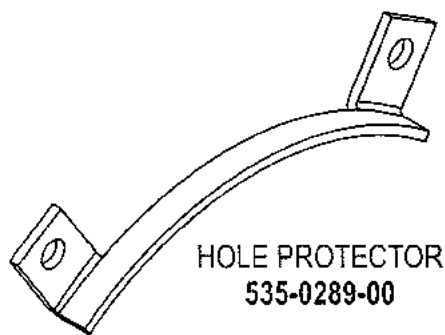
NO.	PART NUMBER	DESCRIPTION	QTY.
1	535-9248-00	BRACKET	1
2	535-5203-03	COIL RETAINING BRACKET	2
3	090-5044-ND	COIL 26-1200 - NO DIODE	1
4	545-5847-00	COIL SLEEVE	1
7	280-5014-00	ADJUSTABLE BUMPER/STOP	1
5	515-5198-01	PLUNGER ASM. (CAPPED) LEFT HAND THREAD	1
6	266-5022-00	COMPRESSION SPRING-CONICAL	1
(2)	232-5300-00	SCREW, 8-32 X 1/4" PPH SEMS	4
(7)	240-5208-00	#10-32 KEPS NUT	1



Assemblies & Ramps

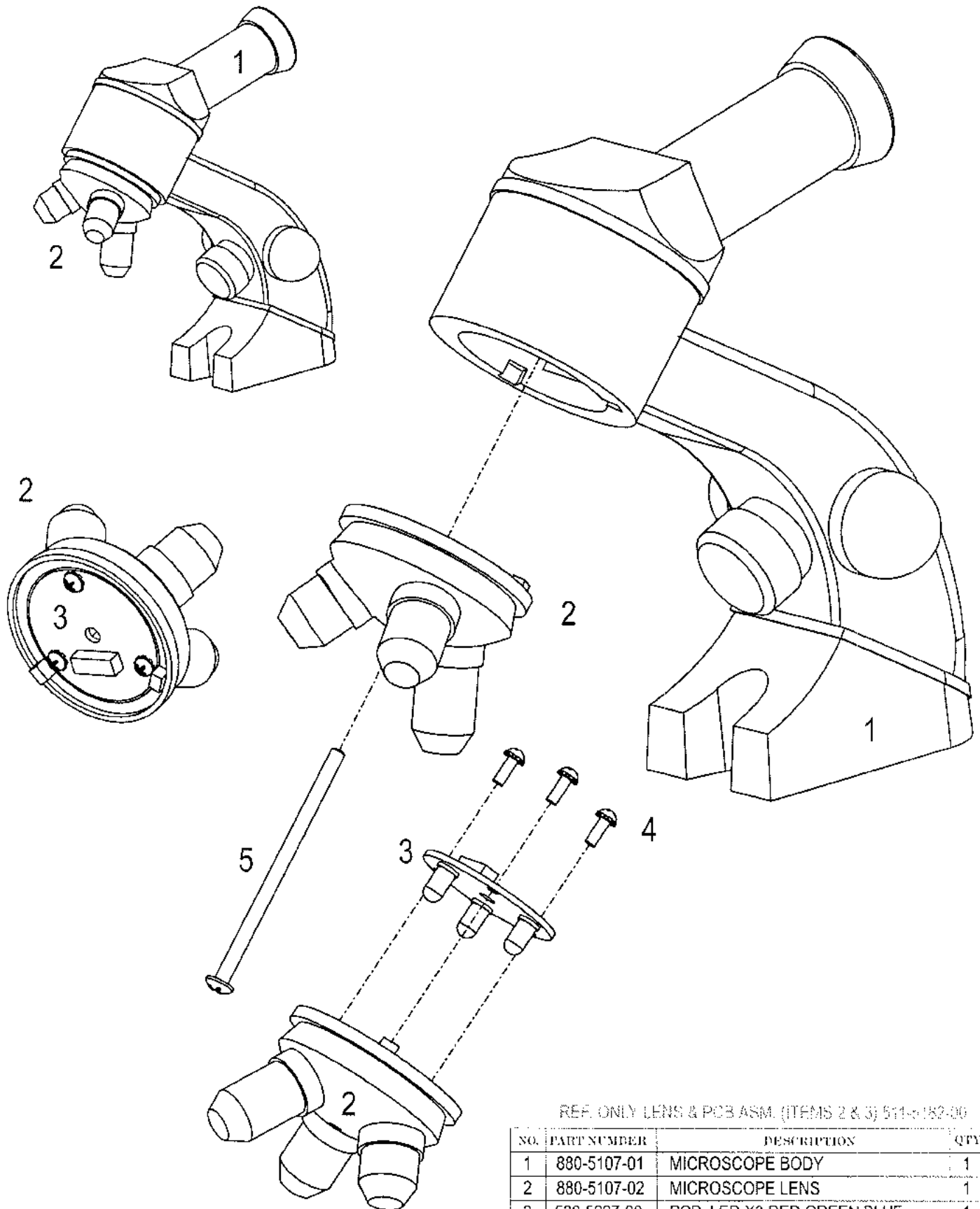
Centrifuge (Spinning Disk) Assembly, 500-7144-00 (Items 1-10)

NO.	PART NUMBER	DESCRIPTION	QTY.
1	535-0278-00	MOUNTING BRACKET	1
2	515-7715-00	MOTOR BRACKET	1
3	511-5024-04	SOLDER ASSY SPINNING DISK MOTOR	1
4	237-6014-00	M5 X 0.8 X 8 PH SELF LOCKING SCREW	4
5	242-5028-00	WASHER NYLON .265 X .688 X .063	1
6	515-7714-00	DISK/HUB WELDMENT	1
7	237-6092-00	#10-32 X 5/16 SOCKET SET SCREW	1
8	626-5086-00	ADHESIVE PAD - BLUE RUBBER	1
9	237-5995-00	#10-32 X 1/2 HWH NO SLOT SERR ZI	2
10	242-5003-00	7/32 ID X .50 OD X .062 WASHER	2



Assemblies & Ramps

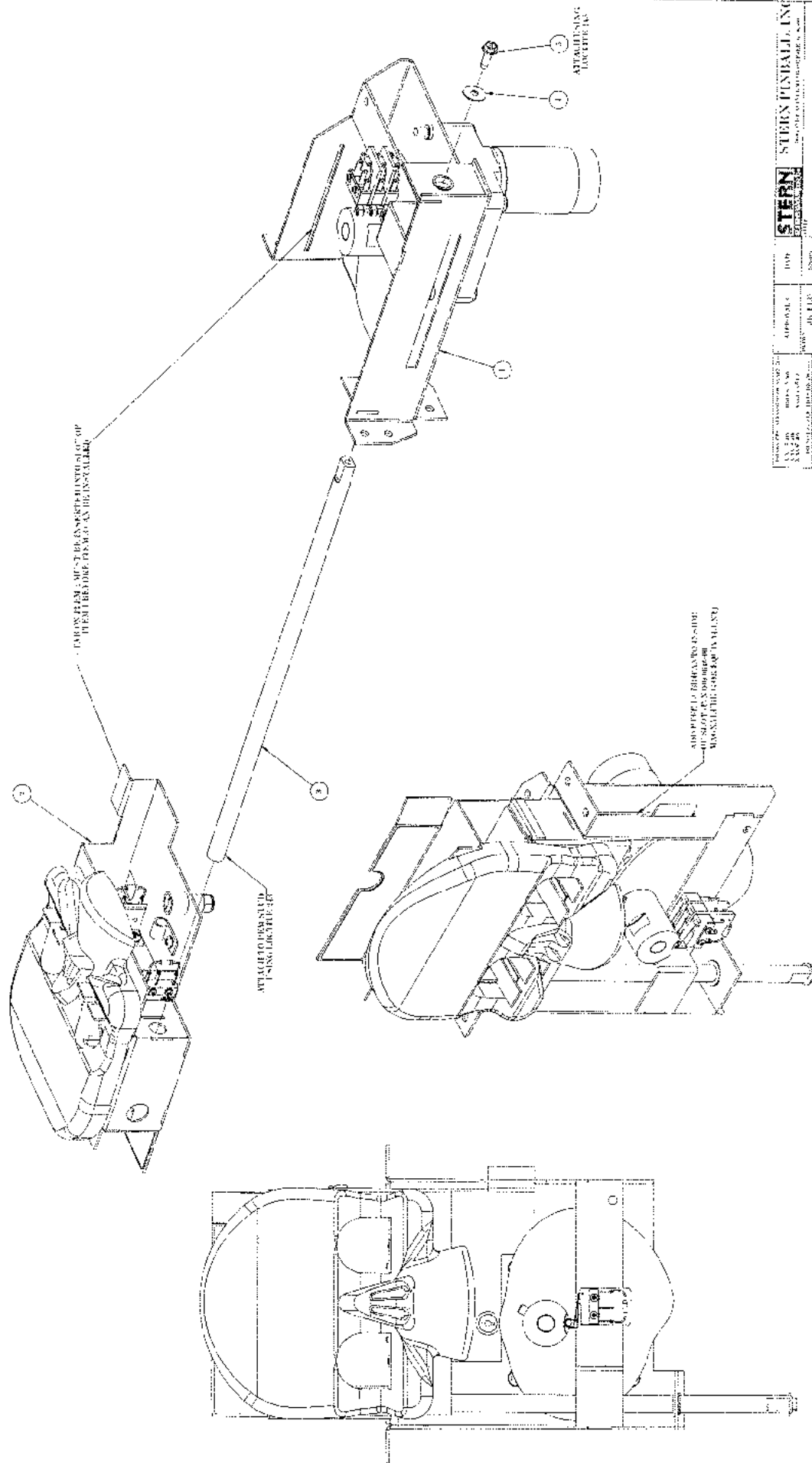
Microscope Assembly, 500-7147-00 (Items 1-5)



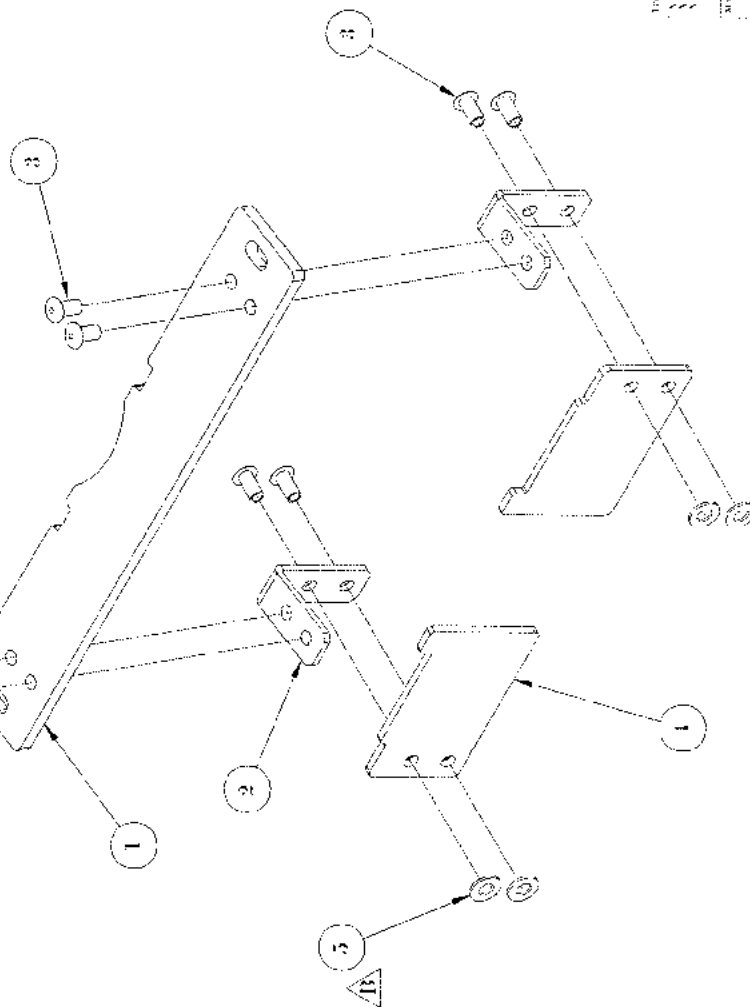
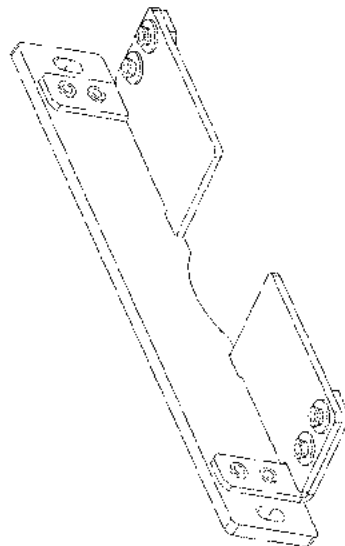
REF. ONLY LENS & PCB ASM. (ITEMS 2 & 3) 511-5182-00

NO.	PART NUMBER	DESCRIPTION	QTY
1	880-5107-01	MICROSCOPE BODY	1
2	880-5107-02	MICROSCOPE LENS	1
3	520-5297-00	PCB, LED X3 RED GREEN BLUE	1
4	237-5882-00	#4-40 X 5/16"	3
5	237-5511-00	#6-32 x 1-3/4"	1



[illegible]

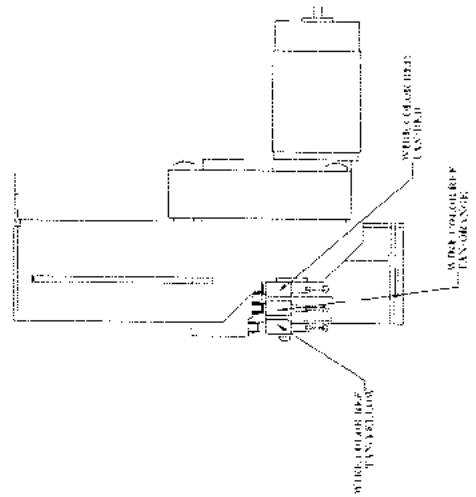
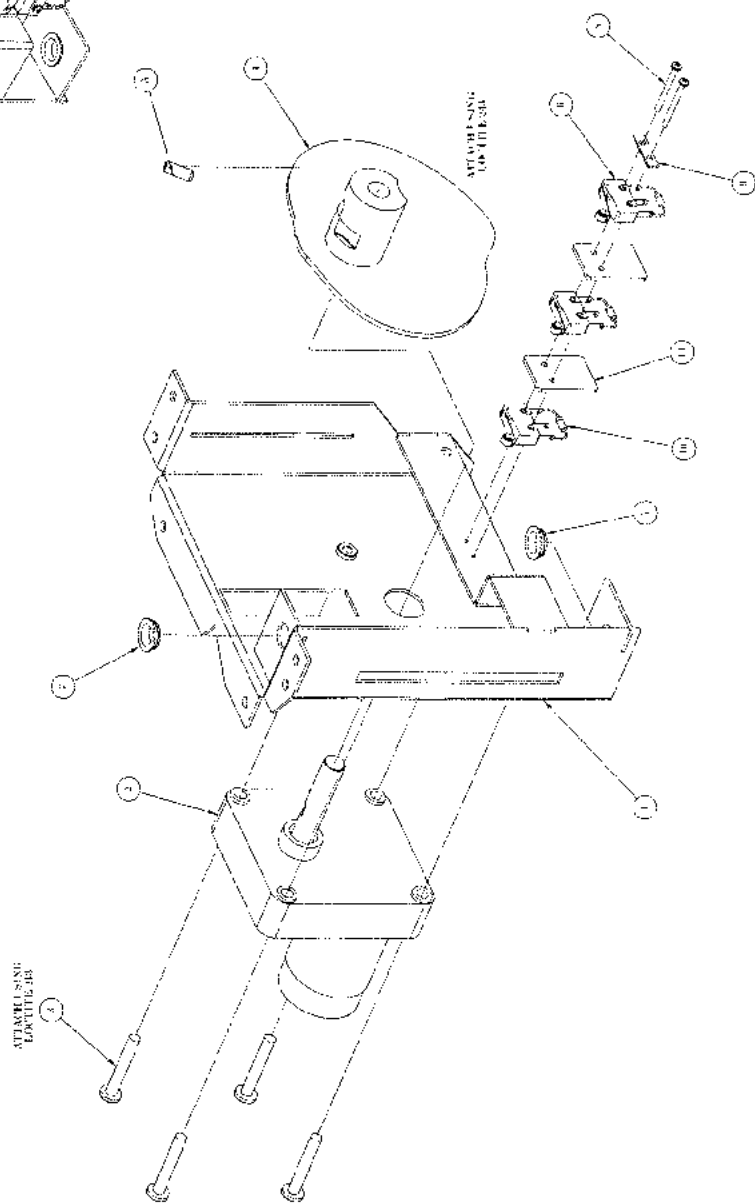
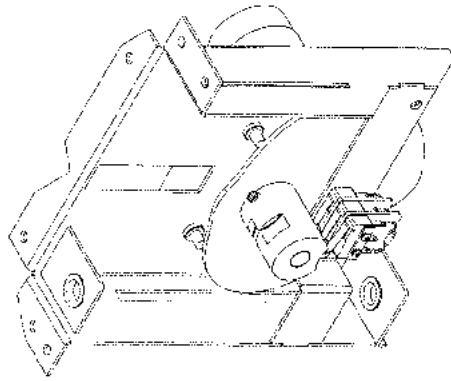
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	515-6372-00	PLATE, SKULL BALL TRANSFER, CSI	2
2	535-0283-00	BRACKET, SKULL BALL STOP, CSI	8
3	240-5003-00	RIVET - 1/8 X 1/4	8
4	830-6071-24	BUTY #24, SKULL BALL STOP, CSI	2
5	242-5017-00	WASHER, 9/64 ID X 5/16 OD X 1/32	4



REV.	DESCRIPTION	APPROVED	DATE
A	INITIAL RELEASE	RDR	09/15/05
B	DEL. OF ITEMS 2, RIVET 1/8 X 1/4, ADD NEW ITEM 5, WASHER	RDR	09/15/05

STERN STERN PINBALL, INC. 200 JAMIE AVE. N.E. SUITE 1100 ATLANTA, GA 30316		DATE: 09/15/05 APPROVALS: RDR DRAWN: J. J. J.
TITLE: RIVETED ASSY. SKULL BALL XFER. CSI		SIZE: 11 SCALE: 1:1
PART NO: 510-5083-00 REV: B		SHEET: 1 OF 1

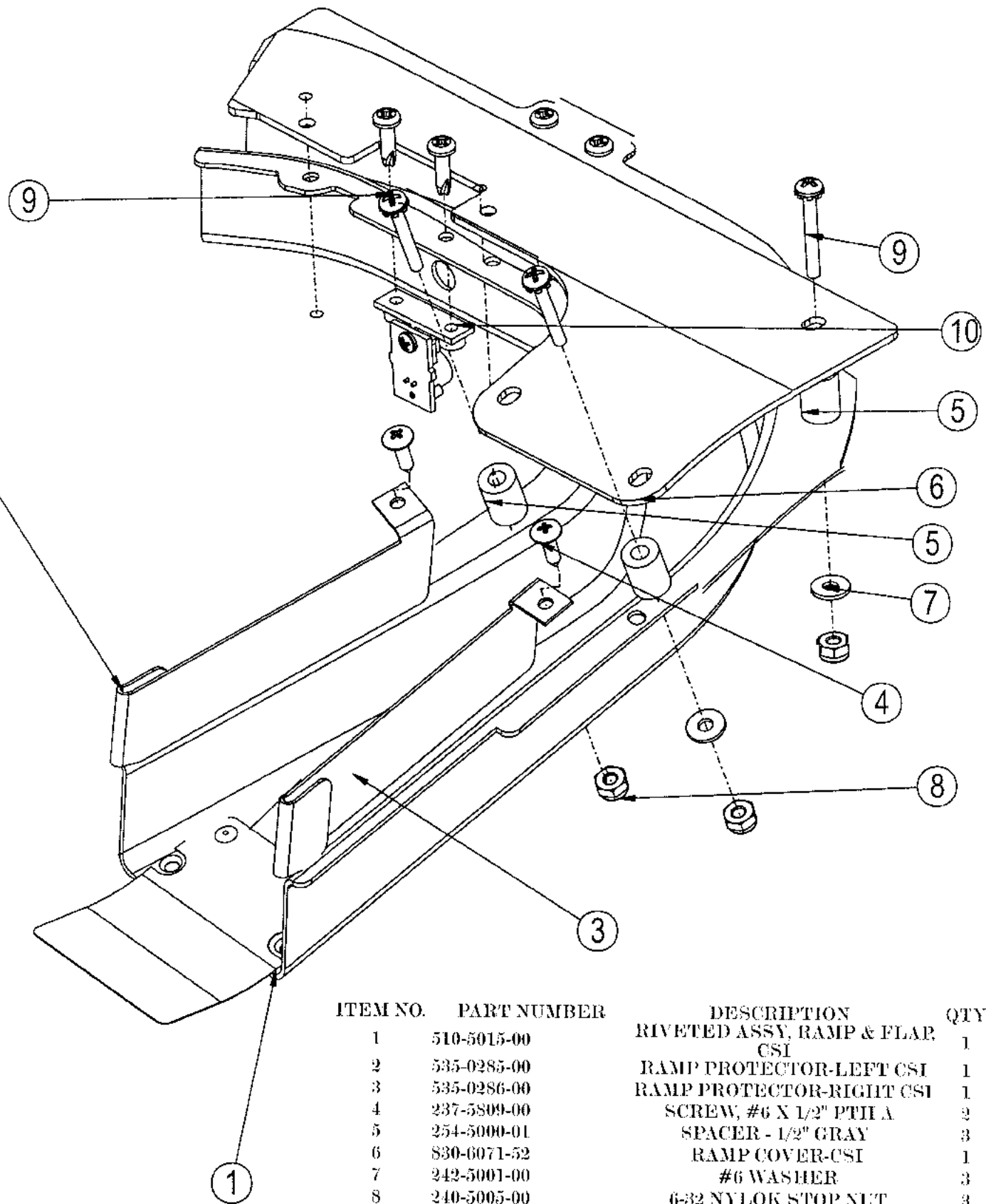
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212 677 8084	212 677 8084
212 677	

Center Plastic Ramp, Individual Parts Only (Items 1-11)

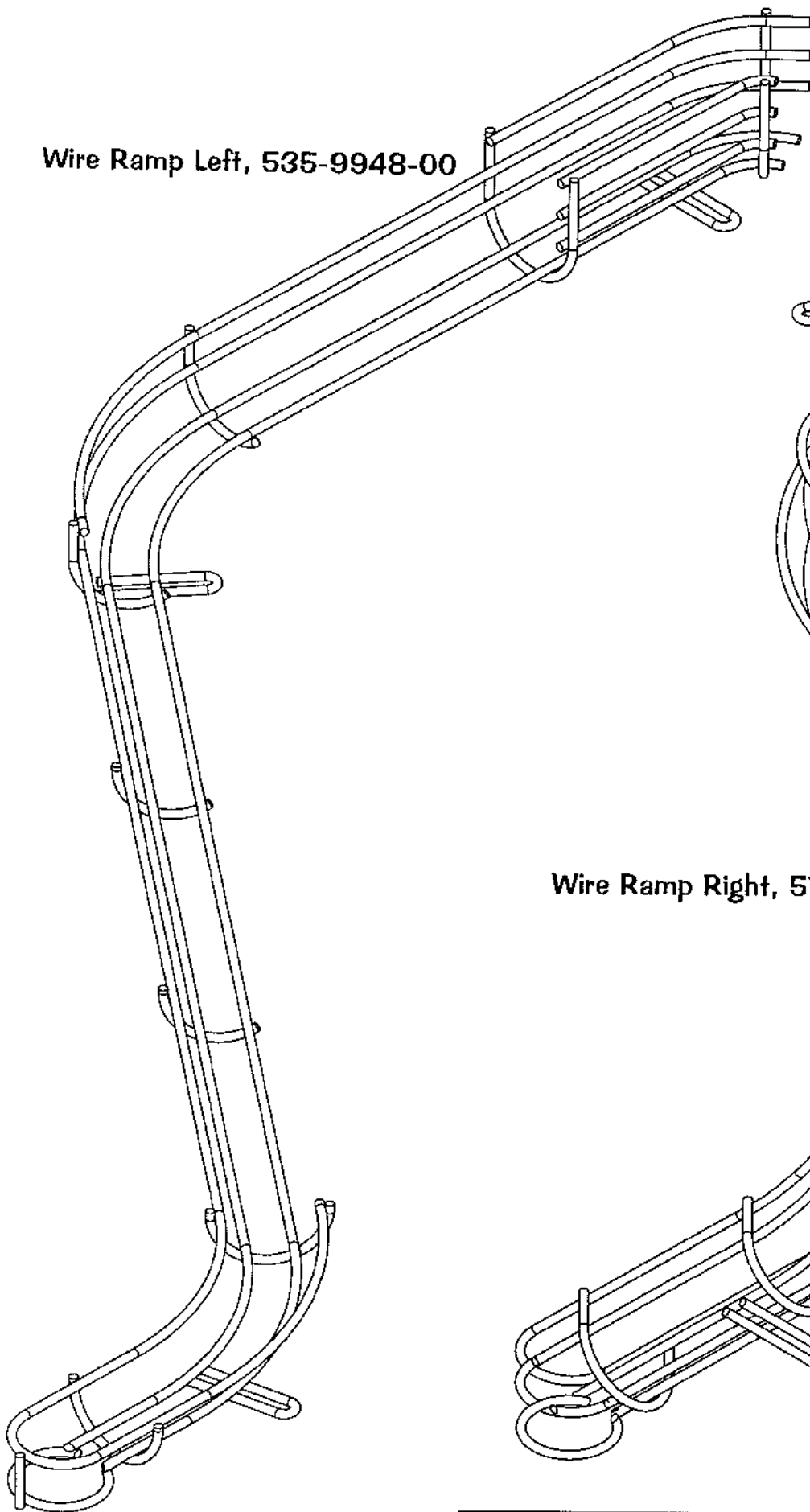
Assemblies & Ramps



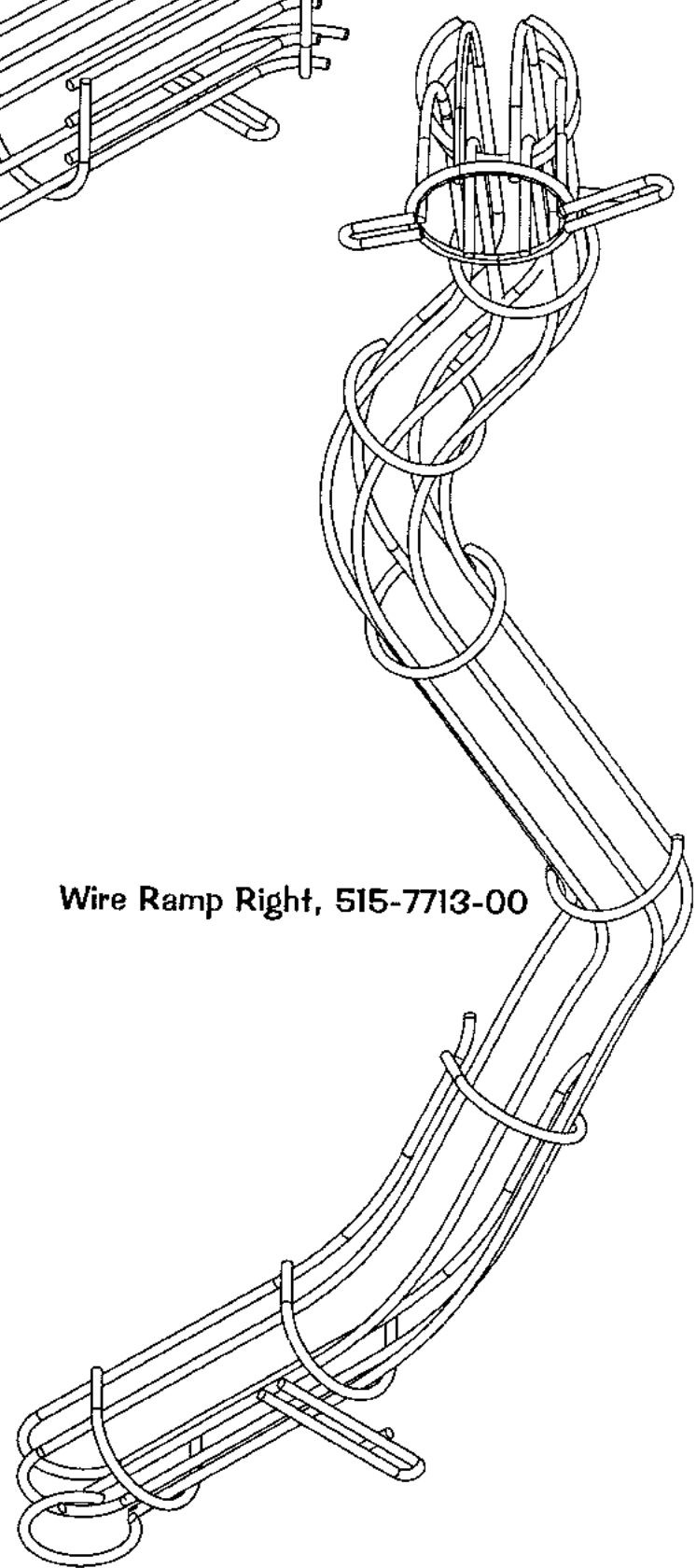
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	510-5015-00	RIVETED ASSY, RAMP & FLAR CSI	1
2	535-0285-00	RAMP PROTECTOR-LEFT CSI	1
3	535-0286-00	RAMP PROTECTOR-RIGHT CSI	1
4	237-5809-00	SCREW, #6 X 1/2" PTH A	2
5	254-5000-01	SPACER - 1/2" GRAY	3
6	830-6071-52	RAMP COVER-COI	1
7	242-5001-00	#6 WASHER	3
8	240-5005-00	6-32 NYLOK STOP NUT	3
9	232-5206-00	SCREW, 6-32 X 1" PPH SEMS	3
10	500-6775-01	OPTO TRANSCIEVER ASSY, 15" LEADS	2
11	237-5880-02	SCREW, #6 X 1/2 PPH T-25	4

ASAL REF ONLY ITEMS 1-11 (500-7148-00)

Wire Ramp Left, 535-9948-00



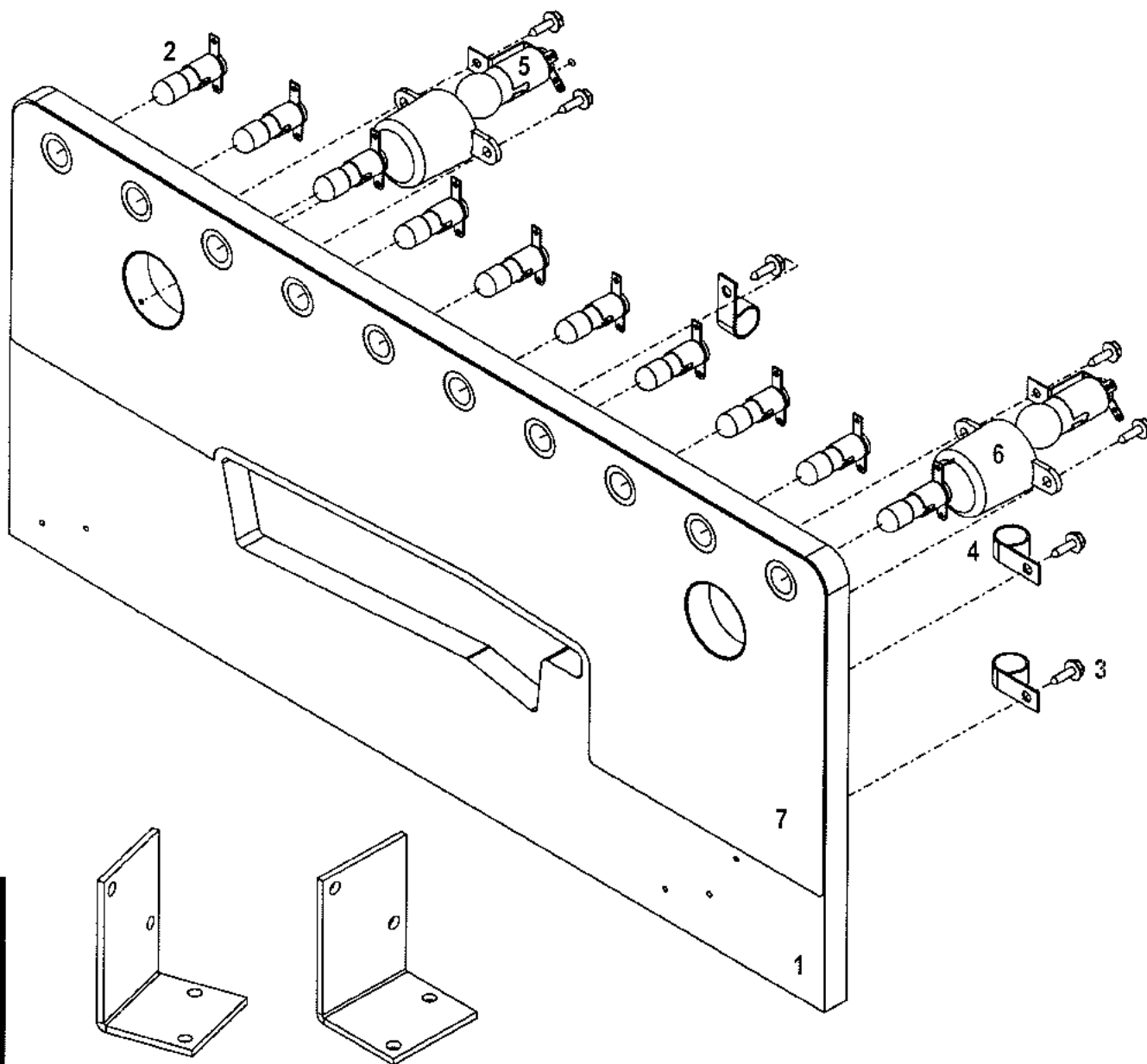
Wire Ramp Right, 515-7713-00



Assemblies & Ramps



Backpanel Assembly, Individual Parts Only (Items 1-7)



535-8964-00 ▲
Back Panel Mounting Bracket

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	525-5684-00	BACK PANEL, CSI	1
2		SOCKET & #44 BULB ASSY, CLEAR	10
3	234-5001-02	SCREW, #6 X 1/2" HWH	7
4	040-5000-06	1/2" CABLE CLAMP	3
5		SOCKET & #89 BULB ASSY - HEAVY FILAMENT	2
6	550-5031-11	MINI MARS W/ EARS - FLUOR. GREEN SB	2
7	802-5000-A2	DECAL, BACK PANEL, CSI 820-5408-10	1

ASML REF ONLY ITEMS 1-7 (500-7119-00)

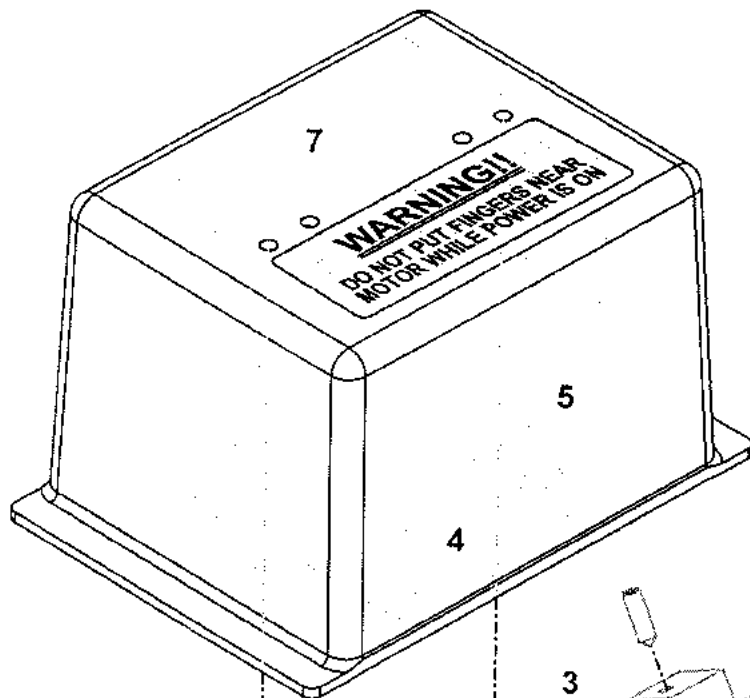
CSI:
CRIME SCENE INVESTIGATION



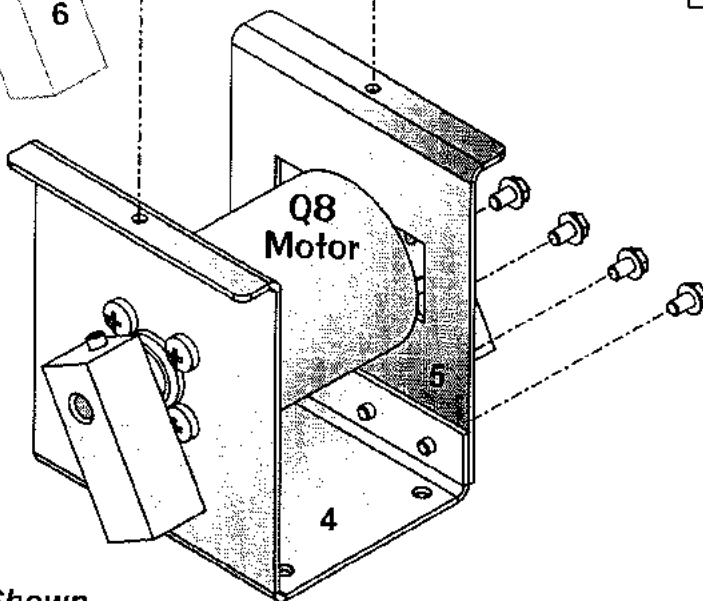
****OPTIONAL** Shaker Motor Kit, 502-5027-00 (Rev. B), (Items 1-10)**

- | | | | |
|-----|---|--------------|---|
| 1 | 1 | 502-5027-00 | SHAKER MOTOR KIT |
| 2-6 | 1 | 515-5893-01 | SHAKER MOTOR ASM. |
| 2 | 1 | 041-5029-04 | MOTOR |
| 3 | 1 | 545-5425-00 | INSULATOR |
| 4 | 1 | 535-6711-01 | S.M. BRACKET |
| 5 | 1 | 535-6711-02 | S.M. BRACKET LEG |
| 6 | 2 | 535-6727-01 | WEIGHT |
| | | 237-5911-00 | SET SCREW |
| 7 | 1 | 545-5241-00 | PLASTIC COVER WITH WARNING DECAL (820-6062-00) |
| 8 | 1 | 515-5742-00 | S.M. PCB + SPACERS |
| 9 | 1 | 756-5027-00 | INSTRUCTION SHEET (2-Sided) |
| | 1 | 756-5027-00T | TEMPLATE |
| 10 | 1 | 036-5537-00 | Wiring (from back of cabinet to front of cabinet (Item 8) S.M. PCB) |

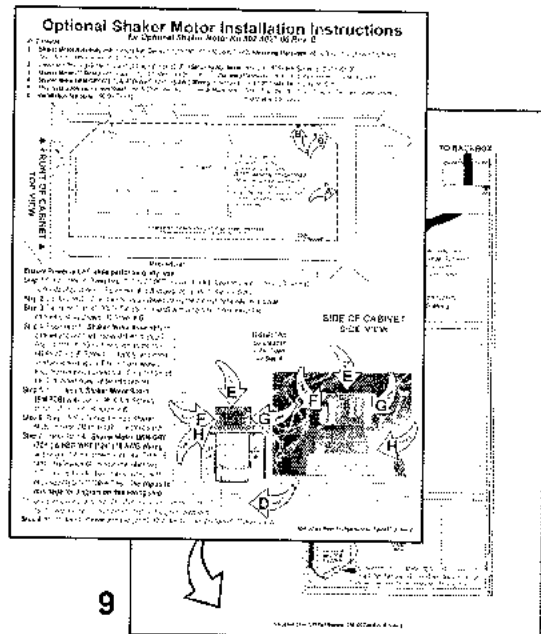
Click to view the instructions and template online:
<http://www.sternpinball.com/756-5027-00RevB.html>
 These 2 sheets are included in the kit.



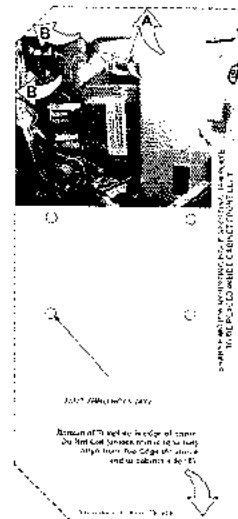
Note the set screw tip should go into the divet on the motor shaft



10 Not Shown



Optional Shaker Motor Installation Template



This diagram shows an exploded view of a mechanical assembly. The components are labeled with callouts: 1 (a large cylindrical part), 2 (a circular flange with markings 'A5 C7', 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z'), 3 (a small cylindrical part), 4 (a bracket-like part), 5 (a small cylindrical part), and a triangle labeled 'D'. The assembly is shown in a disassembled state, with dashed lines indicating the alignment of the parts.

***NOTE:
NOT SHOWN**

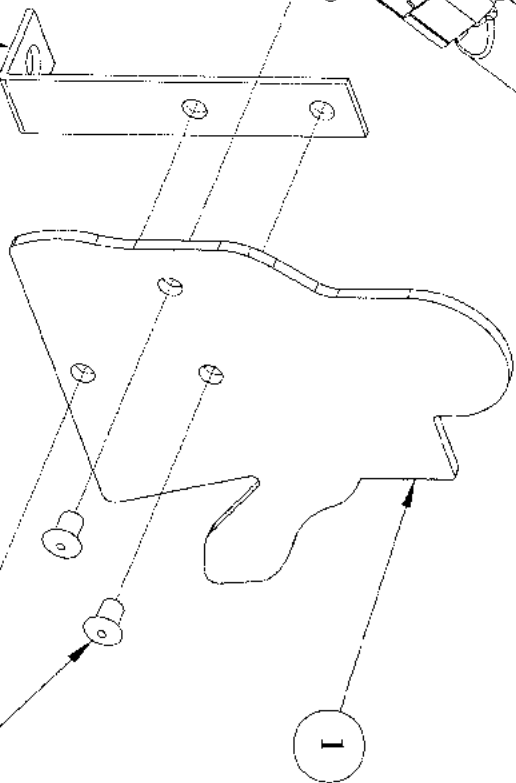
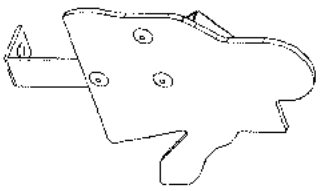
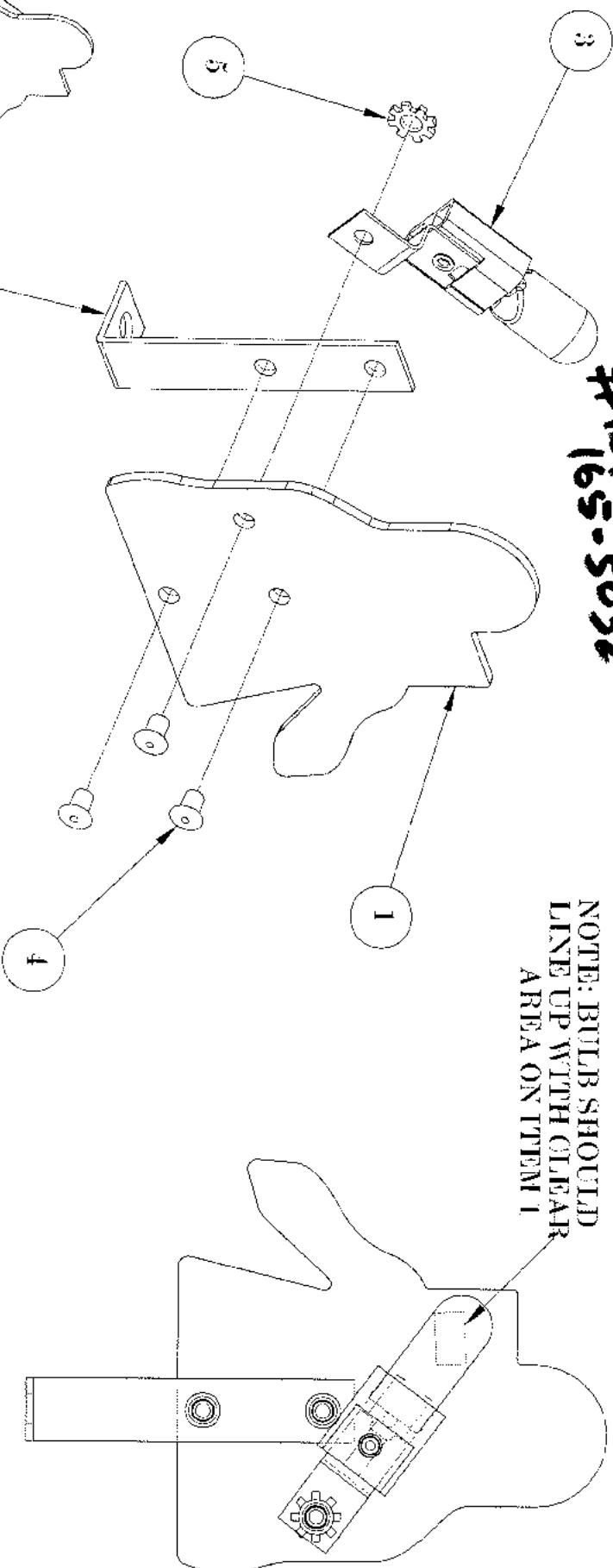
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FINISH	DESIGN	SIZE	DRAWING NO.	REV
OR		A	500-7042-00	1
JUNE	(CUTTER)	SCALE	RELEASE DATE	1 OF 1
1980	500-7042-00	1:1		

ITEM NO	PART NUMBER	DESCRIPTION	QTY.
1	830-6071-55	BUTY #55, PHOTOGRAPHER, CSI	1
2	535-9750-00	BRACKET, SIGN	1
3	165-5032-00 165-5032-00	STEEL PINBALL 12V BULB FOR CSI	1
4	249-5001-00	RIVET - 1/8 X 3/16	3
5	246-5000-00	#6 LOCK WASHER, EXT TOOTH	1

REV	DESCRIPTION	APPROVED	DATE
A	ORIGINAL ISSUE	RDR	10/02/08

**#161 12V BULB
165-5032-00**



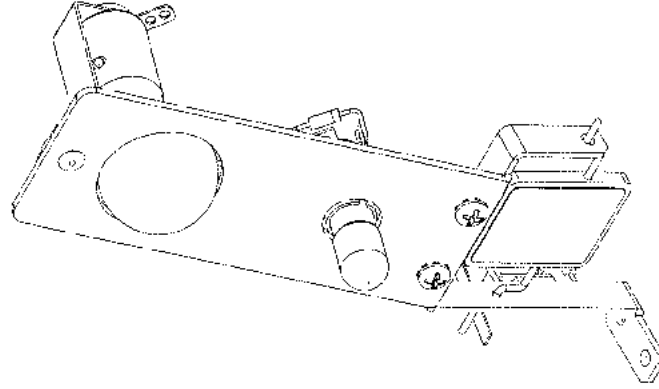
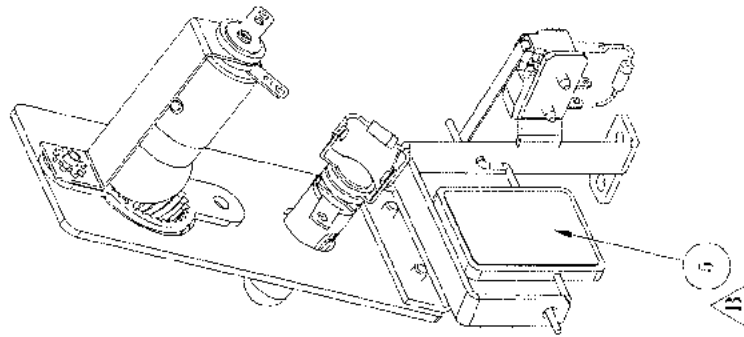
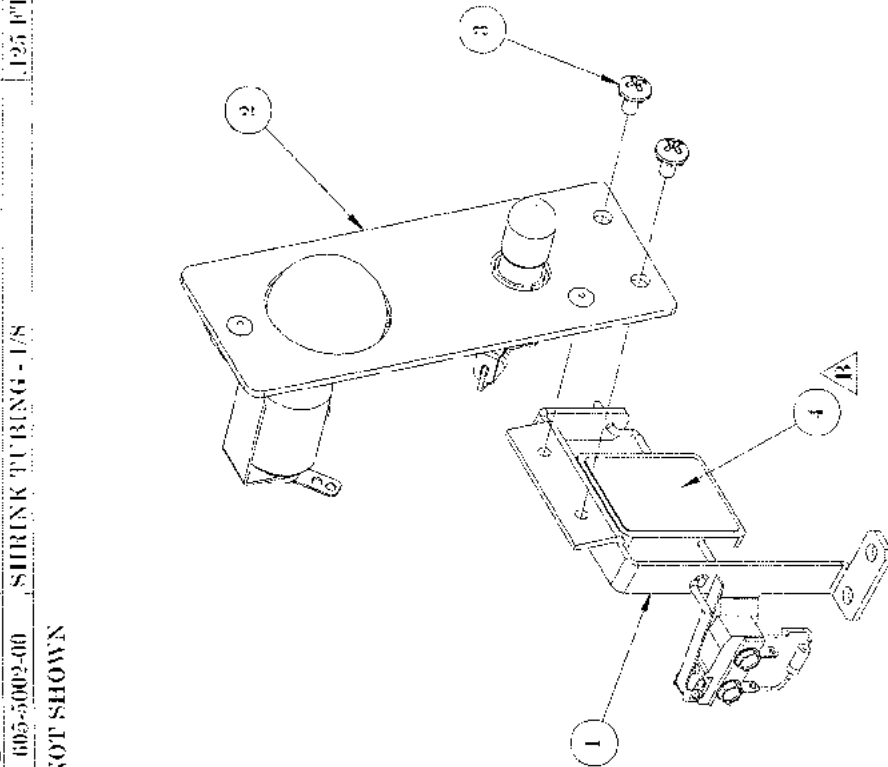
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TOLERANCES UNLESS OTHERWISE SPECIFIED	APPROVALS	DATE
XX ± .015	HOLDER ± .003	
XXX ± .010	ANGLES ± 1°	
XXXX ± .005		
DO NOT SCALE THIS DRAWING	DRAWN	RDR
MATERIAL	CHECK	10/02/08
FINISH	DESIGN	
...	...	
NEW ASSEMBLY	CHANGE	510-5088-00

STERN	STERN PINBALL, INC.
ELMER, ILL. 60120	3030 JANICE AVENUE, MELROSE PARK, IL 60160
TITLE	
RIVETED ASSY, BUTY #55, CSI	
SIZE	DRAWING NO
A	510-5088-00
SCALE	RELEASE DATE
1:1	SHEET
	1 OF 1
REV	
A	

ITEM #	PART #	DESCRIPTION	QTY
1	511-5185-400	SPINNER ASSY - SIDE MOUNT - BILLBOARD 1	1
2	310-5084-400	RIVETED ASSY, BUTY #50, CSI	1
3	232-5200-400	SCREW, 6-32 X 1/4" PPH SEMS	2
4	820-6108-400	DECAL, LEFT SPINNER FRONT, CSI	1
5	820-6108-400	DECAL, LEFT SPINNER BACK, CSI	1
96*	000-0000-000	CABLE LEFT TORBIT SPINNER	1
97*	000-0000-000	CABLE LEFT BILLBOARD	1
98*	000-0000-000	CABLE LEFT BILLBOARD FLASH	1
99*	605-5002-400	SHRINK TUBING - 1/8"	125 FT.

*ITEM NOT SHOWN

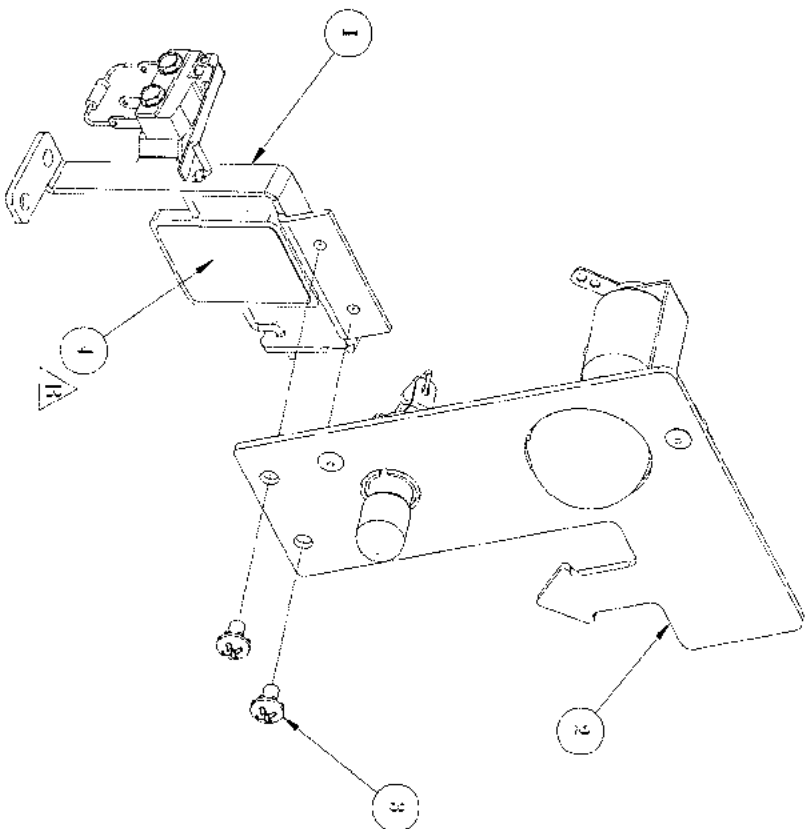


REV	DESCRIPTION	APPROVED	DATE
A	ORIGINAL ISSUE	JMR	8-3-08
B	CHG ITEM 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99	10/1/08	10/1/08

STERN STERN PINBALL, INC.		DATE: 9/8/08	
900 ALVIN AVENUE WEST, SEASIDE, CA 94060		REV: B	
DRAWING NO: 500-7150-00		REV: B	
TITLE: SPINNER ASSY W/ BB - LEFT - CSI		REV: B	
DRAWN BY: JMR		REV: B	
CHECKED BY: JMR		REV: B	
APPROVED BY: JMR		REV: B	
DATE: 9/8/08		REV: B	
SCALE: 1:1		REV: B	
SHEET: 1 OF 1		REV: B	

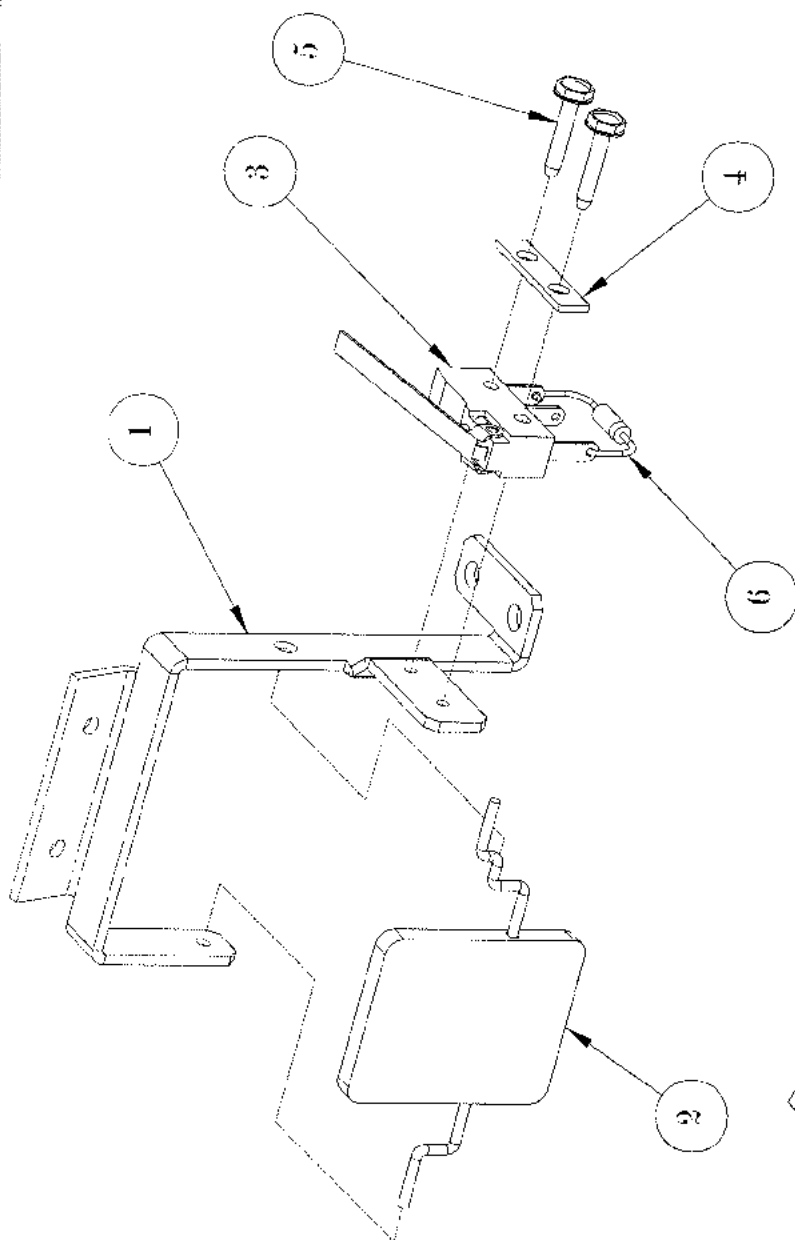
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ITEM #	PART #	DESCRIPTION	QTY
1	511-5185-00	SPINNER ASSY - SIDE MOUNT - BILLBOARD	1
2	510-5085-00	FIVE-TEED ASSY, BITY #53, CSI	1
3	232-5200-00	SCHEM, 6-72 N 1/4" PTH SEAMS	2
4	820-6408-00	DECAL, RIGHT SPINNER FRONT, CSI	1
5	820-6408-00	DECAL, RIGHT SPINNER BACK, CSI	1
6	820-6408-00	CABLE, RIGHT ORBIT SPINNER	1
7	820-6408-00	CABLE, RIGHT BILLBOARD	1
8	820-6408-00	CABLE, RIGHT BILLBOARD FLASH	1
9	820-6408-00	SHRINK TUBING - 1/8"	125 FT



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REV	DESCRIPTION	APPROVED	DATE
A	ORIGINAL ISSUE	JMR	9/8/08



ITEM NO	PART NUMBER	DESCRIPTION	QTY.
1	535-0284-00	SPINNER BRACKET - SIDE MOUNT - BILLBOARD	1
2	515-7088-00	SPINNER TARGET, NARROW	1
3	180-5010-04	MICRO-SWITCH	1
4	535-6539-00	SWITCH BODY PROTECT PLATE	1
5	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	2
6	112-5003-00	DIODE - 1N4004	1

TOLERANCES UNLESS OTHERWISE SPECIFIED	
XXX ± 0.12	HOLE(S): ± 0.05
XXX ± 0.10	ANGLE(S): ± 1/2°
XXXX ± 0.05	
DO NOT SCALE THIS DRAWING	
MATERIAL	

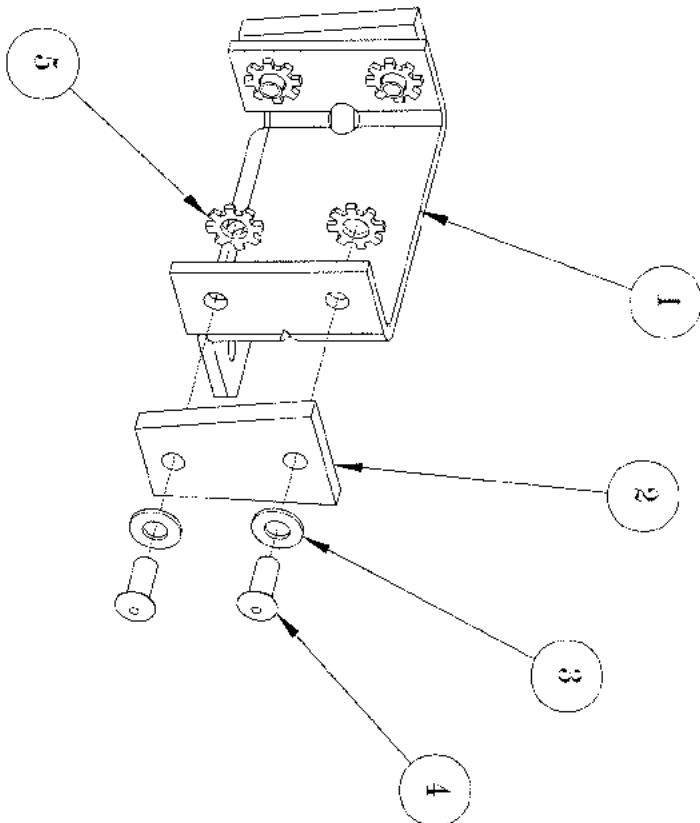
FINISH	

ONE PIECE	VALVE ASSM-BLY

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STERN PINBALL, INC.		STERN PINBALL, INC. 2020 44 AVENUE MELROSE PARK, ILL. 60060	
TITLE			
SPINNER ASSY - SIDE MOUNT - BILLBOARD			
SIZE A	DRAWING NO. 511-5185-00	REV. A	
SCALE 1-1	RELEASE DATE	SHEET 1 OF 1	

ITEM #QTY	PART #	DESCRIPTION
1	535-9988-18	BALL GUIDE #18
2	626-5088-00	RUBBER BUMPER - BLUE - RIVETTED
3	242-5017-00	WASHER, 9/64 ID X 5/16 OD X 1/32
4	249-5025-03	POP RIVET - 1/8 X 5/16
5	246-5000-00	#6 LOCK WASHER, EXT TOOTH



REV	DESCRIPTION	APPROVED	DATE
A	ORIGINAL ISSUE	JMR	9/16/08
B	249-5025-03 WAS 249-5011-00	JMR	10/2/08

TOLERANCES UNLESS OTHERWISE SPECIFIED	
XX ± .005	HOLD .5° ± .001
XXX ± .010	ANGLES ± 1/2°
XXXX ± .005	
DO NOT SCALE THIS DRAWING	
MATERIAL	

APPROVALS	DATE
JMR	9/16/08
CHECK	

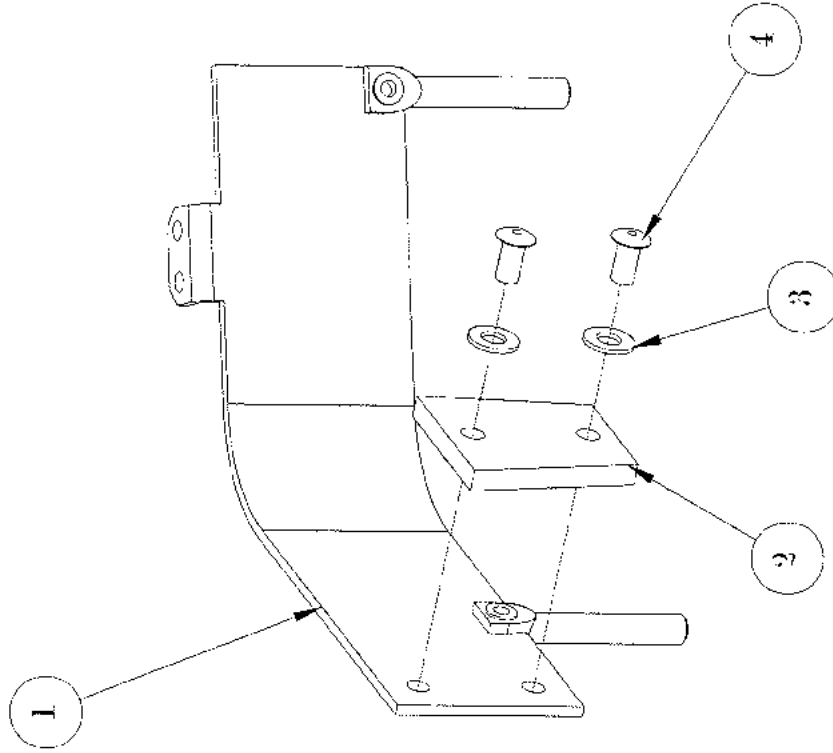
STERN		STERN PINBALL, INC.	
GENERAL ENG		2020 JANICE AVENUE AMHERST, MA 01004	
TITLE			
BALL GUIDE #18 ASSEMBLY			

FINISH		SIZE		DRAWING NO.		REV	
---		A		510-5086-00		B	
DESIGN		SCALE		RELEASE DATE		SHEET	
---		1:1		---		1 OF 1	

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ITEM #	QTY	PART #	DESCRIPTION
1	1	535-9988-05	BALL GUIDE #5
2	1	626-5066-00	RUBBER BUMPER - BLUE - RIVETED
3	2	242-5017-00	WASHER, 9/64 ID X 5/16 OD X 1/32
4	2	249-5003-00	RIVET - 1/8 X 1/4

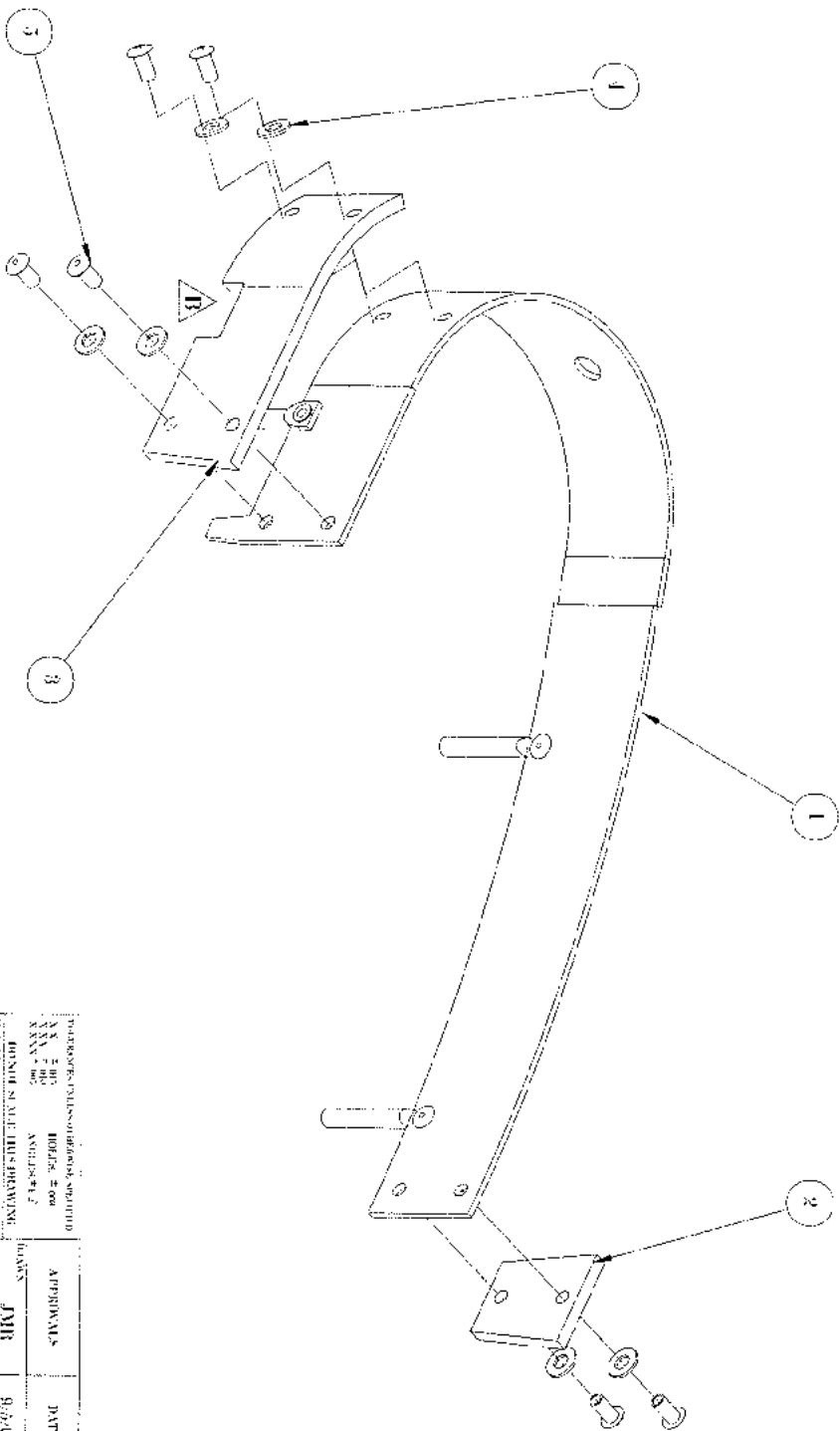
REV	DESCRIPTION	APPROVED	DATE
A	ORIGINAL ISSUE	JMR	9/5/08



TOLERANCES UNLESS OTHERWISE SPECIFIED:		DATE	9/5/08
XXX ± .015	HOLE'S: ± .003	APPROVALS	JMR
XXX ± .010	ANGLE'S: ± 1/2°	DRAWN	
XXX ± .005		CHECK	
DO NOT SCALE THIS DRAWING		DESIGN	
MATERIAL		CAD/REP	510-5079-00
FINISH			
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STERN PINBALL, INC.		STERN PINBALL, INC.	
2020 JANICE AVENUE MELROSE PARK, IL 60160		2020 JANICE AVENUE MELROSE PARK, IL 60160	
TITLE		BALL GUIDE #5 ASSEMBLY	
SIZE	DRAWING NO.	SIZE	DRAWING NO.
A	510-5079-00	A	510-5079-00
SCALE	1:1	RELEASE DATE	1 QP 1
		SHEET	1 OF 1

ITEM #	PART #	DESCRIPTION
1	636-5088-02	RAIL GUIDE #2
2	636-5086-00	RUBBER BUSH - BLADE - RIVETED
3	636-5081-00	BUSHER PAD - 4-HOLE RIVETED
4	343-5017-00	WASHER 9/64 ID X 5/16 OD X 1/32
5	249-5003-00	RIVET - 1/8 X 1/4



REV	DESCRIPTION	APPROVED	DATE
1	ORIGINAL ISSUE	JMR	9-6-08
2	REWORKED	JMR	9-11-08

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APPROVALS	DATE
JMR	9-6-08
MATERIAL	
QUANTITY	UNIT
1	310-5017-00
REVISED	
DATE	
310-5017-00	
REVISED	
DATE	
310-5017-00	
REVISED	
DATE	
310-5017-00	

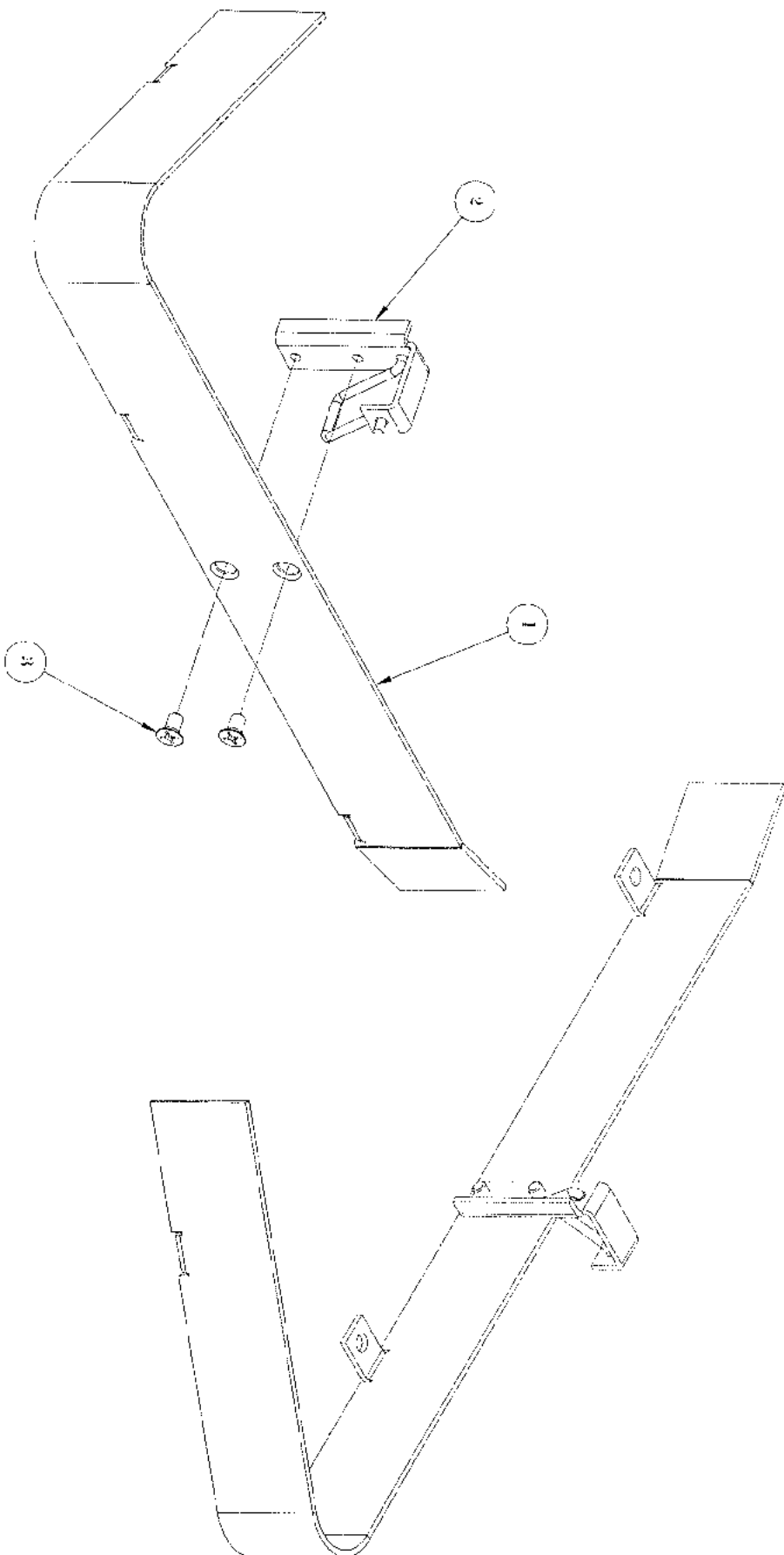


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	510-5987-00	BALL GRID #9 - RIVETED ASSEMBLY	1
2	500-6775-00	OPTO TRANSCEIVER ASSEMBLY	1
3	637-2880-00	SOLDER #600 TO DRILL	

[illegible]

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155 E. 42ND STREET
NEW YORK 17, N.Y.

ITEM NO	PART NUMBER	DESCRIPTION	QTY
1	355-9088-08	BALL GUIDE #8, CSI	1
2	300-7077-00	ONE WAY GATE ASSEMBLY	1
3	937-5871-01	SCRIPPER 6-32 X 1/4" PPH 82 DEG TYP ZINC	2



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DATE	11/1/88	11/1/88	11/1/88
BY	...	...	...

APPROVALS	DATE
RDH	09/13/88
DATE	11/1/88
BY	...

STERN		STERN PINBALL, INC.	
9000 AVENUE AVENUE METROES PARK IL 60109		9000 AVENUE AVENUE METROES PARK IL 60109	
ASSEMBLY BALL GUIDE #8, CSI		ASSEMBLY BALL GUIDE #8, CSI	
REV	DESCRIPTION	REV	DESCRIPTION
B	511-5197-00	A	...
DATE	11/1/88	DATE	11/1/88



APPENDIX A



Pinball Game Firmware (White Star Board System* Only) Table

See website for the latest International Code or Updated USA version / checksums

ROM	Chip Size	Program Part N°	USA Ver. & Check Sum	Bd. Loc.	Raw Part N°
Apollo 13 (Note 1)					
Game ROM	(1M)	965-0208-00	A5.01 \$09FF	U210	960-5009-00
Sound	(512K)	965-0212-00	1.00 \$5244	U7	960-7001-02
Display	(4M)	965-0213-00	A5.00 \$B92B	ROM 0	960-5015-01
Voice 1	(4M)	965-0209-00	1.00 \$7FC7	U17	n/a (masked)
Voice 2	(4M)	965-0210-00	1.00 \$8E55	U21	n/a (masked)
Voice 3	(4M)	965-0211-00	1.00 \$08EE	U36	n/a (masked)
Golden Eye (Note 1)					
Game ROM	(1M)	965-0214-42	A4.04 \$3FFF	U210	960-5009-00
Sound	(512K)	965-0217-42	1.00 \$D615	U7	960-7001-02
Display	(4M)	965-0218-42	A4.00 \$E6ED	ROM 0	960-5015-01
Voice 1	(4M)	965-0215-42	1.00 \$3E32	U17	n/a (masked)
Voice 2	(4M)	965-0216-42	1.00 \$71F0	U21	n/a (masked)
Twister (Note 2)					
Game ROM	(1M)	965-0219-41	A4.05 \$E9FF	U210	960-5009-00
Sound	(512K)	965-0221-41	1.00 \$1FFF	U7	960-7001-02
Display	(4M)	965-0222-41	A4.00 \$FD01	ROM 0	960-5015-01
Voice 1	(4M)	965-0220-41	1.00 \$3650	U17	960-5015-01
Voice 2	(4M)	965-0223-41	1.00 \$9300	U21	960-5015-01
ID4: Independence Day (Note 2)					
Game ROM	(1M)	965-0224-45	A2.02 \$9CFF	U210	960-5009-00
Sound	(512K)	965-0227-45	1.00 \$222B	U7	960-7001-02
Display	(4M)	965-0228-45	A2.00 \$AB7	ROM 0	960-5015-01
Voice 1	(4M)	965-0225-45	1.00 \$34E1	U17	960-5015-01
Voice 2	(4M)	965-0226-45	1.00 \$206E	U21	960-5015-01
Space Jam (Note 2)					
Game ROM	(1M)	965-0229-43	A3.00 \$E6FF	U210	960-5009-00
Sound	(512K)	965-0233-43	1.00 \$F1E7	U7	960-7001-02
Display	(4M)	965-0234-43	A3.00 \$0057	ROM 0	960-5015-01
Voice 1	(4M)	965-0230-43	1.00 \$D8A8	U17	960-5015-01
Voice 2	(4M)	965-0231-43	1.00 \$DDF1	U21	960-5015-01
Voice 3	(4M)	965-0232-43	1.00 \$F32A	U36	960-5015-01
The Star Wars Trilogy - Special Edition (S.E.) (Note 2)					
Game ROM	(1M)	965-0235-56	A4.03 \$5EFF	U210	960-5009-00
Sound	(512K)	965-0238-56	1.00 \$4A7D	U7	960-7001-02
Display	(4M)	965-0239-56	A4.00 \$8817	ROM 0	960-5015-01
Voice 1	(4M)	965-0236-56	1.00 \$E66B	U17	960-5015-01
Voice 2	(4M)	965-0237-56	1.00 \$8F54	U21	960-5015-01
The Lost World: Jurassic Park (Note 2)					
Game ROM	(1M)	965-0240-53	A2.02 \$C8FF	U210	960-5009-00
Sound	(512K)	965-0243-53	1.00 \$A35B	U7	960-7001-02
Display	(4M)	965-0244-53	A2.01 \$7F46	ROM 0	960-5015-01
Voice 1	(4M)	965-0241-53	1.00 \$1D27	U17	960-5015-01
Voice 2	(4M)	965-0242-53	1.00 \$8DA4	U21	960-5015-01
The X-Files (Note 2)					
Game ROM	(1M)	965-0245-46	A3.03 \$A2FF	U210	960-5009-00
Sound	(512K)	965-0248-46	1.00 \$664A	U7	960-7001-02
Display	(4M)	965-0249-46	A3.00 \$66D0	ROM 0	960-5015-01
Voice 1	(4M)	965-0246-46	1.00 \$349D	U17	960-5015-01
Voice 2	(4M)	965-0247-46	1.00 \$629C	U21	960-5015-01
Starship Troopers (Note 3)					
Game ROM	(1M)	965-0250-59	A2.00 \$85FF	U210	960-5009-00
Sound	(512K)	965-0253-59	1.00 \$64B2	U7	960-7001-02
Display	(4M)	965-0254-59	A2.00 \$E77B	ROM 0	960-5015-01
Voice 1	(4M)	965-0251-59	1.00 \$152A	U17	960-5015-01
Voice 2	(4M)	965-0252-59	1.00 \$0291	U21	960-5015-01
Voice 3	(4M)	965-0255-59	1.00 \$95A7	U36	960-5015-01
Viper Night Drivin' (Note 4)					
Game ROM	(1M)	965-0266-35	A2.01 \$C5FF	U210	960-5009-00
Sound	(512K)	965-0271-35	1.00 \$4DF8	U7	960-7001-02
Display	(4M)	965-0272-35	A2.01 \$C17D	ROM 0	960-5015-01
Voice 1	(4M)	965-0267-35	1.00 \$9018	U17	960-5015-01
Voice 2	(4M)	965-0268-35	1.00 \$2157	U21	960-5015-01
Voice 3	(4M)	965-0269-35	1.00 \$B5A6	U36	960-5015-01
Voice 4	(4M)	965-0270-35	1.00 \$D01E	U37	960-5015-01
Lost In Space (Note 4)					
Game ROM	(1M)	965-0282-60	A1.01 \$B2FF	U210	960-5009-00
Sound	(512K)	965-0287-60	1.00 \$A6AF	U7	960-7001-02
Display	(4M)	965-0288-60	A1.02 \$32AB	ROM 0	960-5015-01
Voice 1	(4M)	965-0283-60	1.00 \$4391	U17	960-5015-01
Voice 2	(4M)	965-0284-60	1.00 \$8215	U21	960-5015-01
Voice 3	(4M)	965-0285-60	1.00 \$5B32	U36	960-5015-01
Voice 4	(4M)	965-0286-60	1.00 \$8971	U37	960-5015-01
Godzilla (Note 4)					
Game ROM	(1M)	965-0289-40	A2.05 \$B1FF	U210	960-5009-00
Sound	(512K)	965-0294-40	1.00 \$0CC9	U7	960-7001-02
Display	(4M)	965-0295-40	A3.00 \$C929	ROM 0	960-5015-01
Voice 1	(4M)	965-0290-40	1.00 \$0D75	U17	960-5015-01
Voice 2	(4M)	965-0291-40	1.00 \$CCCF	U21	960-5015-01
Voice 3	(4M)	965-0292-40	1.00 \$227F	U36	960-5015-01
Voice 4	(4M)	965-0293-40	1.00 \$DB69	U37	960-5015-01
South Park (Notes 4, 5)					
Game ROM	(1M)	965-0301-71	A1.03 \$58FF	U210	960-5009-00
Sound	(512K)	965-0306-71	1.00 \$1286	U7	960-7001-02
Display	(4M)	965-0307-71	A1.01 \$166F	ROM 0	960-5015-01
Voice 1	(8M)	965-0302-71	1.00 \$7BF8	U17	960-5016-00
Voice 2	(8M)	965-0303-71	1.00 \$9CCC	U21	960-5016-00
Voice 3	(8M)	965-0304-71	1.00 \$ADD9	U36	960-5016-00
Voice 4	(8M)	965-0305-71	1.00 \$6559	U37	960-5016-00

ROM	Chip Size	Program Part N ^o	USA Ver. & Check Sum	Bd. Loc.	Raw Part N ^o
Harley-Davidson® (Notes 4, 5, 6) Original (1999-2001)					
Game ROM	(1M)	965-0319-67	A1.03	\$3EFF U210	960-5009-00
Sound	(512K)	965-0320-67	1.00	\$F4FF U7	960-7001-02
Display	(4M)	965-0321-67	A1.04	\$FC7C ROM 0	960-5015-01
Voice 1	(8M)	965-0322-67	1.00	\$CD26 U17	960-5016-00
Voice 2	(8M)	965-0323-67	1.00	\$9396 U21	960-5016-00
Voice 3	(8M)	965-0324-67	1.00	\$FB72 U36	960-5016-00
Voice 4	(4M)	965-0325-67	1.00	\$6100 U37	960-5015-01
► Harley-Davidson® (Notes 4, 5, 6, 8) 2nd Edition (2002-2003)					
Game ROM	(1M)	965-0319-67A	A1.08	\$23FF U210	960-5009-00
Display	(4M)	965-0321-67A	A1.05	\$B594 ROM 0	960-5015-01
► Harley-Davidson® (Notes 4, 5, 6, 8) 3rd Edition (2004)					
Game ROM	(1M)	965-0319-87	A4.00	\$1CFF U210	960-5009-00
Display	(4M)	965-0321-87	A4.00	\$F4FF U5	960-5015-01
Striker Xtreme (Notes 4, 5)					
Game ROM	(1M)	965-0326-68	A1.03	\$E4FF U210	960-5009-00
Sound	(512K)	965-0327-68	1.00	\$3BCA U7	960-7001-02
Display	(4M)	965-0328-68	A1.03	\$1957 ROM 0	960-5015-01
Voice 1	(8M)	965-0329-68	1.00	\$482A U17	960-5016-00
Voice 2	(8M)	965-0330-68	1.00	\$7312 U21	960-5016-00
Voice 3	(8M)	965-0331-68	1.00	\$DE2F U36	960-5016-00
Voice 4	(8M)	965-0332-68	1.00	\$C508 U37	960-5016-00
NFL (Notes 4, 5) Not on CD-R or Website: Code through Distributor Only.					
Game ROM	(1M)	965-0339-73	A1.00	\$D2FF U210	960-5009-00
Sound	(512K)	965-0340-73	1.00	\$5 U7	960-7001-02
Display	(4M)	965-0341-73	A1.01	\$845A ROM 0	960-5015-01
Voice 1	(8M)	965-0342-73	1.00	\$ U17	960-5016-00
Voice 2	(8M)	965-0343-73	1.00	\$ U21	960-5016-00
Voice 3	(8M)	965-0344-73	1.00	\$ U36	960-5016-00
Voice 4	(8M)	965-0345-73	1.00	\$ U37	960-5016-00
Sharkey's Shootout (Notes 4, 5)					
Game ROM	(1M)	965-0333-72	A2.11	\$49FF U210	960-5009-00
Sound	(512K)	965-0334-72	1.01	\$9796 U7	960-7001-02
Display	(4M)	965-0335-72	A2.01	\$6C33 ROM 0	960-5015-01
Voice 1	(8M)	965-0336-72	1.00	\$58EA U17	960-5016-00
Voice 2	(8M)	965-0337-72	1.00	\$272B U21	960-5016-00
Voice 3	(8M)	965-0338-72	1.00	\$41AE U36	960-5016-00
High Roller Casino (Notes 4, 5)					
Game ROM	(1M)	965-0346-65	A3.00	\$90FF U210	960-5009-00
Sound	(512K)	965-0347-65	1.00	\$581C U7	960-7001-02
Display	(4M)	965-0348-65	A3.00	\$74B3 ROM 0	960-5015-01
Voice 1	(8M)	965-0349-65	1.00	\$E12D U17	960-5016-00
Voice 2	(8M)	965-0350-65	1.00	\$38F4 U21	960-5016-00
Voice 3	(8M)	965-0351-65	1.00	\$1B54 U36	960-5016-00
Voice 4	(8M)	965-0352-65	1.00	\$D720 U37	960-5016-00
Austin Powers™ (Notes 4, 5)					
Game ROM	(1M)	965-0353-74	A3.02	\$5DFF U210	960-5009-00
Sound	(512K)	965-0354-74	1.00	\$D47B U7	960-7001-02
Display	(4M)	965-0355-74	A3.00	\$6A3A ROM 0	960-5015-01
Voice 1	(8M)	965-0356-74	1.00	\$D2B9 U17	960-5016-00
Voice 2	(8M)	965-0357-74	1.00	\$9E75 U21	960-5016-00
Voice 3	(8M)	965-0358-74	1.00	\$51F3 U36	960-5016-00
Voice 4	(8M)	965-0359-74	1.00	\$0AE5 U37	960-5016-00
MONOPOLY® (Notes 4, 5)					
Game ROM	(1M)	965-0360-75	A3.20	\$07FF U210	960-5009-00
Sound	(512K)	965-0361-75	1.00	\$8C18 U7	960-7001-02
Display	(4M)	965-0362-75	A3.01	\$A381 ROM 0	960-5015-01
Voice 1	(8M)	965-0363-75	1.00	\$35E6 U17	960-5016-00
Voice 2	(8M)	965-0364-75	1.00	\$B35A U21	960-5016-00
Voice 3	(8M)	965-0365-75	1.00	\$8A9F U36	960-5016-00
Playboy (Notes 4, 5, 7)					
Game ROM	(1M)	965-0367-76	A5.00	\$7DFF U210	960-5009-00
Sound	(512K)	965-0368-76	1.02	\$E7C2 U7	960-7001-02
Display	(4M)	965-0369-76	A5.00	\$A5FF ROM 0	960-5015-01
Voice 1	(8M)	965-0370-76	1.00	\$9ABE U17	960-5016-00
Voice 2	(8M)	965-0371-76	1.00	\$9F34 U21	960-5016-00
Voice 3	(8M)	965-0372-76	1.00	\$374B U36	960-5016-00
Voice 4	(8M)	965-0373-76	1.00	\$237A U37	960-5016-00
RollerCoaster Tycoon™ (Notes 4, 5, 7)					
Sound	(512K)	965-0374-78	1.00	\$F663 U7	960-7001-02
Game ROM	(1M)	965-0375-78	A7.02	\$E5FF U210	960-5009-00
Voice 1	(8M)	965-0377-78	1.00	\$3C4A U17	960-5016-00
Voice 2	(8M)	965-0378-78	1.00	\$057A U21	960-5016-00
Voice 3	(8M)	965-0379-78	1.00	\$04D7 U36	960-5016-00
Display	(4M)	965-0376-78	A7.01	\$8DDB U5 Disp. Contr.	
The Simpsons™ Pinball Party (Notes 4, 5, 7)					
Sound	(512K)	965-0381-77	1.01	\$A7EE U7	960-7001-02
Game ROM	(1M)	965-0382-77	A4.00	\$4FFF U210	960-5009-00
Voice 1	(8M)	965-0383-77	1.00	\$9719 U17	960-5016-00
Voice 2	(8M)	965-0384-77	1.00	\$16ED U21	960-5016-00
Voice 3	(8M)	965-0385-77	1.00	\$F1CE U36	960-5016-00
Voice 4	(8M)	965-0386-77	1.00	\$E7E5 U37	960-5016-00
Display	(4M)	965-0387-77	A4.00	\$8A03 U5 DC PCB	960-5015-01
Terminator® 3: Rise of the Machines™ (Notes 4, 5, 7)					
Sound	(512K)	965-0388-79	1.00	\$D2FD U7	960-7001-02
Game ROM	(1M)	965-0389-79	A4.00	\$F8FF U210	960-5009-00
Voice 1	(8M)	965-0390-79	1.00	\$1838 U17	960-5016-00
Voice 2	(8M)	965-0391-79	1.00	\$F0D5 U21	960-5016-00
Voice 3	(8M)	965-0392-79	1.00	\$89DA U36	960-5016-00
Voice 4	(8M)	965-0393-79	1.00	\$1200 U37	960-5016-00
Display	(4M)	965-0394-79	A4.00	\$6E49 U5 DC PCB	960-5015-01
The Lord of the Rings™ (Notes 7, 8)					
Sound	(512K)	965-0401-80	1.01	\$36BC U7	960-7001-02
Game ROM	(1M)	965-0402-80	A10.00	\$84FF U210	960-5009-00
Voice 1	(8M)	965-0403-80	1.00	\$1792 U17	960-5016-00
Voice 2	(8M)	965-0404-80	1.00	\$7E11 U21	960-5016-00
Voice 3	(8M)	965-0405-80	1.00	\$89BE U36	960-5016-00
Voice 4	(8M)	965-0406-80	1.00	\$E4A9 U37	960-5016-00
Display	(4M)	965-0407-80	A10.00	\$1669 U5 DC PCB	960-5015-01



APPENDIX A

Pinball Game Firmware (White Star Board System* & S.A.M. System** Only) Table

SAM

See website for the latest International Code or Updated USA version / checksums

ROM	Chip Size	Program Part N°	USA Ver. & Check Sum	Bd. Loc.	Raw Part N°
Ripley's Believe It or Not!® (Notes 7, 8)					
Sound	(512K)	965-0408-81	1.00 \$D93D	U7	960-7001-02
Game ROM	(1M)	965-0409-81	A3.20 \$43FF	U210	960-5009-00
Voice 1	(8M)	965-0410-81	1.00 \$067B	U17	960-5016-00
Voice 2	(8M)	965-0411-81	1.00 \$C8B8	U21	960-5016-00
Voice 3	(8M)	965-0412-81	1.00 \$64C2	U36	960-5016-00
Voice 4	(8M)	965-0413-81	1.00 \$5341	U37	960-5016-00
Display	(4M)	965-0414-81	A3.00 \$DE4B	U5 DC PCB	960-5015-01
Elvis® (Notes 7, 8)					
Sound	(512K)	965-0415-84	1.00 \$8CD2	U7	960-7001-02
Game ROM	(1M)	965-0416-84	A5.00 \$50FF	U210	960-5009-00
Voice 1	(8M)	965-0417-84	1.00 \$538D	U17	960-5016-00
Voice 2	(8M)	965-0418-84	1.00 \$8BCD	U21	960-5016-00
Voice 3	(8M)	965-0419-84	1.00 \$60F8	U36	960-5016-00
Voice 4	(8M)	965-0420-84	1.00 \$14D8	U37	960-5016-00
Display	(4M)	965-0421-84	A5.00 \$A1F6	U5 DC PCB	960-5015-01
The Sopranos™ (Notes 7, 8)					
Sound	(512K)	965-0422-85	4.00 \$9B5A	U7	960-7001-02
Game ROM	(1M)	965-0423-85	A5.00 \$5BFF	U210	960-5009-00
Voice 1	(8M)	965-0424-85	3.00 \$F01E	U17	960-5016-00
Voice 2	(8M)	965-0425-85	1.04 \$C14C	U21	960-5016-00
Voice 3	(8M)	965-0426-85	1.04 \$47A3	U36	960-5016-00
Voice 4	(8M)	965-0427-85	1.04 \$ADCD	U37	960-5016-00
Display	(4M)	965-0428-85	A5.00 \$B4BB	U5 DC PCB	960-5015-01
NASCAR® (Notes 7, 8)					
Sound	(512K)	965-0429-86	2.00 \$32B3	U7	960-7001-02
Game ROM	(1M)	965-0430-86	A4.50 \$39FF	U210	960-5009-00
Voice 1	(8M)	965-0431-86	2.00 \$CFFB	U17	960-5016-00
Voice 2	(8M)	965-0432-86	2.00 \$22C0	U21	960-5016-00
Voice 3	(8M)	965-0433-86	2.00 \$5FC8	U36	960-5016-00
Voice 4	(8M)	965-0434-86	2.00 \$2902	U37	960-5016-00
Display	(4M)	965-0435-86	A4.00 \$92BD	U5 DC PCB	960-5015-01
Grand Prix (Notes 7, 8)					
Sound	(512K)	965-0429-91	V1.00 \$6F89	U7	960-7001-02
Game ROM	(1M)	965-0430-91	A4.50 \$5EFF	U210	960-5009-00
Voice 1	(8M)	965-0431-91	1.00 \$CEB2	U17	960-5016-00
Voice 2	(8M)	965-0432-91	1.00 \$F4C6	U21	960-5016-00
Voice 3	(8M)	965-0433-91	1.00 \$05D7	U36	960-5016-00
Voice 4	(8M)	965-0434-91	1.00 \$2646	U37	960-5016-00
Display	(4M)	965-0435-91	A4.00 \$DA8E	U5 DC PCB	960-5015-01
[Dale Jr.] (Notes 7, 8) Call for more info if code update required.					
Sound	(512K)	965-0436-97		U7	960-7001-02
Game ROM	(1M)	965-0437-97		U210	960-5009-00
Voice 1	(8M)	965-0438-97		U17	960-5016-00
Voice 2	(8M)	965-0439-97		U21	960-5016-00
Voice 3	(8M)	965-0440-97		U36	960-5016-00
Voice 4	(8M)	965-0441-97		U37	960-5016-00
Display	(4M)	965-0442-97		U5 DC PCB	960-5015-01

**** GAMES BELOW THIS LINE / NEXT COLUMN ARE S.A.M. SYSTEM GAMES**

TO ORDER MEMORY STICK WITH GAME FILES FROM YOUR DISTRIBUTOR, USE SPI PART NUMBER 970-0128-00 & INCLUDE THE GAME NAME / LANGUAGE FILE(S) DESIRED.

World Poker Tour™ Pinball (WPT) (Notes 7, 9)					
Boot B-02	(8M)	965-BOOT-SAM	1.04 \$7E62	U9	960-5016-00 unprogrammed
Memory Stick 128MB (970-0128-00) Version System Bin Files:					
English + Spanish		14AL	1.38+	WPT1400AL.bin	
English Only		14A	1.17+	WPT1400A.bin	
English + French		14AF	1.17+	WPT1400AF.bin	
French Only		14F	1.17+	WPT1400F.bin	
German + French		14GF	1.17+	WPT1400GF.bin	
German Only		14G	1.17+	WPT1400G.bin	
English + Italian		14AI	1.17+	WPT1400AI.bin	
Italian Only		14I	1.17+	WPT1400I.bin	

NOTE: THE TYPICAL SIZE PER UNZIPPED BIN FILE IS 25MB – 30MB+/-

The Simpsons™ Kooky Carnival Redemption (Note 9)					
Boot B-02	(8M)	965-BOOT-SAM	1.04 \$7E62	U9	960-5016-00 unprogrammed
Memory Stick 128MB (970-0128-00) Version System Bin Files:					
English Only		1.05		SKC0105.bin	
English New Jersey Only		0.09NJ		SKC0090NJ.bin	

NOTE: THE TYPICAL SIZE PER UNZIPPED BIN FILE IS 5.5MB +/-

©Disney's Pirates of the Caribbean Pinball (POTC) (Notes 7, 9)					
Boot B-02	(8M)	965-BOOT-SAM	1.06 \$2014	U9	960-5016-00 unprogrammed
Memory Stick 128MB (970-0128-00) Version System Bin Files:					
English + Spanish		4.00AS	1.25+	POTC0400AS.bin	
English + French		4.00AF	1.25+	POTC0400AF.bin	
German + French		4.00GF	1.25+	POTC0400GF.bin	
English + Italian		4.00AI	1.25+	POTC0400AI.bin	

NOTE: THE TYPICAL SIZE PER UNZIPPED BIN FILE IS 25MB – 30MB+/-

Family Guy™ Pinball (FG) (Notes 7, 9)					
Boot B-02	(8M)	965-BOOT-SAM	2.09 \$10A3	U9	960-5016-00 unprogrammed
Memory Stick 128MB (970-0128-00) Version System Bin Files:					
English + Spanish		12.00AL	1.37+	FG1200AL.bin	
English + French		12.00AF	1.37+	FG1200AF.bin	
English + German		12.00AG	1.37+	FG1200GF.bin	
English + Italian		12.00AI	1.37+	FG1200AI.bin	

NOTE: THE TYPICAL SIZE PER UNZIPPED BIN FILE IS 25MB – 30MB+/-

Spider-Man™ / Black Spider-Man™ Pinball (S-M) (Notes 7, 9)					
Boot B-02	(8M)	965-BOOT-SAM	2.1 \$F625	U9	960-5016-00 unprogrammed
Memory Stick 128MB (970-0128-00) Version System Bin Files:					
English		1.92E	1.37+	spd_1_92_e.bin	
English + Spanish		1.92ES	1.37+	spd_1_92_es.bin	
English + French		1.92EF	1.37+	spd_1_92_ef.bin	
German + French		1.92GF	1.37+	spd_1_92_gf.bin	
English + Italian		1.92EI	1.37+	spd_1_92_ei.bin	

NOTE: THE TYPICAL SIZE PER UNZIPPED BIN FILE IS 25MB – 30MB+/-

Wheel of Fortune™ Pinball (WoF) (Notes 7, 9)					
Boot B-02	(8M)	965-BOOT-SAM	2.3 \$B83B	U9	960-5016-00 unprogrammed
Memory Stick 128MB (970-0128-00) Version System Bin Files:					
English		5.0A	1.38+	wof0500a.bin	
German		5.0G	1.38+	wof0500g.bin	
French		5.0F	1.38+	wof0500f.bin	
Italian		5.0I	1.38+	wof0500i.bin	
Spanish		5.0IS	1.38+	wof0500s.bin	

NOTE: THE TYPICAL SIZE PER UNZIPPED BIN FILE IS 25MB – 30MB+/-

Shrek™ Pinball (S) (Notes 7, 9)					
Boot B-02	(8M)	965-BOOT-SAM	2.3 \$B83B	U9	960-5016-00 unprogrammed
Memory Stick 128MB (970-0128-00) Version System Bin Files:					
English ONLY		1.4A	1.41+	SH0140E.bin	

NOTE: THE TYPICAL SIZE PER UNZIPPED BIN FILE IS 25MB – 30MB+/-

Indiana Jones™ Pinball (S) (Notes 7, 9)					
PB EPROM PE-2	(8M)	965-BOOT-SAM	3.1 \$4CF6	U9	960-5016-00 unprogrammed
Memory Stick 128MB (970-0128-00) Version System Bin Files:					
English		1.13A	1.42+	INDY0113A.bin	

NOTE: THE TYPICAL SIZE PER UNZIPPED BIN FILE IS 25MB – 30MB+/-

Batman™ Pinball (S) (Notes 7, 9)					
PB EPROM PE-2	(8M)	965-BOOT-SAM	3.1 \$4CF6	U9	960-5016-00 unprogrammed
Memory Stick 128MB (970-0128-00) Version System Bin Files:					
English		2.2E	1.45+	BAT_V2-20_E.bin	

SEE WEBSITE FOR UPDATES

NOTE: THE TYPICAL SIZE PER UNZIPPED BIN FILE IS 25MB – 30MB+/-

footnotes:

- 1 ROMs on CPU/Sound Bd.: 520-5136-00 (Stereo) & Display Cont. Bd.: 520-5055-01
- 2 ROMs on CPU/Sound Bd.: 520-5136-10 (Mono) & Display Cont. Bd.: 520-5055-01
- 3 ROMs on CPU/Sound Board: 520-5136-15* (Mono) (FCC 11-97) & Display Controller Board: 520-5055-02* (FCC 02-98)
- 4 ROMs on CPU/Sound Bd.: 520-5136-16* (Mono) (FCC 02-98) & Display Controller Board: 520-5055-03* (FCC 02-98)
- 5 This game uses 8MB VOICE ROMS at U17, U21, U36 & U37 (if 3 ROMs use U37 will be unused) requiring a Jumper at Loc. W6. Refer to CPU/Snd. Bd. Schematic (2 of 3).
- 6 Harley-Davidson® 2nd Edition: For Game ROM, Sound & Display info (version, check sums, part numbers) call Tech Support or check our website (see back cover) for current versions or other info. Raw Part numbers are identical to the H-D® original.
- 7 ToPS™ (Tournament Pinball System) READY!
- 8 ROMs on CPU/Sound Board II (with ATMEL Processor): 520-5300-00 & Display Cont. Bd.: 520-5055-03* (FCC 02-98)
- 9 Boot ROM (U9) on CPU/Sound Board (S.A.M. System): 520-5246-00

Game Revisions can be updated after the Production Run. This Table is accurate as of the printing of this manual. If any changes occurred, the next game manual will include the updated information. The version stated is USA. If there is a question as to the latest Code Revision, Check Sum or File Revision, call our Technical Support Dept., 1-800-542-5377 or 1-708-345-7700 (Select Opt. 1).

Our website www.SternPinball.com/GAME-code.shtml has the latest code which can be downloaded (an EPROM Burner and/or Memory Stick are required).

APPENDIX A

Pinball Game Firmware Table

EPROM	Chip Size	Program Part N ^o	USA Ver.	Bd. Loc.	Raw Part N ^o
Laser War					
CPU	(256K)	965-0004-00	LWAR.C5	C5	960-5007-00
Sound (old)	(256K)	965-0005-00		J5	960-5007-00
Sound (old)	(256K)	965-0006-00		J6	960-5007-00
Sound (old)	(256K)	965-0007-00		J7	960-5007-00
			- OR -		
Sound	(256K)	965-0008-00		7F	960-5007-00
Sound 1	(512K)	965-0009-00		6F	960-7001-02
Sound 2	(512K)	965-0010-00		4F	960-7001-02
Secret Service					
CPU	(256K)	965-0011-00	A4-6	B5	960-5007-00
CPU	(256K)	965-0012-00	A4-6	C5	960-5007-00
Voice 1	(512K)	965-0014-00		6F	960-7001-02
Voice 2	(512K)	965-0015-00		4F	960-7001-02
Sound	(256K)	965-0013-00		7F	960-5007-00
Torpedo Alley					
CPU	(256K)	965-0016-00	A2-1	B5	960-5007-00
CPU	(256K)	965-0017-00	A2-1	C5	960-5007-00
Voice 1	(512K)	965-0019-00		6F	960-7001-02
Voice 2	(512K)	965-0020-00		4F	960-7001-02
Sound	(256K)	965-0018-00		7F	960-5007-00
Time Machine					
CPU	(128K)	965-0021-00	A2-4	B5	960-5006-00
CPU	(256K)	965-0022-00	A2-4	C5	960-5007-00
Voice 1	(512K)	965-0024-00		6F	960-7001-02
Voice 2	(512K)	965-0025-00		4F	960-7001-02
Sound	(256K)	965-0023-00		7F	960-5007-00
Playboy 35th Anniversary					
CPU	(256K)	965-0046-00	A2-4	B5	960-5007-00
CPU	(256K)	965-0047-00	A2-4	C5	960-5007-00
Voice 1	(512K)	965-0049-00		6F	960-7001-02
Voice 2	(512K)	965-0050-00		4F	960-7001-02
Sound	(256K)	965-0048-00		7F	960-5007-00
ABC Monday Night Football					
CPU	(128K)	965-0031-00	A2-7	B5	960-5006-00
CPU	(256K)	965-0032-00	A2-7	C5	960-5007-00
Voice 1	(512K)	965-0034-00		6F	960-7001-02
Voice 2	(512K)	965-0035-00		4F	960-7001-02
Sound	(256K)	965-0033-00		7F	960-5007-00
Robocop					
CPU	(256K)	965-0036-00	A3-4	B5	960-5007-00
CPU	(256K)	965-0037-00	A3-4	C5	960-5007-00
Voice 1	(512K)	965-0039-00		6F	960-7001-02
Voice 2	(512K)	965-0040-00		4F	960-7001-02
Sound	(256K)	965-0038-00		7F	960-5007-00
Phantom of the Opera					
CPU	(128K)	965-0026-00	A3-2	B5	960-5006-00
CPU	(256K)	965-0027-00	A3-2	C5	960-5007-00
Voice 1	(512K)	965-0029-00		6F	960-7001-02
Voice 2	(512K)	965-0030-00		4F	960-7001-02
Sound	(256K)	965-0028-00		7F	960-5007-00
Back to the Future					
CPU	(256K)	965-0041-00	A2-0	B5	960-5007-00
CPU	(256K)	965-0042-00	A2-0	C5	960-5007-00
Voice 1	(512K)	965-0044-00		6F	960-7001-02
Voice 2	(512K)	965-0045-00		4F	960-7001-02
Sound	(256K)	965-0043-00		7F	960-5007-00
The Simpsons					
CPU	(128K)	965-0051-00	A2-7	B5	960-5006-00
CPU	(256K)	965-0052-00	A2-7	C5	960-5007-00
Voice 1	(512K)	965-0054-00		6F	960-7001-02
Voice 2	(512K)	965-0055-00		4F	960-7001-02
Sound	(256K)	965-0053-00		7F	960-5007-00
Checkpoint					
CPU	(128K)	965-0056-00	A1-7	B5	960-5006-00
CPU	(256K)	965-0134-00	A1-7	C5	960-5007-00
Voice 1	(1M)	965-0057-00		F7	960-5009-00
Voice 2	(1M)	965-0058-00		F5	960-5009-00
Sound	(256K)	965-0059-00		F4	960-5007-00
Display	(512K)	965-0060-00	CP80	U8	960-7001-02
Teenage Mutant Ninja Turtles					
CPU	(128K)	965-0061-00	A1.04	B5	960-5006-00
CPU	(256K)	965-0062-00	A1.04	C5	960-5007-00
Voice 1	(1M)	965-0063-00		F5/6	960-5009-00
Voice 2	(1M)	965-0064-00		F4/5	960-5009-00
Sound	(256K)	965-0065-00		F7	960-5007-00
Display	(512K)	965-0066-00	A1.04	U8	960-7001-02
Batman					
CPU	(128K)	965-0067-00	A1.06	B5	960-5006-00
CPU	(256K)	965-0135-00	A1.06	C5	960-5007-00
Voice 1	(2M)	965-0068-00		U17	960-5010-00
Voice 2	(2M)	965-0069-00		U21	960-5010-00
Sound	(256K)	965-0070-00		U7	960-5007-00
Display	(1M)	965-0071-00	A1.06	U8	960-5009-00
Star Trek 25th Anniversary					
CPU	(512K)	965-0072-00	A2.01	C5	960-7001-02
Voice 1	(2M)	965-0073-00		U17	960-5010-00
Voice 2	(2M)	965-0074-00		U21	960-5010-00
Sound	(256K)	965-0075-00		U7	960-5007-00
Display	(1M)	965-0076-00	A1.09	U8	960-5009-00
Hook					
CPU	(512K)	965-0077-00	A4.08	C5	960-7001-02
Voice 1	(2M)	965-0078-00		U17	960-5010-00
Voice 2	(2M)	965-0079-00		U21	960-5010-00
Sound	(256K)	965-0080-00		U7	960-5007-00
Display	(1M)	965-0081-00	A4.01	U8	960-5009-00

EPROM	Chip Size	Program Part N ^o	USA Ver.	Bd. Loc.	Raw Part N ^o
Lethal Weapon 3					
CPU	(512K)	965-0082-00	A2.08	C5	960-7001-02
Voice 1	(2M)	965-0083-00		U17	960-5010-00
Voice 2	(2M)	965-0084-00		U21	960-5010-00
Sound	(256K)	965-0085-00		U7	960-5007-00
Display	(2M)	965-0086-00	A2.06	ROM 0	960-5010-00
Display	(2M)	965-0087-00	A2.06	ROM 1	960-5010-00
		(Used on Display PCB 520-5055-00)			
			-OR-		
Display	(4M)	965-0087-04	A2.06	ROM 0	960-5015-00
		(Used on Display PCB 520-5055-01)			
Star Wars					
CPU	(512K)	965-0119-00	A1.03	C5	960-7001-02
Voice 0	(4M)	965-0132-00		U17	960-5015-00
Voice 1	(2M)	965-0133-00		U21	960-5010-00
Sound	(256K)	965-0131-00		U7	960-5007-00
Display	(2M)	965-0120-00	A1.04	ROM 0	960-5010-00
Display	(2M)	965-0121-00	A1.04	ROM 1	960-5010-00
		(Used on Display PCB 520-5055-00)			
			-OR-		
Display	(4M)	965-0122-00	A1.05	ROM 0	960-5015-00
		(Used on Display PCB 520-5055-01)			
Rocky & Bullwinkle & Friends					
CPU	(512K)	965-0138-00	A1.30	C5	960-7001-02
Voice 0	(4M)	965-0139-00		U17	960-5015-00
Voice 1	(2M)	965-0140-00		U21	960-5010-00
Sound	(256K)	965-0141-00		U7	960-5007-00
Display	(4M)	965-0142-00	A1.30	ROM 0	960-5015-00
Jurassic Park					
CPU	(512K)	965-0143-00	A5.13	C5	960-7001-02
Voice 0	(4M)	965-0144-00		U17	960-5015-00
Voice 1	(2M)	965-0145-00		U21	960-5010-00
Sound	(256K)	965-0146-00		U7	960-5007-00
Display	(4M)	965-0147-00	A5.10	ROM 0	960-5015-00
Last Action Hero					
CPU	(512K)	965-0148-00	A1.12	C5	960-7001-02
Voice 0	(4M)	965-0149-00		U17	960-5015-00
Voice 1	(2M)	965-0150-00		U21	960-5010-00
Sound	(256K)	965-0151-00		U7	960-5007-00
Display	(4M)	965-0152-00	A1.06	ROM 0	960-5015-00
Tales from the Crypt					
CPU	(512K)	965-0157-00	A3.03	C5	960-7001-02
Voice 0	(4M)	965-0158-00		U17	960-5015-00
Voice 1	(2M)	965-0159-00		U21	960-5010-00
Sound	(256K)	965-0160-00		U7	960-5007-00
Display	(4M)	965-0161-00	A3.01	ROM 0	960-5015-00
The Who's Tommy					
CPU	(512K)	965-0162-00	A4.00	C5	960-7001-02
Voice 1	(4M)	965-0165-00		U17	960-5015-00
Voice 2	(4M)	965-0166-00		U21	960-5010-00
Voice 3	(4M)	965-0167-00		U36	960-5015-00
Voice 4	(4M)	965-0168-00		U37	960-5015-00
Sound	(512K)	965-0164-00		U7	960-7001-02
Display	(4M)	965-0163-00	A4.00	ROM 0	960-5015-00
WWF Royal Rumble					
CPU	(512K)	965-0169-00	A1.06	C5	960-7001-02
Voice 1	(4M)	965-0172-00		U17	960-5015-00
Voice 2	(4M)	965-0173-00		U21	960-5015-00
Voice 3	(4M)	965-0174-00		U36	960-5015-00
Sound	(512K)	965-0171-00		U7	960-7001-02
Display	(4M)	965-0170-00	A1.02	ROM 0	960-5015-00
Guns N' Roses					
CPU	(512K)	965-0175-00	A3.00	C5	960-7001-02
Voice 1	(4M)	965-0178-00		U17	960-5015-00
Voice 2	(4M)	965-0179-00		U21	960-5015-00
Voice 3	(4M)	965-0180-00		U36	960-5015-00
Voice 4	(4M)	965-0181-00		U37	960-5015-00
Sound	(512K)	965-0177-00		U7	960-7001-02
Display	(4M)	965-0176-00	A3.00	ROM 0	960-5015-00
Maverick *					
CPU	(512K)	965-0182-00	A4.04	C5	960-7001-02
Voice 1	(4M)	965-0186-00		U17	960-5015-00
Voice 2	(4M)	965-0187-00		U21	960-5015-00
Voice 3	(4M)	965-0187-01		U36	960-5015-00
Sound	(512K)	965-0185-00		U7	960-7001-02
Display*	(4M)	965-0183-00	A4.01	ROM 0	960-5015-00
Display*	(4M)	965-0184-00	A4.01	ROM 3	960-5015-00
Mary Shelley's Frankenstein *					
CPU	(512K)	965-0188-00	A1.03	C5	960-7001-02
Voice 1	(4M)	965-0192-00		U17	960-5015-00
Voice 2	(4M)	965-0193-00		U21	960-5015-00
Voice 3	(4M)	965-0194-00		U36	960-5015-00
Sound	(512K)	965-0191-00		U7	960-7001-02
Display*	(4M)	965-0189-00	A1.03	ROM 0	960-5015-00
Display*	(4M)	965-0190-00	A1.03	ROM 3	960-5015-00
Baywatch * (CPU Board 520-5003-04)					
CPU	(512K)	965-0195-00	A4.00	C5	960-7001-02
Voice 1	(4M)	965-0196-00		U17	960-5015-00
Voice 2	(4M)	965-0197-00		U21	960-5015-00
Sound	(512K)	965-0199-00		U7	960-7001-02
Display*	(4M)	965-0200-00	A4.00	ROM 0	960-5015-00
Display*	(4M)	965-0201-00	A4.00	ROM 3	960-5015-00
Batman Forever * (CPU Board 520-5003-04)					
CPU	(512K)	965-0202-00	A3.02	C5	960-7001-02
Voice 1	(4M)	965-0203-00		U17	960-5015-00
Voice 2	(4M)	965-0204-00		U21	960-5015-00
Sound	(512K)	965-0205-00		U7	960-7001-02
Display*	(4M)	965-0206-00	A3.00	ROM 0	960-5015-00
Display*	(4M)	965-0207-00	A3.00	ROM 3	960-5015-00

APPENDIX B

Semi-Conductors / Integrated Circuits (I.C.) / Relays Cross-Reference Table

Table No	Type	Source Number	STERN® PINBALL	N T E®	E C G®	Radio Shack®	R C A®
RECTIFICATION, BLOCKING, DAMPENING DIODES AND/OR LIGHT EMITTING DIODES (LEDs)							
1	Diode	1N4001	112-5001-00	NTE552	ECG552	- - - - -	SK9000
	Diode	1N4004	112-5003-00	NTE116	ECG116	276-1103	SK3312
	Diode	1N5401	112-0056-00	NTE5801	ECG5801	276-1143	SK9004
	Diode	1N5404	112-5004-00	NTE5804	ECG5804	276-1144	SK9007
	Diode	T6A10L	112-5006-01	NTE5812	ECG5812	- - - - -	- - - - -
	Diode	FR302	112-5009-00	NTE588	ECG588	- - - - -	SK5014
	Diode, Signal	1N914	112-5014-00	- - - - -	- - - - -	- - - - -	- - - - -
	LED	MT5000UR or TLRH180P (T1-3/4 GaAlAs)	165-5052-00 (old SPI Part No: 165-5100-00)	- - - - -	- - - - -	276-066B	- - - - -
ZENER DIODES							
2	Diode	1N4742A 12v	112-0061-00	NTE142A	ECG142A	276-563	SK12V
	Diode	1N4760B 68v	112-0062-00B	NTE5092A	ECG5092A	- - - - -	SK68V
	Diode	1N4764A 100v	112-0049-00A	NTE5096A	ECG5096A	- - - - -	SK100V
	Diode	1N5228 3.9v	112-0053-00	NTE5007A	ECG5007A	- - - - -	SK3A9
	Diode	1N5234B 6.2v	112-0047-00B	NTE5013A	ECG5013A	276-561	SK6A2
	Diode	1N5379 110v	112-0072-00	NTE5157	ECG5157	- - - - -	SK110X
	Diode	1N6267A 6.8v	112-5011-00	NTE4902	ECG4902	- - - - -	- - - - -
	Diode	1N4752A 33v	112-5010-00A	NTE147A	ECG147A	- - - - -	SK33V
3	Diode	1N4736 6.8v 1w	112-5007-00	NTE5071A	ECG5071A	- - - - -	- - - - -
	TRANSISTORS - TYPE FET, NPN, PNP AND/OR SCR						
	FET Trans.	STP20N10L	110-0106-00	NTE2987	ECG2987	- - - - -	- - - - -
	FET Trans.	STP19N06L	110-0088-00	NTE2985	ECG2985	- - - - -	- - - - -
	FET Trans.	VN02N	110-0089-00	- - - - -	- - - - -	- - - - -	- - - - -
	NPN Trans.	2N4401	110-0073-00	NTE85	ECG85	276-2009	SK3124A
	NPN Trans.	2N6427	110-0070-00	NTE48	ECG48	- - - - -	SK4906
	NPN Trans.	MJE340	110-0071-00	NTE157	ECG157	- - - - -	SK3747
4	NPN Trans.	MPSA42	110-0082-00	NTE287	ECG287	- - - - -	SK3232
	NPN Trans.	2N3904	110-0069-00	NTE123AP	ECG123AP	276-2009	- - - - -
	NPN Trans.	TIP122	110-0067-00	NTE261	ECG261	276-2068	SK3896
	NPN Trans.	MJE15030	110-0101-00	NTE375	ECG375	- - - - -	SK9118
	PNP Trans.	2N5401	110-0078-00	NTE288	ECG288	- - - - -	SK3434
	PNP Trans.	MJE15031	110-0103-00	NTE292	ECG292	- - - - -	SK3441
	PNP Trans.	MJE350	110-0072-00	NTE374	ECG374	- - - - -	SK9042
	PNP Trans.	MPSA92	110-0100-00	NTE288	ECG278	- - - - -	SK3434
5	PNP Trans.	TIP42	110-0068-00	NTE332	ECG332	- - - - -	SK9236
	PNP Trans.	TIP32C	110-0081-00	NTE292	ECG292	- - - - -	SK3441
	PNP Trans.	TIP36C	110-0077-00	NTE393	ECG393	- - - - -	SK3961
	SCR Trans.	2N5060	110-0074-00	NTE5400	ECG5400	276-1067	SK3950
	SCR Trans.	SCR2800B	110-0083-00	NTE5461-8	ECG5461-8	- - - - -	- - - - -
	BRIDGE RECTIFIERS (BR)			Comments:			
	BR (Present)	DB3501 or CM3501	112-5000-00	For White Star I/O Bds., BR = 35 Amp @ 100v P.I.V.			
	RELAYS			Comments:			
6	Relay	FRL-264 D024/02CK	190-5002-00	For PPB, Power Supply, & White Star I/O Boards, Relay = 24v DC 10 Amp DPDT			
	Relay	FRL-264 D006/04CV	190-5001-00	For CPU Boards, Relay = 6v DC 5 Amp 4 Pole DT			





APPENDIX C

Production Start Date, Manual Part No., ROM Size & Positions and Jumper W6 Installed Note† (White Star Board System & S.A.M. System Only*)

SAM

Game Name White Star Bd. System™		Production Start Date and Manual Part Nr.	CPU/Sound Board CPU/Sound Board CPU/Sound Board				Jumper Installed († see Note)
			U17	U21	U36	U37	
* Note: For complete Appendix Information for Games Laser War through Batman Forever, see any Service Game Manual between Apollo 13 through Ripley's Believe It or Not! or on-line at our website www.sternpinball.com/parts.htm; also available on CD-R, 970-2003-00 (The Simpsons™ Pinball Party, T3® and The Lord of the Rings™).							
29	Apollo 13 (A13)	NOV 95 780-5044-00	4MB	4MB	4MB	Not Used	n / a
30	Golden Eye	FEB 96 780-5042-00	4MB	4MB	Not Used	Not Used	n / a
31	Twister	APR 96 780-5041-00	4MB	4MB	Not Used	Not Used	n / a
32	ID4: Independence Day	JUL 96 780-5045-00	4MB	4MB	Not Used	Not Used	n / a
33	Space Jam	OCT 96 780-5043-00	4MB	4MB	4MB	Not Used	n / a
34	The Star Wars Trilogy - Sp. Ed.	FEB 97 780-5056-00	4MB	4MB	Not Used	Not Used	n / a
35	The Lost World: Jurassic Park	JUN 97 780-5053-00	4MB	4MB	Not Used	Not Used	n / a
36	The X-Files	AUG 97 780-5046-00	4MB	4MB	Not Used	Not Used	n / a
37	Starship Troopers	NOV 97 780-5059-00	4MB	4MB	4MB	Not Used	n / a
38	Viper Night Drivin'	FEB 98 780-5035-00	4MB	4MB	4MB	4MB	n / a
39	Lost In Space	JUN 98 780-5060-00	4MB	4MB	4MB	4MB	n / a
40	Godzilla	SEP 98 780-5040-00	4MB	4MB	4MB	4MB	n / a
41	South Park	JAN 99 780-5071-00	8MB	8MB	8MB	8MB	W6
42a	Harley-Davidson®	AUG 99 780-5067-01	8MB	8MB	8MB	8MB	W6
42b	Harley-Davidson® 2nd Ed.	SEP 02 780-5067-10	8MB	8MB	8MB	8MB	W6
42c	Harley-Davidson® 3rd Ed.	OCT 04 780-5087-00	8MB	8MB	8MB	8MB	W6
43a	Striker Xtreme	MAR 00 780-5068-01	8MB	8MB	8MB	8MB	W6
43b	NFL	OCT 00 780-5073-00	8MB	8MB	8MB	8MB	W6
44	Sharkey's Shootout	JUL/OCT 00 780-5072-01	8MB	8MB	8MB	Not Used	W6
45	High Roller Casino	JAN 01 780-5065-00	8MB	8MB	8MB	8MB	W6
46	Austin Powers™	MAY 01 780-5074-00	8MB	8MB	8MB	8MB	W6
47	MONOPOLY®	SEP 01 780-5075-00	8MB	8MB	8MB	Not Used	W6
48	Playboy	FEB 02 780-5076-00	8MB	8MB	8MB	8MB	W6
49	RollerCoaster Tycoon™	AUG 02 780-5078-00	8MB	8MB	8MB	Not Used	W6
50	The Simpsons™ Pinball Party	JN 03/JL 07 780-5077-08	8MB	8MB	8MB	8MB	W6
51	T3®: Rise of the Machines™	MAY 03 780-5079-00	8MB	8MB	8MB	8MB	W6
52	The Lord of the Rings™	NOV 03 780-5080-00	8MB	8MB	8MB	8MB	
53	Ripley's Believe It or Not!®	APR 04 780-5081-00	8MB	8MB	8MB	8MB	

† Additional Information for **Installed Jumper** (above games 41-51):

• Installed **W6** so 8MB ROMs can be utilized. See the **CPU/Sound Board Schematic** (Sheet 2 of 3, Address Location 3E) in the games' Service Game Manual. Games 52 - 57 CPU/Sound Board differ than <51 (See Appendix D).

See **Apdx. A** for more detailed information on **Pinball Game Firmware** (ROM Name, Size, Part Numbers, USA Version & Checksum and Board Locations).

Game Name White Star Board System™		Production Start Date and Manual Part Nr.	CPU/Sound Board Sound U7 512K CPU/Sound Board Game U210 1MB CPU/Sound Board Voice ROMS:			
			U17	U21	U36	U37
54	Elvis®	AUG 04 780-5084-00	8MB	8MB	8MB	8MB
55	The Sopranos SM	FEB 05 780-5085-00	8MB	8MB	8MB	8MB
56	NASCAR®	JUL 05 780-5086-00	8MB	8MB	8MB	8MB
56	Dale Jr. NASCAR® SE Special Edition	AUG 07 780-5097-00	8MB	8MB	8MB	8MB
57	Grand Prix	SEP 05 780-5091-00	8MB	8MB	8MB	8MB

See **Apdx. A** for more detailed information on **Pinball Game Firmware** (ROM Name, Size, Part Numbers, USA Version & Checksum and Board Locations).

Game Name S.A.M. System	Production Start Date and Manual Part Nr.	S.A.M. System CPU/Sound Board Boot EPROM U9			
		965-BOOT-SAM (Programmed)			
58	World Poker Tour™ (WPT)	JUN 06 780-5088-00	8MB	B-02 V2.1+ chksum \$F625	LOC: U9
59	The Simpsons™ Kooky Carnival	APR 06 780-5090-00	8MB	B-02 V2.1+ chksum \$F625	LOC: U9
60	©Disney's Pirates of the Caribbean	AUG 06 780-5092-00	8MB	B-02 V2.1+ chksum \$F625	LOC: U9
61	Famil Guy™	DEC 06 780-5093-00	8MB	B-02 V2.1+ chksum \$F625	LOC: U9
62	Spider-Man™	MAY 07 780-5094-00	8MB	B-02 V2.1+ chksum \$F625	LOC: U9
62 SE	Black Spider-Man™	NOV 07 780-50A6-00	8MB	B-02 V2.1+ chksum \$F625	LOC: U9
63	Wheel of Fortune™	NOV 07 780-5098-00	8MB	B-02 V2.3+ chksum \$B83B	LOC: U9
64	SHREK™	JAN 08 780-50A5-00	8MB	B-02 V2.3+ chksum \$B83B	LOC: U9
65	Indiana Jones™	APR 08 780-50A4-00	8MB	PE-2 V3.1+ chksum \$4CF6	LOC: U9
66	BATMAN™	AUG 08 780-50A3-00	8MB	PE-2 V3.1+ chksum \$4CF6	LOC: U9

Games 58 – current, S.A.M. System : CPU/Sound & I/O Power Driver PCBs differ than White Star (previous Games 29 – 57); Disp. Controller Not Required.



APPENDIX D

Board Type (White Star Board System* Only) Table



Game Name	Flipper	I/O Power Driver	CPU/Sound Stereo	Disp. Power Supply	Dot Matrix Display	Display Controller	OPTO Transmitter	OPTO Receiver	OPTO Application
Apollo 13	520-5080-00 2-Flipper	520-5137-00	520-5136-00	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-01	520-5124-00 Single OPTO	520-5125-00 Single OPTO	5-Ball Trough over Up-Kicker
	Miscellaneous PC Boards:	Light Boards 520-5130-01, -04 & -05 Magnet Interface, 7-Segment Display & Light Bd. 520-5130-06 Magnet Driver Board 520-5130-02 Switch Membrane Board 520-5130-03				Relay Board 520-5010-00			
Golden Eye	520-5080-00 2-Flipper	520-5137-00	520-5136-00	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-01	520-5124-00 Single OPTO	520-5125-00 Single OPTO	5-Ball Trough over Up-Kicker
	Miscellaneous PC Boards:	Light Boards 520-5128-05 through -08 Mag. Processor X2 Driver Bd. 520-5143-00				Relay Board 520-5010-00			
GAMES HEREON NO LONGER REQUIRE THE FLIPPER BOARD WITH THE WHITE STAR BOARD SYSTEM™									
Game Name	I/O Power Driver	CPU/Sound Mono	Disp. Power Supply	Dot Matrix Display	Display Controller	OPTO Transmitter	OPTO Receiver	OPTO Application	Misc OPTO & App.
Twister	520-5137-01	520-5136-10	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-01	520-5124-00 Single OPTO	520-5125-00 Single OPTO	5-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	Light Boards 520-5145-01 through -07			Mag. Drv. Bd. 520-5143-00	Relay Board 520-5010-00			
Independence Day (ID4)	520-5137-01	520-5136-10	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-01	520-5124-00 Single OPTO	520-5125-00 Single OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	Light Boards 520-5149-01 through -10			Servo Mtr. Bd. 520-5152-00		520-5082-00 Long Hop OPTO	520-5083-00 Long Hop OPTO	Alien Head Enter
Space Jam	520-5137-01	520-5136-10	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-01	520-5124-00 Single OPTO	520-5125-00 Single OPTO	5-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	2X 7-Segment Display Board 520-5153-00							
The Star Wars Trilogy - Special Ed.	520-5137-01	520-5136-10	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-01	520-5124-00 Single OPTO	520-5125-00 Single OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	Relay Board 520-5010-00							
The Lost World: J.P.	520-5137-01	520-5136-10	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-01	520-5124-00 Single OPTO	520-5125-00 Single OPTO	4-Ball Trough over Up-Kicker	520-5162-00 2-Pos. Motor Sensor on Snagger Motor
	Miscellaneous PC Boards:	DC Relay Bd. 520-5066-00	Shaker Mtr. Bd. 520-5065-00						
The X-Files	520-5137-01	520-5136-10	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-01	520-5124-00 Single OPTO	520-5125-00 Single OPTO	4-Ball Trough over Up-Kicker	520-5155-00 3-Pos. Motor Sensor on File Cab. Motor
	Miscellaneous PC Boards:						520-5082-00 Long Hop OPTO	520-5083-00 Long Hop OPTO	File Cabinet Enter
Starship Troopers	520-5137-01	520-5136-15	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-02	520-5124-00 Single OPTO	520-5125-00 Single OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	4X 7-Segment Display Board 520-5166-00				520-5082-00 Long Hop OPTO	520-5083-01 Long Hop OPTO	L/R Orbit Lane Enter	
Viper Night Drivin'	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	520-5124-00 Single OPTO	520-5125-00 Single OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	Relay Board 520-5010-00					520-5082-00 Long Hop OPTO	520-5083-01 Long Hop OPTO	Jump Ramp
Lost In Space	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	Relay Board 520-5010-00							
Godzilla	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	Shaker Mtr. Bd. 520-5065-00							
South Park	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	5-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:						520-5082-00 Long Hop OPTO	520-5083-01 Long Hop OPTO	Kenny Under Trough Enter
Harley-Davidson® 1st-3rd* Editions	520-5137-01	520-5136-16 *520-5300-00*	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	Relay Board 520-5010-00	Shaker Mtr. Bd. 520-5065-00	Diode Board 520-5146-00		520-5082-00 Long Hop OPTO	520-5083-01 Long Hop OPTO	Motorcycle Enter	
Striker Xtreme (NFL)	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	520-5155-00 3-Pos. Motor Sensor on Goalie Motor
	Miscellaneous PC Boards:	DC Relay Bd. 520-5066-00	Relay Board 520-5010-00	Diode Board 520-5146-00	for UK ONLY> Solenoid Expander Bd. 520-5192-00	520-5082-00 Long Hop OPTO	520-5083-01 Long Hop OPTO	Goalie Under-Trough Enter	
Sharkey's Shootout	520-5137-64	520-5136-64	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	520-5194-00 4-Pos. Motor Sensor on ?-Ball Motor
	Miscellaneous PC Boards:	Relay Board 520-5010-00	Sol. Exp. Bd. 520-5192-00						
High Roller Casino	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	520-5194-00 4-Pos. Motor Sensor on Roulette Wheel Motor
	Miscellaneous PC Boards:	Dot Display (5X7) in Slot Mach. 520-5197-00			for UK ONLY> Solenoid Expander Bd. 520-5192-00	520-5082-00 Long Hop OPTO	520-5083-01 Long Hop OPTO	Ball Lock under Roulette	
Austin Powers™	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	520-5212-00 Pulse-Stretcher OPTO on Spini-Me
	Miscellaneous PC Boards:	Relay Bd. (X3) 520-5010-00				for UK ONLY> Solenoid Expander Bd. 520-5192-00	520-5082-00 Long Hop OPTO	520-5083-01 Long Hop OPTO	Time Machine Ramp
MONOPOLY®	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	DC Relay Bd. 520-5066-00	Mini-Dot Display (3 by 5X7) 520-5197-00 (Electric C- Sign)		for UK ONLY> Solenoid Expander Bd. 520-5192-00	520-5218-00 4-Pos. OPTO	520-5210-00 4-Pos. OPTO	Bank Door	

Table continued on the next page.





APPENDIX D

Board Type (White Star Board System* & S.A.M. System** Only) Table

SAM

Game Name	I/O Power Driver	CPU/Sound (old & new)	Disp. Power Supply	Dot Matrix Display	Display Controller	OPTO Transmitter	OPTO Receiver	OPTO Application	Misc OPTO & App.
Playboy	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	DC Relay Bd. 520-5066-00	Relay Bd. 520-5010-00		for UK ONLY> Solenoid Expander Bd. 520-5192-00				
RollerCoaster Tycoon™	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	520-5222-00 1-Position Switch Detect on Wheel Spin
	Miscellaneous PC Boards:	DC Relay Bd. 520-5066-00	Mini-Dot Display (3 by 5X7) 520-5221-00 (Ramp Enter Sign)		for UK ONLY> Solenoid Expander Bd. 520-5192-00	520-5082-00 Long Hop OPTO	520-5083-01 Long Hop OPTO	Behind 1-Bank Drop Target	
The Simpsons™ Pinball Party	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:	LED Bd. 520-5219-00	Color Dot Display (4 by 5X7) 520-5225-00 (TV Set)		for UK ONLY <<<< Aux. Driver Bd. 520-5068-01				
Terminator® 3: Rise of the Machines™	520-5137-01	520-5136-16	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:				for UK ONLY <<<< Aux. Driver Bd. 520-5068-01	515-7307-00 Single OPTO	515-7308-00 Single OPTO	TX Cannon Trough	
The Lord of the Rings™	520-5137-01	New 520-5300-00	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	500-6746-00 (White Trans.) 500-6747-00 (Black Rec.)
	Miscellaneous PC Boards:	19-LED PCB 520-5242-00	OPTO Transmitter / Receiver Amplifier PCB 520-5239-00		for UK ONLY <<<< Aux. Driver Bd. 520-5068-01	515-7307-00 Single OPTO	515-7308-00 Single OPTO	Orthanc Tower Trough	
Ripley's Believe It or Not!®	520-5137-01	520-5300-00	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	500-6775-00 OPTO Trnscvr
	Miscellaneous PC Boards:	520-5236-00 X3 Dot Display	OPTO Transmitter / Receiver Amplifier PCB 520-5239-01		for UK ONLY <<<< Aux. Driver Bd. 520-5068-01	520-5234-00 3-Pos. OPTO	520-5234-00 3-Pos. OPTO	Vari-Target	520-5235-03 X3 Aux. Drvr
Elvis®	520-5137-01	520-5300-00	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:				for UK ONLY <<<< Aux. Driver Bd. 520-5068-01				
The Sopranos™	520-5137-01	520-5300-00	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	
	Miscellaneous PC Boards:				for UK ONLY <<<< Aux. Driver Bd. 520-5068-01				
NASCAR® and [NDSE]	520-5137-01	520-5300-00	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	500-6775-00 OPTO Trans. (Qty. 16) Switch Detect.
	Miscellaneous PC Boards:	520-5235-03 X3 Aux. Drvr	OPTO Transmitter / Receiver Amplifier PCB 520-5239-01		for UK ONLY <<<< Aux. Driver Bd. 520-5068-01				
Grand Prix	520-5137-01	520-5300-00	520-5138-00	520-5052-00 128 X 32 Dots	520-5055-03	515-0173-00 Dual OPTO	515-0174-00 Dual OPTO	4-Ball Trough over Up-Kicker	500-6775-00 OPTO Trans. (Qty. 16) Switch Detect.
	Miscellaneous PC Boards:	520-5235-03 X3 Aux. Drvr	OPTO Transmitter / Receiver Amplifier PCB 520-5239-01		for UK ONLY <<<< Aux. Driver Bd. 520-5068-01				

Game Name	I/O Power Driver**	CPU / Sound**	Disp. Power Supply	Dot Matrix Display	Dual OPTO Transmitter	Dual OPTO Receiver	Dual OPTO Transceiver	OPTO Transceiver Miscellaneous
World Poker Tour™ (WPT)	520-5249-00 Backbox	520-5246-00 Backbox	520-5138-00 Backbox	520-5052-00 128 X 32 Dots	515-0173-00 4-Ball Trough	515-0174-00 4-Ball Trough	500-6775-00 4 Switch Pairs (Qty. 8)	520-5251-00 'U' 1/per PCB Jail Bars Up Ace/Hole Mech 520-5252-04 'U' 4/per PCB Drop Targets 4- & 8- Banks
	Miscellaneous PCBs :	520-5254-00 50V Step-Up Drv	520-5250-14 14LED 5X7 Disp.	520-5239-01 OPTO Amplifier	520-5247-00 Ace/Hole Mech	520-5248-00 Ace/Hole Mech		
The Simpsons™ Kooky Carnival	520-5249-00 Back Door	520-5246-00 Back Door	520-5138-00 Cabinet Rear	520-5052-00 128 X 32 Dots			520-5253-00-ASY Coin Drop (Qty. 11)	
	Miscellaneous PCBs :	515-5742-00 Shaker PCB	500-6700-00 Relay (incl. Wiring + Conn.)					
©Disney's Pirates of the Caribbean	520-5249-00 Backbox	520-5246-00 Backbox	520-5138-00 Backbox	520-5052-00 128 X 32 Dots	515-0173-00 4-Ball Trough	515-0174-00 4-Ball Trough	500-6775-00 5 Switch Pairs (Qty. 10)	
	Miscellaneous PCBs :	520-5239-01 OPTO Amp. (X3)	511-5024-03 Relay (incl. Wiring + Conn.)					
Family Guy™ & SHREK™	520-5249-00 Backbox	520-5246-00 Backbox	520-5138-00 Backbox	520-5052-00 128 X 32 Dots	515-0173-00 4-Ball Trough	515-0174-00 4-Ball Trough	500-6775-00 3 Switch Pairs (Qty. 6)	520-5252-01 'U' 1/per PCB Drop Target 1-Bank
	Miscellaneous PCBs :	520-5239-01 OPTO Amp. (X2)	520-5261-00 Stepper Motor	511-5042-01 Trgt. Sensor (X2)			500-6775-01 1 Switch Pair (Qty. 2)	520-5252-04 'U' 4/per PCB Drop Target 4-Bank
Spider-Man™ & Black Spider-Man	520-5249-00 Backbox	520-5246-00 Backbox	520-5138-00 Backbox	520-5052-00 128 X 32 Dots	515-0173-00 4-Ball Trough	515-0174-00 4-Ball Trough	500-6775-00 3 Switch Pairs (Qty. 6)	
	Miscellaneous PCBs :	520-5239-01 OPTO Amp. (X2)						
Wheel of Fortune™	520-5249-00 Backbox	520-5246-00 Backbox	520-5138-00 Backbox	520-5052-00 128 X 32 Dots	515-0173-00 4-Ball Trough	515-0174-00 4-Ball Trough	500-6775-01 2 Switch Pairs (Qty. 4)	520-5255-00 In-Line OPTO PCB Drop Target Module (1/per) 520-5283-00 Wheel of Fortune LED & OPTO Transceiver PCB
	Miscellaneous PCBs :	520-5239-01 OPTO T/R Amp.	520-5274-00 Mini-Dot Display 5X7 X5 PCB					
Indiana Jones™	520-5249-00 Backbox	520-5246-00 Backbox	520-5138-00 Backbox	520-5052-00 128 X 32 Dots	515-0173-00 5-Ball Trough	515-0174-00 5-Ball Trough	500-6775-01 2 Switch Pairs (Qty. 4)	520-5251-01 'U' Interruptor PCB Swordsman Assembly
	Miscellaneous PCBs :	520-5287-00 Lamp X20	520-5289-00 LED (X2 Flash) (Qty. 4)					
BATMAN™	520-5249-00 Backbox	520-5246-00 Backbox	520-5138-00 Backbox	520-5052-00 128 X 32 Dots	515-0173-00 4-Ball Trough	515-0174-00 4-Ball Trough		520-5291-00 'U' Interruptor PCB Driver Disc (Joker Motor) Asm. 520-5292-00 'U' Interruptor PCB Idle Disc (Joker Motor) Asm.
	Miscellaneous PCBs :		520-5290-00 Crane OPTO & LED Lamp					

APPENDIX D

Board Type Table

Game Name	Flipper	Sound	Power Supply	Display X-Digit
• Laser War	2-Flipper Board Not Required	<i>initial:</i> 520-5002-00 <i>replaced with:</i> 520-5002-02 <i>520-5002-01 was not used.</i>	520-5000-00	Master: 520-5004-00 plus: 520-5005-00 (Qty. 2): 7 Digit Alpha/Numeric 520-5006-00 (Qty. 2): 7 Digit Numeric 520-5007-00 (Qty. 1): 4 Digit Numeric
• Secret Service • Torpedo Alley	3-Flipper Board Not Required	520-5002-02		520-5014-01 7 Digit Alpha/Numeric Combined
• Time Machine	2-Flipper Board Not Required			
• Playboy 35th Anniversary *	520-5033-00 2-Flipper <i>(*only for 100 games of Playboy 35th Anniv. & ABC Mon. Night Football)</i>			
• ABC Monday Night Football *				
• Robocop				
• Phantom of the Opera				
• Back to the Future				
• The Simpsons		520-5002-03	520-5030-00 16 Digit Alpha/Numeric Combined	

Game Name	Flipper	Sound	Power Supply	Dot Matrix Display	Display Controller	OPTO Transmitter	OPTO Receiver	OPTO Application			
• Checkpoint • Teenage Mutant Ninja Turtles	520-5033-00 2-Flipper	520-5002-03	520-5047-00	520-5042-00 128 X 16							
• Batman • Star Trek 25th Anniv. • Hook		520-5050-01									
• Lethal Weapon 3 • Star Wars • Rocky & Bullwinkle & Friends		520-5050-02	520-5047-01	520-5055-00							
• Jurassic Park			520-5047-02		520-5052-00 128 X 32						
• Last Action Hero	520-5050-03	520-5055-01									
• Tales from the Crypt • The Who's Tommy									520-5077-00		
• WWF Royal Rumble	520-5050-03										
• Guns N' Roses			520-5047-03		520-5075-00 192 X 64				520-5092-01	520-5102-00 Single OPTO	520-5103-00 Single OPTO
• Maverick	520-5077-00										
• Mary Shelley's Frankenstein	520-5126-02										
• Baywatch											
• Batman Forever											

Miscellaneous Boards (Lamp Boards & Relay Boards) not listed above can be found in each individual game manual.



APPENDIX E

Flipper Coil (White Star Board System* & S.A.M. System** Only) Table

SAM

Typical Coil Diode 1N4004 unless noted otherwise (Diode Top = above lugs next to windings; Diode Below (Bottom) = under lugs opposite of windings).

STANDARD COILS (TYPICAL APPLICATIONS)			LARGE COILS (FLIPPERS & SPECIAL APPLICATIONS)		
Ga.-Turn	Res (Ω)	SPI Part Number and Comments	Ga.-Turn	Res (Ω)	SPI Part Number and Comments
20-400	1.0 Ω	090-5021- <i>use</i> : -00 Diode Top	21-900	<i>call</i> Ω	090-5020- <i>use</i> : -01 3-Lugs + 1N4004 & 1N5404 Diodes -10 Diode Top <BROWN><RED>
22-500	1.7 Ω	090-5017- <i>use</i> : -00 Diode Top			
22-600	2.2 Ω	090-5017- <i>use</i> : -0B Diode Below // -0T Diode Top	22-750 / 30-2600	2.6 Ω 92.0 Ω	090-5011- <i>use</i> : -00 DUAL WND COIL // 3-Lugs Diode x2
23-700	3.1 Ω	090-5022- <i>use</i> : -0B Diode Below // -0T Diode Top			
23-750	3.4 Ω	090-5019- <i>use</i> : -00 Diode Top	22-900	3.45 Ω	090-5020- <i>use</i> : -20T Diode Top <YELLOW> // -20-ND No Diode
23-800	3.6 Ω	090-5001- <i>use</i> : -0B Diode Below // -0T Diode Top // -NL No Lugs 11" Leads // -ND No Diode	22-1080	4.2 Ω	090-5032- <i>use</i> : -0B D. Below // -0T D. Top <YEL-GRN> -NL No Diode
23-840	4.0 Ω	090-5005- <i>use</i> : -00 Diode Top			
23.5-765	3.6 Ω	090-5037- <i>use</i> : -03 Diode Top	23-620 / 30-2600	2.4 Ω 75.0 Ω	090-5006- <i>use</i> : -00 DUAL WND COIL // 3-Lugs Diode x2
24-900	5.0 Ω	090-5002- <i>use</i> : -02 Diode Top // -10 No Lugs 14" Leads			
24-940	5.5 Ω	090-5036- <i>use</i> : -0B Diode Below // -0T Diode Top <i>use</i> 090-5051-01 No Lugs 11" Leads	23-700 / 30-2600	3.0 Ω 83.5 Ω	090-5013- <i>use</i> : -00 DUAL WOUND COIL // Diode Top
25-1240	9.3 Ω	090-5034- <i>use</i> : -00 Diode Below	23-800 / 30-2600	2.4 Ω 90.5 Ω	090-5012- <i>use</i> : -00 DUAL WOUND COIL // Diode Top
26-1200	10.3 Ω	090-5044- <i>use</i> : -0B Diode Below // -0T Diode Top // -NL No Lugs 11" Leads // -ND No Diode	23-900	4.05 Ω	090-5020- <i>use</i> : -30 Diode Top <GREEN>
27-1300	14.2 Ω	090-5003- <i>use</i> : -0T Diode Top	23-1100	5.1 Ω	090-5030- <i>use</i> : -0T Diode Top <ORANGE> -ND No Diode
27-1400		090-5015- <i>use</i> : -00 Diode Below			
27-1400	14.7 Ω	511-5031-00 <i>Special App.: No Diode / Lugs + Conn.</i>	23-1200	7.1 Ω	090-5008- <i>use</i> : -00 Diode Top <BLACK>
27-1500	16.3 Ω	090-5004- <i>use</i> : -0B Diode Below // -0T Diode Top	23-1500	4.4 Ω	090-5062- <i>use</i> : -00 Diode Top <BLUE>
29-2000	33.6 Ω	090-5016- <i>use</i> : -00 Diode Top	24-1570	9.5 Ω	090-5025- <i>use</i> : -00 Diode Top <BLUE>
LARGE, MEDIUM & MINI COILS (MAGNET APPLICATIONS)			25-1400	<i>call</i> Ω	090-5067- <i>use</i> : -0T Diode Top <RED>
20.5-480	2.9 Ω	090-5064- <i>use</i> : -02 No Lugs or Core; 14" Leads // Large	25-1600	<i>call</i> Ω	090-5068- <i>use</i> : -0T Diode Top <WHITE>
22-650	4.3 Ω	090-5042- <i>use</i> : -00 No Lugs or Core; 6" Leads // Large -01 No Lugs or Core; 12" Leads // Large	25-1800	13.8 Ω	090-5041- <i>use</i> : -0T Diode Top <BLUE-GREEN>
			MINI COILS (RESET / TRIP APPLICATIONS)		
24-780	8.0 Ω	090-5061- <i>use</i> : -00 No Lugs or Core; 6" Lds. // Medium	27-950	<i>call</i> Ω	090-5046- <i>use</i> : -01 Diode Top
29-1000	15.2 Ω	090-5059- <i>use</i> : -00 Lugs + Diode + Magnet Core // Mini	28-1050	11.5 Ω	090-5046- <i>use</i> : -00 Diode Top
31-1500	52.0 Ω	090-5054-00 : Straight Lugs + Diode + Mag Core // Mini 090-5055-00 : 90° Lugs + Diode + Magnet Core // Mini	27-880	<i>call</i> Ω	500-6976-01 No Lugs or Diode + 6" Leads & Conn.
			31-590	<i>call</i> Ω	090-5010- <i>use</i> : -00 Diode Top
<i>Please Note: Ohm values may vary +/- .03 depending on meter calibration.</i>			32-1250	35.0 Ω	515-6916-01 : includes Flap & Screw <YELLOW>
<i>Ordering Note: Coils typically should not come with Coil Sleeves. IF A SLEEVE EXISTS, ensure it is the correct sleeve for the application usage. For the correct Coil Sleeve, refer to the Game Assembly Drawing the coil exists on and order separately.</i>			32-1800	50.2 Ω	090-5031- <i>use</i> : -0B Diode Below // -0T Diode Top (515-6110-00) <i>use</i> 515-# to include mounting & armature brackets
			33-1590	59.0 Ω	515-6916-00 : includes brackets <WHITE>

Flipper Coil (White Star Board System* Only) Table

GAME NAME	Nº of Flippers	FLIPPERS		FLIPPERS no E.O.S. Switch	
		SPI Nº / GAUGE-TURNS / Color		SPI Nº / GAUGE-TURNS / Color	
		LOWER LEFT	LOWER RIGHT	UPPER LEFT	UPPER RIGHT
<i>* Note: For complete Appendix Information for Games Laser War through Batman Forever, see any Service Game Manual between Apollo 13 through Ripley's Believe It or Not!; or order CD-R, 970-2003-00 (The Simpsons™ Pinball Party, Terminator® 3 and The Lord of the Rings™).</i>					
Apollo 13	2	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
Golden Eye	2	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
Twister	2	090-5020-20T 22-900 -YELLOW-	090-5032-0T 22-1080 -YEL-GRN-	Not Used	Not Used
ID4: Independence Day	3	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	090-5020-30 23-900 -GREEN-
Space Jam †	2	090-5032-0T 22-1080 -YEL-GRN-	090-5020-20T 22-900 -YELLOW-	Not Used	Not Used
The Star Wars Trilogy - Special Edition †	2	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
The Lost World: Jurassic Park †	2	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
The X-Files †	2	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
Starship Troopers †	3	090-5030-0T 23-1100 -ORANGE-	SAME	Not Used	090-5032-0T 22-1080 -YEL-GRN-
Viper Night Drivin' †	2	090-5030-0T 23-1100 -ORANGE-	SAME	Not Used	Not Used
Lost In Space †	2	090-5030-0T 23-1100 -ORANGE-	090-5032-0T 22-1080 -YEL-GRN-	Not Used	Not Used
Godzilla †	2	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
South Park †	2	090-5030-0T 23-1100 -ORANGE-	SAME	Not Used	Not Used

† Coil Part Numbers ending with a "T" signifies the Diode is on the top of the lug (on the coil-winding side); Coil Part Numbers ending with a "B" signifies the Diode is on the bottom of the lugs.

Table continued on the next page.



APPENDIX E

Flipper Coil (White Star Board System* & S.A.M. System** Only) Table

SAM

GAME NAME	Nº of Flippers	FLIPPERS w/E.O.S. Switch		FLIPPERS no E.O.S. Switch	
		SPI Nº / GAUGE-TURNS / Color		SPI Nº / GAUGE-TURNS / Color	
		LOWER LEFT	LOWER RIGHT	UPPER LEFT	UPPER RIGHT
Harley-Davidson® † and 1st through 3rd Editions	2	090-5032-0T 22-1080 -YEL-GRN-	090-5030-0T 23-1100 -ORANGE-	Not Used	Not Used
Striker Xtreme (NFL) †	3	090-5032-0T 22-1080 -YEL-GRN-	090-5030-0T 23-1100 -ORANGE-	090-5030-0T 23-1100 -ORANGE-	Not Used
Sharkey's Shootout †	3	090-5030-0T 23-1100 -ORANGE-	SAME	090-5030-0T 23-1100 -ORANGE-	Not Used
High Roller Casino †	2	090-5020-20T 22-900 -YELLOW-	090-5032-0T 22-1080 -YEL-GRN-	Not Used	Not Used
Austin Powers™ †	2	090-5020-30 23-900 -GREEN-	090-5030-0T 23-1100 -ORANGE-	Not Used	Not Used
MONOPOLY® †	3	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	090-5062-0T 23-1500 -BLUE-
Playboy †	2	090-5030-0T 23-1100 -ORANGE-	SAME	Not Used	Not Used
RollerCoaster Tycoon™ †	4	090-5032-0T 22-1080 -YEL-GRN-	SAME	090-5067-0T 25-1400 -RED-	090-5068-0T 25-1600 -WHITE-
The Simpsons™ Pinball Party †	6** (5 with Flipper Bats)	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	090-5030-0T 23-1100 -ORANGE-
		** The Homer Head Assembly is affixed to an Upr. Rt. Style Flipper (no E.O.S. Switch):		Flippers (Mini-Bats) on 2nd Level Playfield:	
			** 090-5020-20T 22-900 -YELLOW-	090-5041-00T 25-1800 -BLU-GRN-	090-5025-00 24-1570 -BLUE-
Terminator® 3: Rise of the Machines™ †	2	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
The Lord of the Rings™ †	2	090-5020-20T 22-900 -YELLOW-	SAME	Not Used	Not Used
Ripley's Believe It or Not!® †	3	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	090-5067-00T 25-1400 -RED-
Elvis® †	4	090-5020-20T 22-900 -YELLOW-	SAME	090-5020-30 23-900 -GREEN-	SAME
The Sopranos™ †	2	090-5032-0T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
NASCAR® and [NDSE] †	2	090-5030-0T 23-1100 -ORANGE-	SAME	Not Used	Not Used
Grand Prix †	2	090-5030-0T 23-1100 -ORANGE-	SAME	Not Used	Not Used
† Coil Part Numbers ending with a "T" signifies the Diode is on the top of the lug (on the coil-winding side); Coil Part Numbers ending with a "B" signifies the Diode is on the bottom of the lugs.					
** S.A.M. System Games DO NOT REQUIRE DIODES. If you use a coil from your stock which has a diode, remove it ONLY FOR S.A.M. System Games.					
World Poker Tour™ (WPT)**	4	090-5032-ND 22-1080 [NO DIODE]	SAME	090-5030-ND 23-1100 [NO DIODE]	SAME
©Disney's Pirates of the Caribbean**	2	090-5030-ND 23-1100 [NO DIODE]	SAME	Not Used	Not Used
Family Guy™ ** and Shrek™ **	3 Norm.	090-5030-ND 23-1100 [NO DIODE]	SAME	090-5062-ND 23-1500 [NO DIODE]	Not Used
	2 Mini	090-5046-01-ND 27-950 [NO DIODE]	SAME		
Spider-Man™ ** and Black Spider-Man™ **	3	090-5032-ND 22-1080 [NO DIODE]	SAME	Not Used	090-5032-ND 22-1080 [NO DIODE]
Wheel of Fortune™ **	2	090-5032-ND 22-1080 [NO DIODE]	SAME	Not Used	Not Used
Indiana Jones™ **	2	090-5032-ND 22-1080 [NO DIODE]	SAME	Not Used	Not Used
BATMAN™ **	2	090-5032-ND 22-1080 [NO DIODE]	SAME	Not Used	Not Used

APPENDIX E

Generic Coil Cross-Reference Guide † ‡

Flipper Coil Table ‡ ††

GAME NAME	Nº of Flippers	FLIPPERS w/E.O.S. Switch		FLIPPERS no E.O.S. Switch	
		SPI Nº / GAUGE-TURNS / Color		SPI Nº / GAUGE-TURNS / Color	
		LOWER LEFT	LOWER RIGHT	UPPER LEFT	UPPER RIGHT
Laser War ‡	2	090-5011-00 22-750 / 30-2600	SAME	Not Used	Not Used
Secret Service ‡	3	090-5006-00 23-620 / 30-2600	SAME	Not Used	090-5006-00 23-620 / 30-2600
Torpedo Alley ‡	3	090-5011-00 22-750 / 30-2600	090-5013-00 23-700 / 30-2600	Not Used	090-5012-00 23-800 / 30-2600
Time Machine ‡	2	090-5011-00 22-750 / 30-2600	SAME	Not Used	Not Used
‡ These coils are dual-wound.					
Playboy 35th Anniversary ††	2	090-5020-02 22-900 -YEL-YEL-	SAME	Not Used	Not Used
ABC Monday Night Football ††	2	090-5020-02 22-900 -YEL-YEL-	SAME	Not Used	Not Used
†† A very small % of these games used a 090-5020-20 coil which used a proto-type Solid State Flipper System. The two types of coils both are 22-900 coils; the only difference is the addition of the 1N5404 Diode on the (-02) coils which was used in the Deger Design.					
Robocop	2	090-5020-20 22-900 -YEL-YEL-	SAME	Not Used	Not Used
Phantom of the Opera	2	090-5020-20 22-900 -YEL-YEL-	SAME	Not Used	Not Used
Back to the Future	2	090-5020-20 22-900 -YEL-YEL-	SAME	Not Used	Not Used
The Simpsons	2	090-5020-20 22-900 -YEL-YEL-	SAME	Not Used	Not Used
Checkpoint	2	090-5020-20 22-900 -YEL-YEL-	SAME	Not Used	Not Used
Teenage Mutant Ninja Turtles	2	090-5020-30 23-900 -GRN-GRN-	SAME	Not Used	Not Used
Batman	2	090-5020-30 23-900 -GRN-GRN-	SAME	Not Used	Not Used
Star Trek 25th Anniversary	2	090-5020-30 23-900 -GRN-GRN-	SAME	Not Used	Not Used
Hook	2	090-5030-00 23-1100 -ORG-ORG-	090-5020-30 23-900 -GRN-GRN-	Not Used	Not Used
Lethal Weapon 3	2	090-5030-00 23-1100 -ORG-ORG-	SAME	Not Used	Not Used
Star Wars	2	090-5032-00 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
Rocky & Bullwinkle & Friends	2	090-5020-30 23-900 -GRN-GRN-	SAME	Not Used	Not Used
Jurassic Park	3	090-5020-30 23-900 -GRN-GRN-	SAME	Not Used	090-5030-00 23-1100 -ORG-ORG-

Table continued on the next page.



APPENDIX E

Flipper Coil Table †

GAME NAME	Nº of Flippers	FLIPPERS w/ E.O.S. Switch		FLIPPERS no E.O.S. Switch	
		SPI Nº / GAUGE-TURNS / Color		SPI Nº / GAUGE-TURNS / Color	
		LOWER LEFT	LOWER RIGHT	UPPER LEFT	UPPER RIGHT
Last Action Hero	2	090-5020-30 23-900 -GRN-GRN-	SAME	Not Used	Not Used
Tales from the Crypt	3	090-5032-00 22-1080 -YEL-GRN-	SAME	Not Used	090-5041-00 25-1800 -BLU-GRN-
The Who's Tommy	3	090-5020-30 23-900 -GRN-GRN-	SAME	090-5041-00 25-1800 -BLU-GRN-	Not Used
WWF Royal Rumble	4	090-5032-00 22-1080 -YEL-GRN-	SAME	090-5041-00 25-1800 -BLU-GRN-	SAME
Guns N' Roses	3	090-5032-00 22-1080 -YEL-GRN-	SAME	090-5030-00 23-1100 -ORG-ORG-	Not Used
Maverick	3	090-5032-00 22-1080 -YEL-GRN-	SAME	Not Used	090-5032-00 22-1080 -YEL-GRN-
Mary Shelley's Frankenstein	3	090-5030-00 23-1100 -ORG-ORG-	SAME	Not Used	090-5030-00 23-1100 -ORG-ORG-
Baywatch	4	090-5030-00 23-1100 -ORG-ORG-	090-5020-30 23-900 -GRN-GRN-	090-5025-00 24-1570 -See Note-	090-5030-00 23-1100 -ORG-ORG-
Batman Forever	3	090-5032-00 22-1080 -YEL-GRN-	090-5020-20 22-900 -YEL-YEL-	Not Used	090-5020-30 23-900 -GRN-GRN-
Apollo 13	2	090-5032-00 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
Golden Eye	2	090-5032-00 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
Twister	2	090-5020-20 22-900 -YEL-YEL-	090-5032-00 22-1080 -YEL-GRN-	Not Used	Not Used
ID4: Independence Day	3	090-5032-00 22-1080 -YEL-GRN-	SAME	Not Used	090-5020-30 23-900 -GRN-GRN-
Space Jam †	2	090-5032-00T 22-1080 -YEL-GRN-	090-5020-20T 22-900 -YEL-YEL-	Not Used	Not Used
The Star Wars Trilogy - Special Edition †	2	090-5032-00T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
The Lost World: Jurassic Park †	2	090-5032-00T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
The X-Files †	2	090-5032-00T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
Starship Troopers †	3	090-5030-00T 23-1100 -ORG-ORG-	SAME	Not Used	090-5032-00T 22-1080 -YEL-GRN-
Viper Night Drivin' †	2	090-5030-00T 23-1100 -ORG-ORG-	SAME	Not Used	Not Used
Lost In Space †	2	090-5030-00T 23-1100 -ORG-ORG-	090-5032-00T 22-1080 -YEL-GRN-	Not Used	Not Used
Godzilla †	2	090-5032-00T 22-1080 -YEL-GRN-	SAME	Not Used	Not Used
South Park †	2	090-5030-00T 23-1100 -ORG-ORG-	SAME	Not Used	Not Used
Harley-Davidson® † and Harley-Davidson® 2nd Ed. †	2	090-5032-00T 22-1080 -YEL-GRN-	090-5030-00T 23-1100 -ORG-ORG-	Not Used	Not Used
Striker Xtreme (NFL) †	3	090-5032-00T 22-1080 -YEL-GRN-	090-5030-00T 23-1100 -ORG-ORG-	090-5030-00T 23-1100 -ORG-ORG-	Not Used
Sharkey's Shootout †	3	090-5030-00T 23-1100 -ORG-ORG-	SAME	090-5030-00T 23-1100 -ORG-ORG-	Not Used
High Roller Casino †	2	090-5020-20T 22-900 -YEL-YEL-	090-5032-00T 23-1080 -YEL-GRN-	Not Used	Not Used
Austin Powers™ †	2	090-5020-30 23-900 -GRN-GRN-	090-5030-00T 23-1100 -ORG-ORG-	Not Used	Not Used
MONOPOLY® †	3	090-5032-00T 22-1080 -YEL-GRN-	SAME	Not Used	090-5062-00T 23-1500 -BLU-BLU-
Playboy †	2	090-5030-00T 23-1100 -ORG-ORG-	SAME	Not Used	Not Used
RollerCoaster Tycoon™ †	4	090-5032-00T 22-1080 -YEL-GRN-	SAME	090-5067-00T 25-1400 -RED-RED-	090-5068-00T 25-1600 -WHT-WHT
The Simpsons™ Pinball Party †	6* (5 with Flipper Bats)	090-5032-00T 22-1080 -YEL-GRN-	SAME	Not Used	090-5030-00T 23-1100 -ORG-ORG-
		* The Homer Head Assembly is affixed to an Upr. Rt. Style Flipper (no E.O.S. Switch):		Flippers (Mini-Bats) on 2nd Level Playfield:	
Terminator® 3: Rise of the Machines™ †	2	090-5032-00T 22-1080 -YEL-GRN-	090-5020-20T 22-900 -YEL-YEL-	090-5041-00T 25-1800 -BLU-GRN-	090-5025-00T 24-1570 -See Note-
The Lord of the Rings™ †	2	090-5020-20T 22-900 -YEL-YEL-	SAME	Not Used	Not Used
Ripley's Believe It or Not!® †	3	090-5032-00T 22-1080 -YEL-GRN-	SAME	Not Used	090-5067-00T 25-1400 -RED-RED-

† Coil Part N°s ending with a "T" signifies the Diode is on the top of the lug (on the coil-winding side); Coil Part N°s ending with a "B" signifies the Diode is on the bottom of the lugs.



APPENDIX F

Motor Specification (White Star Board System* Only) Table



Game Name	Function	Specifications	Part Number
Apollo 13	Rocket Up/Down Movement	Bowman Motor 24VAC 60Hz 3W 6 RPM CCW	515-6383-00 <i>incl. Connector</i>
	Moon Unit Rotational Orbit	Multi Products Motor 24VAC 50/60Hz 3W 6 RPM CCW	515-6487-00 <i>incl. Connector</i>
	Shaker	Johnson Motor (Vibrator) 10.5VDC 10 AMP 2950 RPM CW	041-5029-00 <i>MOTOR ONLY</i>
Golden Eye	Satellite Left/Right Movement	Bowman Motor 24VAC 60Hz 3W 6 RPM CW	515-6528-00 <i>incl. Connector</i>
Twister	Spinning Disc with Magnet	Multi Products Motor 24VAC (041-5026-00) 50/60Hz 3W 325 RPM CCW	515-6347-00 <i>incl. Connector</i>
	Backbox Fan (Tornado Wind)	Multi Products Motor 24VAC (041-5052-00) 50/60Hz 3W 3600 RPM CW	515-6531-00 <i>incl. Connector</i>
ID4: Independence Day	Alien Head Open/Close Movement	Servo Motor (94322)	041-5045-00 <i>MOTOR ONLY</i>
SPACE JAM (NO MOTOR USED)			
The Star Wars Trilogy - S.E.	X-Wing Left/Right Movement	Bowman Motor 24VAC (041-5058-00) 60Hz 3W 10 RPM CCW	515-6383-01 <i>incl. Connector</i>
The Lost World: Jurassic Park	Snagger & Center Link Lift Up/Down Movement	Multi Products Motor 20VDC (041-5059-03) 9 RPM Non-Directional	515-6715-03 <i>incl. Connector</i>
	Shaker	Johnson Motor (Vibrator) 10.5VDC 10 AMP 2950 RPM CW	041-5029-00 <i>MOTOR ONLY</i>
The X-Files	X-File Cabinet Lift Up/Down Movement	Multi Products Motor 20VDC 9 RPM CCW	041-5057-00 <i>MOTOR ONLY</i>
Starship Troopers	Warrior Bug Forward/Reverse Movement	Haydon Switch & Instrument, Inc. Stepper Motor 12VDC 4.6W (041-5062-00), Series 36000: 1.4"ø (Non-Captive Shaft not included) HSI #36864-12 (Unipolar) Travel per Step: .004 Step Angle: 15°	515-6794-00 <i>incl. Connector</i> Requires 7" Shaft: 530-5503-00
VIPER NIGHT DRIVIN' (NO MOTOR USED)			
Lost In Space	Spinning Disc with Magnet	Multi Products Motor 24VAC (041-5046-00) 50/60Hz 3W 325 RPM CCW	515-6347-00 <i>incl. Connector</i>
Godzilla	Shaker ‡	Multi #3811 0630 Motor (Vibrator) 12VDC 3100 RPM CW (w/DRL PTS) ‡	041-5029-01 <i>MOTOR ONLY</i>
SOUTH PARK (NO MOTOR USED)			
Harley-Davidson® 1st through 3rd Editions	Shaker ‡	Multi #3811 0630 Motor (Vibrator) 12VDC 3100 RPM CW (w/DRL PTS) ‡	041-5029-01 <i>MOTOR ONLY</i>
	Motorcycle Lift Up/Down Movement	Autotrol 24VAC (041-5072-02) 20 RPM CCW	515-7025-00 <i>incl. Connector</i>
Striker Xtreme (NFL)	Goalie (Linebacker) Left to Right Movement	Multi #3590 12VDC (041-5075-00) 60 RPM	515-7071-00 <i>incl. Connector</i>
Sharkey's Shootout	Mystery Ball Rotating Movement	Hanksraft Motor Model-E 24VAC (041-5076-00) 50/60Hz 3W 20 RPM CW	515-7095-00 <i>incl. Connector</i>
High Roller Casino	Roulette Wheel Rotating Movement	Multi Products Motor 20VDC (041-5078-00) 17 RPM CCW	515-7153-00 <i>incl. Connector</i>
	Up/Dn. Ramp in Slot Mach. Lift Up/Down Movement	Haydon Switch & Instrument, Inc. Stepper Motor 12VDC 4.6W (041-5062-00), Series 36000: 1.4"ø (Non-Captive Shaft not included) HSI #36864-12 (Unipolar) Travel per Step: .004 Step Angle: 15°	515-6794-00 <i>incl. Connector</i> Requires Shaft 4¼": 530-5503-01
Austin Powers™	Time Machine Rotating Movement	Multi Products Motor 24VAC (041-5079-00) 50/60Hz 20RPM CCW	515-7141-00 <i>incl. Connector</i>
	Laser Beam Left to Right Directional	Autotrol Motor 24VAC (041-5081-00) 50/60Hz 4W 10RPM Bi-Directional	515-7171-00 <i>incl. Connector</i>
	Dr. Evil Target Lift Up/Down Movement	Hanksraft Motor Model-E 24VAC (041-5030-00) 50/60Hz 6RPM CCW	515-5900-00 <i>incl. Connector</i>
Monopoly®	Mini-Flipper (Waterworks) Rotating Movement	Multi Prod. Motor & Gear Box #7000 EX00159A 20VDC 50/60Hz 85RPM CC/CCW	041-5083-00 <i>MOTOR ONLY</i>
Playboy	Triangular Billboard Rotating Movement	Autotrol Motor (BD511 150-1387) 24VAC 50/60Hz 12RPM Bi-Directional	041-5086-02 <i>MOTOR ONLY</i>
	Centerfold Mechanism Open/Close Movement	Multi Products (3680) Motor 12v DC 10/12 RPM CC/CCW	041-5075-04 <i>MOTOR ONLY</i>
	Tease Drop Screen Lift Up/Down Movement	Haydon Switch & Instrument, Inc. Stepper Motor 12VDC 4.6W (041-5062-00), Series 36000: 1.4"ø (Non-Captive Shaft not included) HSI #36864-12 (Unipolar) Travel per Step: .004 Step Angle: 15°	515-6794-00 <i>incl. Connector</i> Requires 7" Shaft: 530-5503-00

‡ Please Note: "-01" Shaker Motor is **Not Compatible** with old Shaker Motor 041-5029-00 (Shaker Motor Assy. 515-5893-00). THIS NEW MOTOR CAN ONLY BE USED IN NEW SHAKER MOTOR ASSY. 515-5893-01.

Table continued on the next page.





APPENDIX F

Motor Specification (White Star Board System* & S.A.M. System** Only) Table

SAM

Game Name	Function	Specifications	Part Number
ROLLERCOASTER TYCOON™ (NO MOTOR USED)			
THE SIMPSONS™ PINBALL PARTY (NO MOTOR USED)			
Terminator® 3: Rise of the Machines™	Backbox Ball Shooter Up/Down Movement	Multi Products Motor 24VAC (041-5079-01) 21 RPM CW	515-7317-00 <i>incl. Connector</i>
The Lord of the Rings™	Balrog (Motor & Gate) Open/Close Movement	Multi Prod. Motor 20VDC Series 600B (or equiv.) 50/60Hz 10 RPM Bi-Directional	041-5088-01 MOTOR ONLY
RIPLEY'S BELIEVE IT OR NOT!® (NO MOTOR USED)			
Elvis®	Elvis™ Front/Back Movement	Haydon Switch & Instrument, Inc. Stepper Motor 12VDC 10W (041-5089-00), (Non-Captive Shaft not included) HSI #46868-12-002	500-6809-00 <i>incl. Connector</i> Requires 7.25" Shaft: 530-5658-00
	▶▶▶ OPTIONAL ◀◀◀ Shaker Motor Kit 502-5027-00	Multi #3811 0630 Motor (Vibrator) 12VDC (041-5029-01) 3100 RPM (w/DRL PTS)	515-5893-01 <i>incl. Connector</i>
The Sopranos™	Bada Bing! Girls x2 Rotating Posts Movement	Autotrol Synchronous Motor 24VAC 4W 50/60Hz 45.7/54.9 RPM Bi-Directional	041-5092-00 <i>w/1" Shaft + 12" Leads</i>
NASCAR® and [NDSE]	Back Panel Rotating (Car) Windmill (Skill Ball Enter)	Multi Products Motor & Gear Box 20VDC Model #8000 (EX-04-073) 10 RPM	041-5093-00 MOTOR ONLY
Grand Prix	Back Panel Rotating (Car) Windmill (Skill Ball Enter)	Multi Products Motor & Gear Box 20VDC Model #8000 (EX-04-073) 10 RPM	041-5093-00 MOTOR ONLY
World Poker Tour™ (WPT) (NO MOTOR USED)			
The Simpsons™ Kooky Carnival	Bart on Skateboard Left/Right Movement	Multi Products Motor with Crank 24VAC (041-5095-01) 50/60Hz 3W 14 RPM	500-6947-01 <i>incl. Connector</i>
	Left & Right Ramps Up/Down Movement	Multi Products Motor 24VAC (041-5048-01) 50/60Hz 3W 15 RPM CCW (Qty. 2 in game)	515-7558-00 <i>incl. Connector</i>
	Shaker (details in SKC Manual, Page 24)	Multi #3811 0630 Motor (Vibrator) 12VDC 3100 RPM (w/DRL PTS)	041-5029-01 MOTOR ONLY
©Disney's Pirates of the Caribbean	Spinning Disk	Multi #3811R 0630 Motor (Vibrator) 12VDC (041-5029-04) 3100 RPM (w/DRL PTS) -04 is RoHS compliant; can substitute with -01 domestic	511-5024-04 <i>incl. Connector</i>
	Pirate Ship Sinking/Raising Movement	Multi Products Motor & Gear Box 24VDC Reversible Model #7000D-DCM 12 RPM 35MM (.86" Shaft)	041-5101-00 MOTOR ONLY
Family Guy™ and Shrek™	Stewie Figurine Left & Right Movement	Stepper Motor NPM PF35T-48D4STD 5V RVB (041-5102-00 Reference Only)	511-5043-00 <i>incl. Connector</i>
Spider-Man™ and Black Spider-Man™	Doc Ock, Sandman & 3-Bank Up/Down Movement	Sync. Motor 24VAC 50/60Hz 3W 12 RPM CW (041-5103-00 Reference Only)	511-5063-00 <i>incl. Connector</i>
	▶▶▶ OPTIONAL ◀◀◀ Shaker Motor Kit 502-5027-00	Multi #3811R 0630 Motor (Vibrator) 12VDC (041-5029-04) 3100 RPM (w/DRL PTS) -04 is RoHS compliant; can substitute with -01 domestic	515-5893-01 <i>incl. Connector</i>
Wheel of Fortune™	Wheel (LED & OPTO) Spinning Movement	Stepper Motor Lin. Eng. 4118S-70-RO (041-5105-00 Reference Only)	511-5072-00 <i>incl. Connector</i>
Indiana Jones™	Ark (Pinball Elevator) Up/Down Movement	Multi Products Motor & Gear Box 24VDC Reversible Model #7000D-DCM 12 RPM 35MM (.63" Shaft)	041-5107-00 MOTOR ONLY
	Temple Newton Captive Ball Up/Down Movement	Sync. Motor 24VAC 50/60Hz 3W 12 RPM CW (041-5103-00 Reference Only)	511-5063-00 <i>incl. Connector</i>
	Swordsman Gate Open/Close Movement	Sync. Motor 24VAC 50/60Hz 3W 12 RPM CW (041-5103-02 Ref. Only) Modified Motor Shaft	511-5063-02 <i>incl. Connector</i>
	▶▶▶ OPTIONAL ◀◀◀ Shaker Motor Kit 502-5027-00	Multi #3811R 0630 Motor (Vibrator) 12VDC (041-5029-04) 3100 RPM (w/DRL PTS) -04 is RoHS compliant; can substitute with -01 domestic	515-5893-01 <i>incl. Connector</i>
BATMAN™	Crane Motor (Type 1) Forward & Back. Movement	Multi Products Motor & Gear Box 24VDC Reversible Model #7000D-DCM 12 RPM 35MM (.63" Shaft)	041-5107-01 MOTOR ONLY
	Crane Motor (Type 2) Forward & Back. Movement	Multi Products Motor & Gear Box 24VDC Reversible Model #7000D-DCM 12 RPM 35MM (.63" Shaft) KEYED (includes Key #404 (535-0256-00))	041-5107-02 MOTOR ONLY
	Reveal (Joker) Open/Close Movement	Multi Products & Gear Motor 24VDC Model #7000 12 RPM with 26mm Diam. ø	041-5108-00 MOTOR ONLY
	▶▶▶ OPTIONAL ◀◀◀ Shaker Motor Kit 502-5027-00	Multi #3811R 0630 Motor (Vibrator) 12VDC (041-5029-04) 3100 RPM (w/DRL PTS) -04 is RoHS compliant; can substitute with -01 domestic	515-5893-01 <i>incl. Connector</i>

APPENDIX F

Motor Specification Table

The following table only list games that used motors. Part Numbers starting with "515-" will include the Wiring Harness & Connector.

Game Name	Function	Specifications	Part Nº
ABC Monday Night Football	Goal Post Up/Down Movement	Motor 24v A.C. 60 RPM CW	515-5222-00
Phantom of the Opera	Organ Up/Down Movement	Bowman Motor 24v 60Hz 3W 11 RPM CCW	515-5256-00
Checkpoint	Mag Wheel (in Backbox)	Motor D.C. (KEN)	041-5005-00
	Shaker	Johnson Motor (Vibrator)	041-5002-00
Teenage Mutant Ninja Turtles	Spinning Pizza Ball Deflector	Gear Motor 24v A.C. 325 RPM CW	515-5397-00
Batman	Bar Target Up/Down Movement	Bowman Motor 24v 60Hz 3W 11 RPM CCW	515-5256-00
Star Trek 25th Anniversary	Swinging Target	Bowman Motor 24v 22½ RPM	515-5534-00
	Transporter F/X	Gear Motor 24v A.C. 3½ RPM	500-5421-00
	Cooling Fan (for Transporter F/X)	4½" Motor 12v	041-5014-00
Lethal Weapon 3	Spinning Light	Motor 2½ v A.C. 4000 RPM CCW	041-5017-00
Star Wars	Bar Target Up/Down Movement	Bowman Motor 24v 60hz 3W 11 RPM CCW	515-5256-00
	R2D2 Robot Left/Right Movement	Bowman Motor 24v A.C. 22½ RPM CW	515-5571-00
	Death Star Rotation	Bowman "G" Motor 24v A.C. 60Hz 6 RPM CW	515-5570-00
Rocky & Bullwinkle & Friends	Nell Log "Cutting Blade" Forward/Back Movement	Autotrol Model E Motor 24v 60Hz 4W 3 RPM CCW	041-5023-00
Jurassic Park	T-Rex Left/Right Movement	Multi Motor 5v D.C.	041-5025-00
	T-Rex Up/Down Movement	Bowman Motor 24v 11 RPM CW	041-5026-00
	Shaker	Johnson Motor (Vibrator)	041-5002-00
Last Action Hero	Crane Left/Right Movement	Multi Products Motor 12v D.C. #3312 OSC	041-5027-00
	Shaker	Johnson Motor (Vibrator) 10.5v D.C. 10 AMP 2950 RPM CW	041-5029-00
Tales from the Crypt	Tombstone Up/Down Movement	Bowman Motor 24v A.C. 6 RPM CCW	515-5900-00
	Shaker	Johnson Motor (Vibrator) 10.5v D.C. 10 AMP 2950 RPM CW	041-5029-00
The Who's Tommy	Mirror Up/Down Movement	Bowman Motor 24v A.C. 6 RPM CCW	515-5900-00
	Flipper Blinders	Servo Motor (94102)	041-5032-00
	Spinning Airplane Propellers	Motor D.C.	041-5033-00
WWF Royal Rumble	Shaker	Johnson Motor (Vibrator) 10.5v D.C. 10 AMP 2950 RPM CW	041-5029-00
Maverick, The Movie	Turning Paddle Wheel	Motor 24v A.C. 10 RPM	041-5036-00
Mary Shelley's Frankenstein	Creature Head Left/Right Movement	Servo Motor (94102)	041-5032-00
Batman Forever	Cannon Left/Right Movement	Bowman Motor 24v A.C. 60Hz 3W 6 RPM CCW	515-6383-00

APPENDIX G

Part Number Prefix Classification Codes

I. Electrical Source, Energy & Signal Converters

- 010- Transformers
- 031- Speakers
- 090- Solenoids (Coils)
- 150- Filters, Outlets, Varistors, Thermistors
- 200- Fuses

II. Conductors, Connectors & Insulators

- 034- Line Cords
- 036- Cable Assemblies & Wiring Harnesses
- 041- Motors
- 045- Connectors (All Types)
- 055- Lugs (M/F), Pins (M/F), Discs, Ring Terminals, Terminal Strips, etc.
- 060- Polarizing Keys and Conn. Covers
- 077- Lamp Sockets

III. Circuits & Circuit Elements

- 100- ICs
- 110- Transistors
- 112- Diodes (All Types including LEDs & Modules)
- 121- Resistors
- 123- Resistors (Variable & Adjustable)
- 124- Regulators & Bridge Rectifiers
- 125- Capacitors (Radial Lytics & Ferrites)
- 126- Piezo Crystal
- 127- Heatsinks
- 130- Capacitors (Tecates & Ceramics)
- 140- Oscillators (Clocks/Crystals)
- 165- Light Bulbs
- 180- Switches
- 181- Switch Membranes (Pads) & Piezo Sensors
- 190- Relays
- 960- EPROM (*Raw Part*)
- 965- EPROM (*Programmed Part*)

IV. Bolts, Screws, Nuts, Washers & Nails

- 231- Bolts
- 232- Screws (Pan Head)
- 234- Screws (HWH)
- 237- Screws (Misc.)
- 240- Nuts (Misc.)
- 242- Washers (Flat, Round)
- 244- Washers (Split Lock)
- 245- Nyloners
- 246- Washers (Lockers, External Tooth)
- 281- Nails

V. Mechanical Components

- 249- Rivets
- 251- Pins (Dowel), Finishing Nails, Hairpins, Spring Pins and Clevis Pins
- 254- Stand-Offs, Spacers and Shims
- 260- Steel Ball (All Types Steel, Glowing, Delrin, etc.)
- 265- Springs (Extension)
- 266- Springs (Compression)
- 267- Springs (Torsion)
- 269- Springs (Washers - Belleville, Wave)
- 270- Retaining Rings
- 280- Grommets, Bushings and Nyloners
- 283- Bearings

VI. Handles, Locks, Catches, Latches, Keys

- 355- Handles, Locks, Catches, Latches and Keys

VII. Fabricated Parts

- 390- Hinges
- 501- Coin Doors
- 515- Sub-Assemblies
- 520- Printed Circuit Boards (PCBs)
- 522- Display Glass
- 525- Wood Parts
- 530- Screw Machined Parts
- 535- Fabricated Parts
- 545- Molded (Extruded) Plastic and Rubber Parts (Rings, Sleeves, etc.)
- 550- Molded (Inserts)

VIII. In-House Assemblies

- 500- End Product (Systems and Models)
- 502- Kits (Created In-House)
- 505- Cabinets (complete)
- 510- Riveted Sub-Assemblies (In-House)
- 511- Sub-Assemblies (In-House)
- 515- Sub-Assemblies*

*2 or more 515-'s but still a sub-assembly.

IX. Bulk Materials

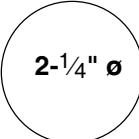
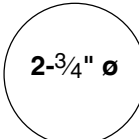
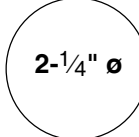
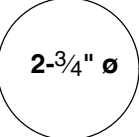
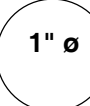
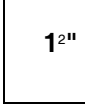
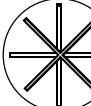
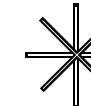
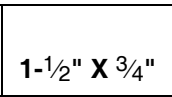
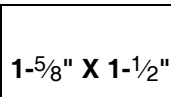
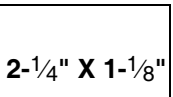
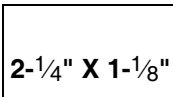
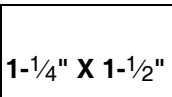
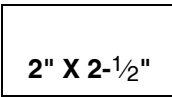
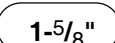
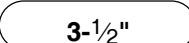
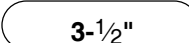
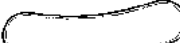
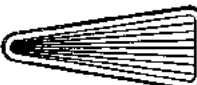
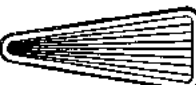
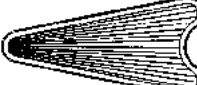
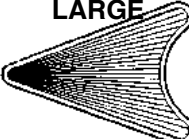
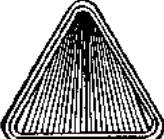
- 600- Braided Wire & Ground Straps
- 601- Stranded Wire
- 602- Ribbon Cable
- 604- Telephone Line Cord
- 605- Sleeving (Shrink Tubing)
- 625- Velcro (non-adhesive)
- 626- Foam Rubber, Foam Pads, Rubber Bumpers (Blue Pads), Tape (All Types) Velcro (adhesive) and String / Rope

X. Miscellaneous

- 000- Tools (*see also 777-*) and Supplies
- 040- Clamps, Ties & Clips
- 042- Pulleys
- 091- Coin Mechs
- 205- Fuse Holders
- 631- Staples
- 660- Glass (Playfield, Backglass, etc.)
- 675- Cleaners
- 705- Packing & Shipping Items
- 755- Instruction, Coin Cards, Ins. Sheets
- 756- Information Sheets, Service Bulletins, Instruction Sheets in Kits and Templates
- 777- Tools (Wrenches and Drivers)
- 780- Manuals
- 802- Decal Kits (comprised of 820's)
- 820- Decals, Mylar and Labels (Sheets/Sets)
- 803- Plastic Kits (comprised of 830's)
- 830- Plastic Pieces (Butyrate Sheets/Sets)
- 880- Toys, Models, Figurines, etc.
- 900- Game Posters

APPENDIX H

Playfield Inserts (Plastic Light Covers)

Patterns: STARBURST  STIPPLE 	STARBURST CIRCULAR  550-5000-XX	STARBURST CIRCULAR  550-5001-XX	STARBURST CIRCULAR  550-5002-XX	STARBURST CIRCULAR  550-5003-XX	STARBURST CIRCULAR  550-5004-XX
STARBURST CIRCULAR  550-5005-XX	STARBURST CIRCULAR  550-5006-XX	PLAIN CIRCULAR  550-5007-XX	PLAIN CIRCULAR  550-5008-XX	PLAIN CIRCULAR  550-5009-XX	PLAIN CIRCULAR  550-5010-XX
PLAIN CIRCULAR  550-5011-XX	PLAIN CIRCULAR  550-5012-XX	STIPPLE CIRCULAR  550-5048-XX	STIPPLE 1" SQUARE  550-5019-XX	ROLLOVER BUTTON BASE  550-5026-XX	WHITE STAR (only in white)  545-5015-00
STIPPLE RECTANGULAR  550-5018-XX	STIPPLE RECTANGULAR  550-5051-XX	STARBURST RECTANGULAR  550-5044-XX	PLAIN RECTANGULAR  550-5049-XX	PLAIN RECTANGULAR  550-5050-XX	PLAIN RECTANGULAR  550-5063-XX
STARBURST MINI SHIELD  550-5024-XX	STARBURST LARGE SHIELD  550-5025-XX	MINI HOT DOG  550-5020-XX	BEVEL HOT DOG  550-5021-XX	PLAIN HOT DOG  550-5022-XX	BANANA  550-5023-XX
STARBURST ARROW-SMALL  550-5013-XX	STARBURST ARROW-LARGE  550-5070-XX	STARBURST ARROW-HEAD SMALL  550-5014-XX	STARBURST ARROW-HEAD LARGE  550-5015-XX	STARBURST BULLET  550-5016-XX	STARBURST TRIANGLE  550-5017-XX

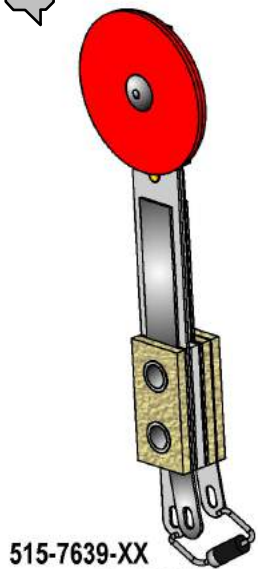
Note: The shapes and sizes shown above are not to scale. Some shapes may no longer be available in every color.

Instructions: Parts which may come in various colors (i.e. targets, some posts, playfield inserts, etc.) end in a 2-digit number which correspond to the color of that part. The "-XX" in part number which may come in various colors should be replaced with the desired 2-Digit number corresponding to the color desired below. *Not all colors may be available.*

PLASTIC PART COLOR CHART											
Nº	Color	Nº	Color	Nº	Color	Nº	Color	Nº	Color	Nº	Color
-00	Black or Solid Clear	-03	Amber	-06	Yellow	-09	Purple	-12	Fluor. Blue	-15	Luminescent
-01	Clear	-04	Green	-07	Orange	-10	Fluor. Orange	-13	Teal Green	-16	Gold
-02	Red	-05	Blue	-08	White	-11	Fluor. Green	-14	Gray	-17	Trans. Brown

APPENDIX I

Anti-Loft Stand-Up Targets



515-7639-XX
1" Ø ROUND
ANTI-LOFT STAND-UP
SWITCH & TARGET
RIVETED ASSEMBLY*



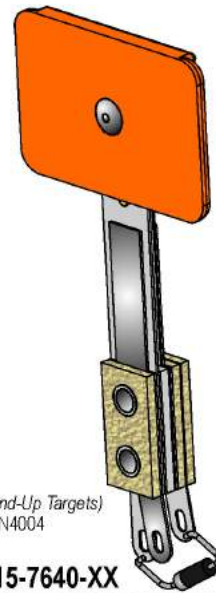
515-7581-XX
1" X 1/2" NARROW RECTANGLE
ANTI-LOFT STAND-UP
SWITCH & TARGET
RIVETED ASSEMBLY*

Ordering Note:
-XX REPLACE WITH
2-DIGIT FOR COLOR:
Not all colors available
(colors shown not exact)

-02	Red
-03	Amber
-04	Green
-05	Blue
-06	Yellow
-07	Orange
-08	White



515-7568-XX
1" X 1" SQUARE
ANTI-LOFT STAND-UP
SWITCH & TARGET
RIVETED ASSEMBLY*



515-7640-XX
1" X 1-1/2" WIDE RECTANGLE
ANTI-LOFT STAND-UP
SWITCH & TARGET
RIVETED ASSEMBLY*

(Required on all Stand-Up Targets)
Switch Diode, 1N4004
112-5003-00

*Some targets may require the lugs position be changed to the left or to the right, depending on the application; these targets will have a different part number and are called out in the game manual they are used in (see Section 4, Chapter 1, Parts Identification & Location, Playfield ... -Switches.) Review the game manual for the game desired for the original target used or application.

**For Anti-Loft
Application use**
Large Foam Pad,
5/8" X 7/16" X 3/16" Thick
626-5078-00



**For > Light < Anti-Loft
Application use**
Small Foam Pad,
7/16" X 7/16" X 1/8" Thick
626-5029-00

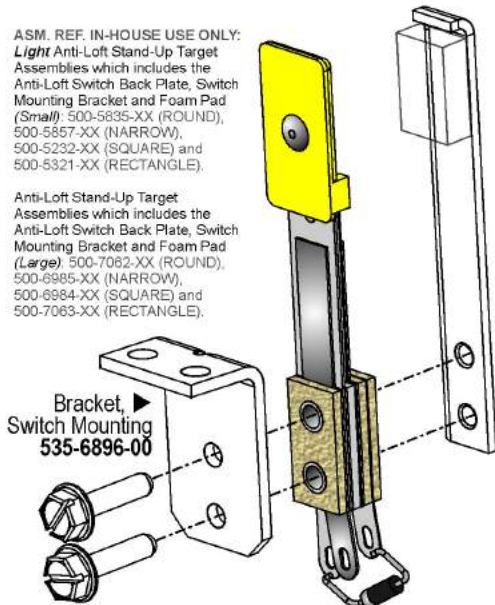


or

Anti-Loft Switch
Back Plate ▼
535-9823-01

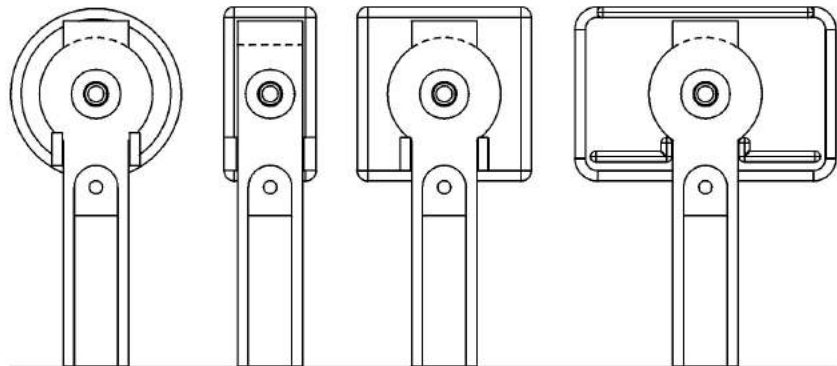
ASM. REF. IN-HOUSE USE ONLY:
Light Anti-Loft Stand-Up Target
Assemblies which includes the
Anti-Loft Switch Back Plate, Switch
Mounting Bracket and Foam Pad
(Small): 500-5835-XX (ROUND),
500-5857-XX (NARROW),
500-5232-XX (SQUARE) and
500-5321-XX (RECTANGLE).

Anti-Loft Stand-Up Target
Assemblies which includes the
Anti-Loft Switch Back Plate, Switch
Mounting Bracket and Foam Pad
(Large): 500-7082-XX (ROUND),
500-6985-XX (NARROW),
500-6984-XX (SQUARE) and
500-7063-XX (RECTANGLE).



Bracket,
Switch Mounting
535-6896-00

▲ #6-32 X 5/8" Slotted HWH Swage (Zinc)
Screws (Qty. 2/per) **237-5976-04**



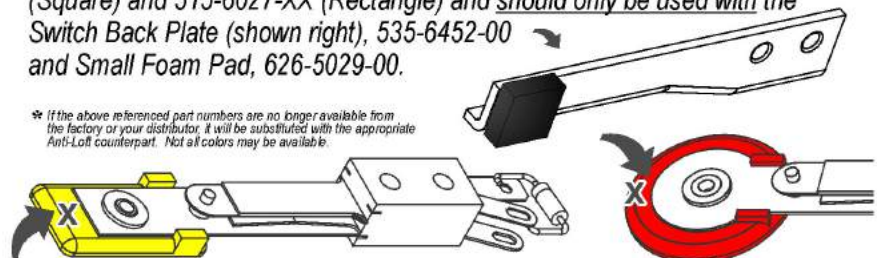
REAR VIEWS OF ANTI-LOFT TARGET & SWITCH ASSEMBLIES

The material of the Anti-Loft Switch has been extended higher to be used with the Anti-Loft Switch Back Plate. **IMPORTANT:** Switch & Target Assemblies (X) without the extension (the predecessors) **SHOULD NOT** be used with an Anti-Loft Switch Back Plate (shown left).

APPENDIX REFERENCE FOR PINBALL GAMES WHICH USED THE BELOW SWITCH & TARGET ASSEMBLIES NOTE:

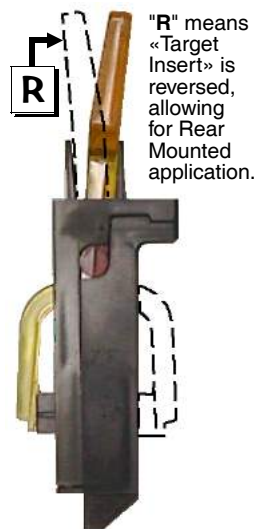
The Switch & Target Assemblies (X) without the extension have the following part numbers*: 515-5966-XX (Round), 515-5967-XX (Narrow), 515-5162-XX (Square) and 515-6027-XX (Rectangle) and should only be used with the Switch Back Plate (shown right), 535-6452-00 and Small Foam Pad, 626-5029-00.

* If the above referenced part numbers are no longer available from the factory or your distributor, it will be substituted with the appropriate Anti-Loft counterpart. Not all colors may be available.



APPENDIX I

Modular Stand-Up Targets



"R" means «Target Insert» is reversed, allowing for Rear Mounted application.



Take Note:

- Items A-E come in various colors. These targets may not be available in every color. The "-XX" in should be replaced with the desired 2-Digit number for the color desired as described in the Color Chart below. As of print date, the following colors were used :
-01 Clear (A, D); -02 Red (A, B, C, D, E); -03 Amber (D, E);
-04 Green (A, B); -05 Blue (C); -06 Yellow (A, C),
-09 Purple (B, D); -11 Fluorescent Green (A, B, D)
2. For location(s) and type of Stand-Up Targets used, if any, see Section 4, Chapter 1, Parts Identification & Location.

-XX REPLACE WITH 2-DIGIT FOR COLOR:

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

Note: Not all colors available.

Nr.	STAND-UP TARGET PARTS	SPI PART Nr.
A	Modular Stand-Up Target Narrow Assembly	500-6138-XX
	Stand-Up Target Narrow (Insert)	545-6138-XX
B	Modular Stand-Up Target Square Assembly	500-6139-XX
	Stand-Up Target Square (Insert)	545-6139-XX
C	Modular Stand-Up Target Rectangle Asm.	500-6228-XX
	Stand-Up Target Rectangle (Insert)	545-6228-XX
D	Modular Stand-Up Target Round Assembly	500-6075-XX
	Stand-Up Target Round (Insert)	545-6075-XX
E	Modular Stand-Up Target 1" Spherical Asm.	500-6189-XX
	Stand-Up Target 1" Spherical (Insert)	545-6189-XX

To Replace the « Target Insert » or change Target Orientation :

Items A-E Note: For the Target Assembly use the "500-" SPI Part Number(s) shown in the Parts Table below. To receive the Target Assembly with the « Target Insert » « Reversed » simply add a "R" at the end of the Part Number. See Side View picture left to compare (dashed line shows target reversed). For just the «Target Insert» use the "545-" SPI Part Number.



To reverse it yourself or to just change the insert:

- With a small flat head screwdriver, push into the small tab at the bottom of the target front and give a slight twist motion to "pop" the two halves.

- Push the Target Insert bottom in at the same time while you slide the top (front) part up, then let go of the insert as the two halves come apart.



- Replace target or reinsert it into the other size while sliding the two halves back together.

Note: If you were reversing the orientation, don't forget to also turn the Switch Actuator PCB 180°. Test Switch.

APPENDIX J

Coin Cards for USA & International (Euro & Non-Euro) Pricing Defaults



If more than one Pricing Scheme is available for countries listed, the asterisk listed beside the option, denotes the Factory Default Setting.

VISIT OUR WEBSITE TO DOWNLOAD ALL THE LATEST COIN CARDS (INCLUDING COIN CARDS FOR OLDER GAMES).

USA 10* (Canada Custom) 755-5400-11-Y	USA 5 (Canada Custom) 755-5400-08-Y	USA & Canada Custom 755-5400-04-Y	USA 3, 4 or 5 (Can. Cust.) 755-5400-03-Y	Canada 2* (USA Custom) 755-5400-10-Y	Canada 1 (USA 2 or 8) 755-5400-09-Y
Custom All Countries 755-5400-06-Y	Australia 1* & 2 755-5406-00-Y	Croatia 755-5410-00-Y	Czech Republic 755-5415-00-Y	Denmark 1* & 2 755-5402-00-Y	Hong Kong 755-5414-00-Y
Japan 1 & 2* 755-5408-01-Y	Lithuania 755-5416-00-Y	Middle East 755-5400-06-Y	New Zealand 1* & 2 755-5406-00-Y	Norway 1* & 2 755-5403-01-Y	Norway 1* & Custom 755-5403-02-Y
Norway 3 & 4 755-5403-03-Y	Norway 2 755-5403-00-Y	Romania 755-5417-00-Y	Russia 755-5411-00-Y	South Africa 1* & Custom 755-5409-01-Y	Sweden 1* & 2 755-5404-00-Y
Switzerland 1* & 2 755-5405-00-Y	Taiwan, R.O.C. 755-5412-00-Y	Turkey 755-5413-00-Y	United Kingdom 5* 755-5407-01-Y	United Kingdom 1 & 3 755-5407-00-Y	United Kingdom Custom 755-5407-02-Y
EURO 1 755-5401-01-Y	EURO 2 755-5401-02-Y	EURO 3 755-5401-03-Y	EURO 4 755-5401-04-Y	EURO 5 755-5401-05-Y	EURO 6 755-5401-06-Y
EURO 7 755-5401-07-Y	EURO 8 755-5401-08-Y	EURO 9 755-5401-09-Y	EURO 10 755-5401-10-Y	EURO 11 755-5401-11-Y	EURO 12 755-5401-12-Y

Section 3, Chapter 4, GO TO ADJUSTMENTS MENU, Adj. 18, Game Pricing, USA & International (non-Euro) and Euro 1-12 Summary & International (Euro) Standard Pricing Select Tables, summarizes Standard or Custom Pricing Schemes & the Dip Switch Setting required.

Download all Coin Cards from our website:
<http://www.sternpinball.com/coinagecards.shtml>

Appendix J:

1

or order SPI Part No.: 970-2007-00 (970-2002-00 thru 970-2006-0) CD-Rom through your Local Distributor.

Coin Cards (USA & Intn'l Pricing Defaults)