

# PINBALL MACHINE SERVICE AND OPERATION MANUAL



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## WWE PRO

Games configured for North America operate on 60 cycle electricity only. These games will not operate in countries with 50 cycle electricity (Europe UK, Australia).

WWE PRO #500-55G1-00  
MANUAL #780-50G1-00

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## GAME SOFTWARE UPDATE



Keep your game up to date! The latest Stern game software is always available at [www.sternpinball.com](http://www.sternpinball.com). Stern games show the current version number when starting up.

### Pinball Game Software Update Instructions

1. Obtain a blank standard FAT32-formatted USB flash drive (SPI Part Number 970-0128-00).
2. Download the latest game software update for your game from [www.sternpinball.com](http://www.sternpinball.com).
3. Copy the game software update file, which ends in .BIN, to the root (primary) directory of the flash drive.
4. Use backbox power switch to turn off the game.
5. Plug the USB flash drive into the CPU Node USB connector, CN20 or CN21.
6. Turn on the game. The game will discover and automatically begin the software update. **DO NOT TURN OFF POWER DURING THE UPDATE.**
7. When the display indicates "Update Complete", turn off the game.
8. Remove USB flash drive from the CPU node.
9. Turn game on to complete the update and play pinball!

Detailed instructions and troubleshooting tips are available at [www.sternpinball.com](http://www.sternpinball.com) and authorized Stern distributors.

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# 1. SETUP AND MOVING

## 1.1 FIRST-TIME SETUP

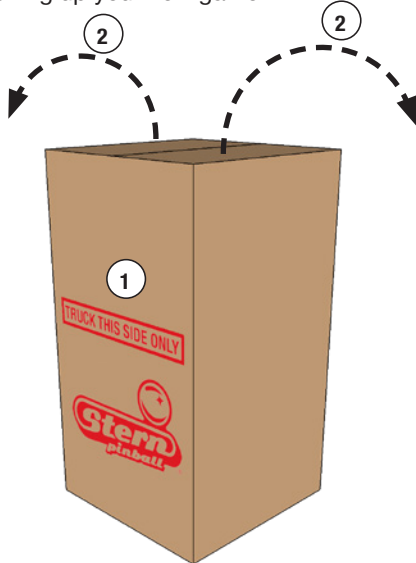
Your brand new Stern Pinball Machine is carefully packed for safety and security. For your safety, exercise caution and use the correct tools and sufficient help when setting up your new game.

### TOOLS REQUIRED

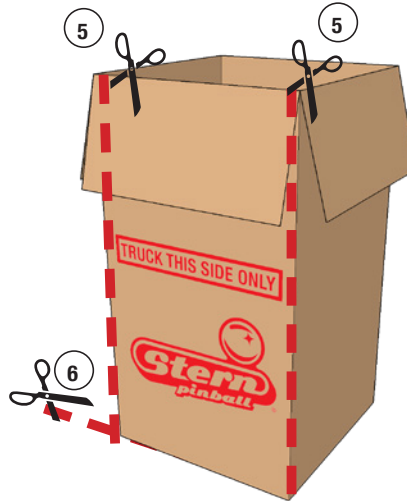
- 5/8" Socket Wrench
- Utility Knife
- Snips
- A Helper

### CAUTION

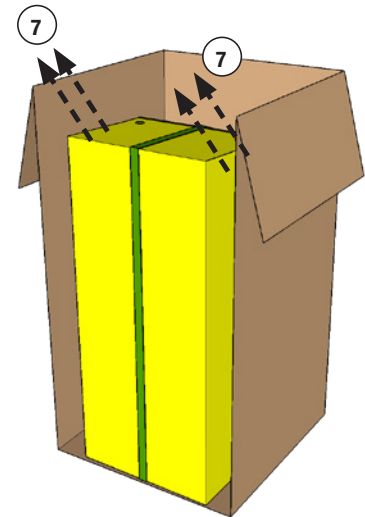
AT LEAST TWO (2) PEOPLE ARE REQUIRED TO MOVE AND MANEUVER THE GAME. USE PROPER MOVING EQUIPMENT AND EXTREME CARE WHILE HANDLING. STERN PINBALL MACHINES WEIGH OVER 250LBS BOXED.



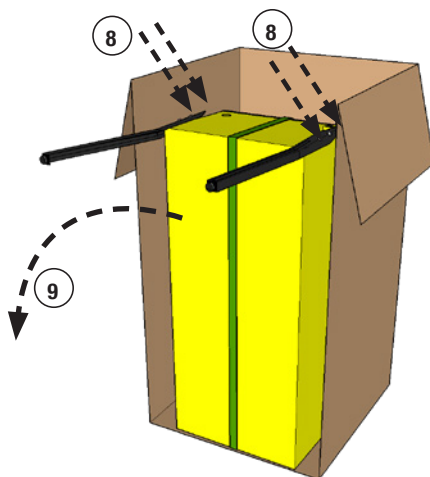
1. Locate the side labeled "TRUCK THIS SIDE ONLY". The bottom of the game faces this side.
2. Open the top box flaps by pulling hard in an upward motion on each flap. If the flaps are taped, cut the tape first, taking care to avoid the box staples.



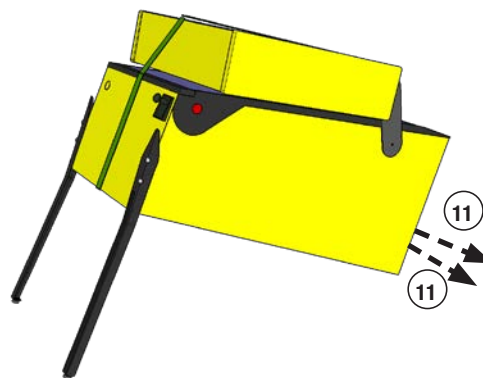
3. Remove the four (4) foam pieces and two (2) narrow box tubes which contain the four (4) identical legs with levelers.
4. DO NOT CUT STRAPPING YET. Keep backbox secured in the down position.
5. With the utility knife, carefully cut down the left and right corners of the box.



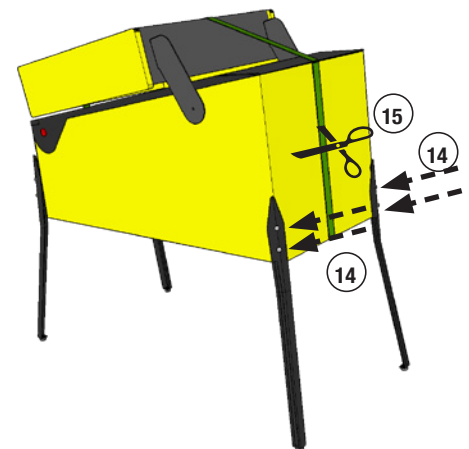
6. Let the face fall forward and remove the entire side by carefully cutting the bottom.
7. With the game still in its folded position, use a 5/8" wrench to loosen and remove the 2 leg bolts on each side of the front cabinet. Ensure the leg levelers are screwed all the way in to the legs.



8. Install front legs using the bolts removed from Step 5. Secure tightly.
9. Use a helper to carefully set the game down on the front legs.



10. Set aside the open box.
11. With the 5/8" socket wrench, loosen and remove the 2 leg bolts on each side of the rear cabinet, 4 total.
12. Using supports or two people, prop the rear of the cabinet up.



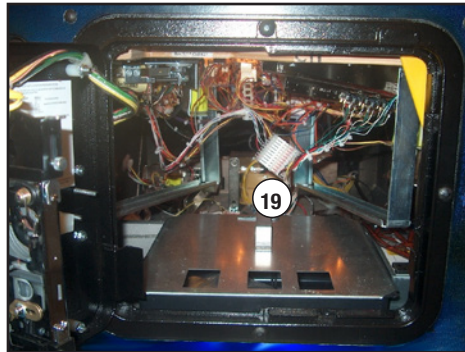
13. Ensure the rear leg levelers are screwed all the way into the legs.
14. Install rear legs using the 4 bolts removed from step 11.
15. Cut nylon strapping and remove protective strap corner guards



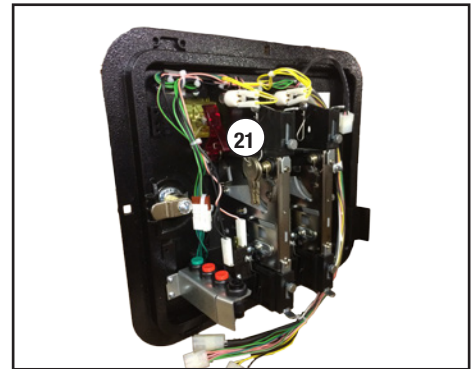
# FIRST-TIME SETUP CONTINUED



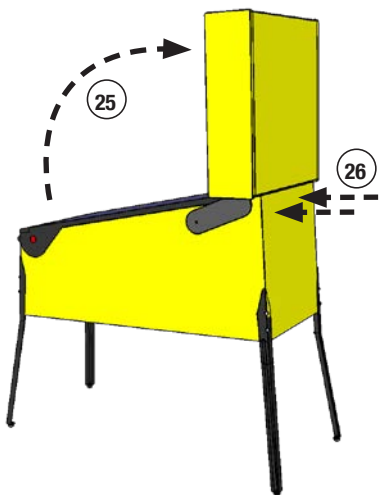
- 16. Locate the factory keys, either on the shooter rod or taped to the playfield glass.
- 17. Using the snips, cut the tie-wrap securing the keys if required. One set of keys is for the front coin door, the other set of keys is for accessing components in the backbox
- 18. Open the front coin door.



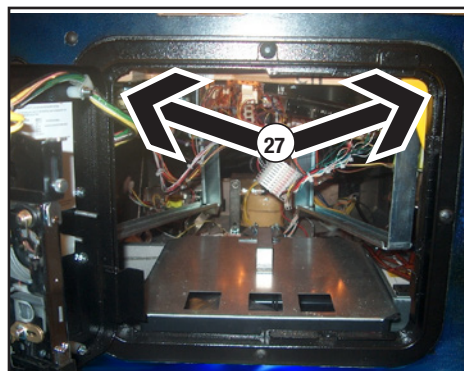
- 19. Reach into the game and remove the retaining clip at the rear of the cash box.
- 20. Remove the cash box lid by sliding it toward you.



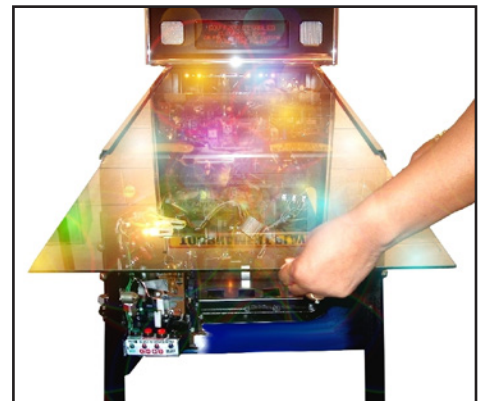
- 21. Store the backbox keys, if desired, on the metal hook located in the coin door.
- 22. Locate and remove the pinballs, plumb bob, and backbox bolts from the cash box.
- 23. Replace the cash box lid and retaining clip for future use.
- 24. Locate the two (2) backbox bolts in the cash box.



- 25. Carefully raise backbox to upright position while ensuring that cables are not pinched.
- 26. Use the 5/8" wrench to install the two (2) backbox bolts to secure the backbox as indicated on the back of the cabinet.



- 27. Reach inside the cabinet and lift the two latches toward the back of the game. vw
- 28. Remove the front top molding.



- 29. Remove the playfield glass by sliding it toward you and carefully place it in a safe location. Remove all playfield shipping tie downs, shipping blocks, and packing foam, and follow any game-specific unpacking instructions included in the playfield, if present.

## CAUTION

**PLAYFIELD GLASS IS MADE FROM HIGH-STRENGTH TEMPERED GLASS. TEMPERED GLASS IS SENSITIVE TO EXTREME TEMPERATURE SHIFTS AND CORNER NICKS, WHICH CAN CAUSE THE GLASS TO FAIL CATASTROPHICALLY. TAKE CARE TO STORE THE GLASS ON ON A SOFT, ROOM-TEMPERATURE SURFACE AND PREVENT THE CORNERS FROM BEING DAMAGED.**



## FIRST-TIME SETUP CONTINUED

30. If pinballs were already installed into the lower ball trough, remove them before lifting the playfield.
31. Raise the playfield and rest it against the backbox.
32. Grasp the lower arch between the flippers, and firmly but gently pull directly up to raise the playfield 8-12 inches.
33. While holding the playfield up, pull the playfield toward you until the two playfield supports are over the front edge of the cabinet.
34. Rest the playfield on the front edge of the cabinet.
35. Visually inspect all cabinet cables and connector terminations; ensure no wires or cables are pinched and that cable harnesses are not pulled tight.
36. Locate the plumb bob in the parts bag in the cash box
37. Slide plumb bob onto the hanger wire. Note: the vertical position of the plumb bob affects tilt sensitivity - higher makes the game more sensitive to tilting.
38. Tighten the Thumb Screw finger-tight.
39. Install the correct number of pinballs. Refer to the decal on the lock down assembly for the correct number of pinballs.

## LOCATING, LEVELING, AND FINAL SETUP

40. Select a location that is indoors, out of direct sunlight, and climate controlled. Excessive moisture/humidity can cause long-term damage to your game.
41. Adjust the front or rear levelers as necessary to position the playfield level bubble, located on the front right of the playfield next to the shooter lane, to float between the two (2) black lines. This will place the playfield at the recommended 6.5° pitch. Playfield angles greater than 6.5° can be achieved by turning out the rear leg leveler(s) for increased difficulty and faster gameplay.
42. Use a pinball to roll down the center of the playfield for side-to-side leveling, or use an external bubble level, digital level, or smartphone level app.
43. Plug into a grounded outlet and check for proper operation through DIAGNOSTICS.
44. Check the coin door: With the door closed, insert coins to verify proper operation.
45. Play game: Check for satisfactory operation and adjust game volume (push the Red Buttons inside the Coin Door).
46. If desired, perform any game diagnostics, game adjustments, and pricing settings at this time.



## 1.2 TRANSPORTING THE GAME

When transporting the game, such as in the back of a truck or with a hand truck, the game's backbox must be secured to prevent damage to the side rails.

### 1. SECURE THE BACKBOX

1. Ensure that the pinballs are removed from the playfield, and secure any free-moving mechanisms that may get damaged in transport

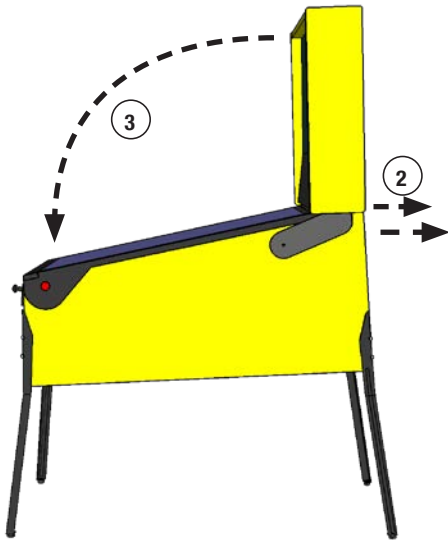
#### TOOLS REQUIRED

- STRAP (500LB OR GREATER)
- A HELPER
- HAND TRUCK

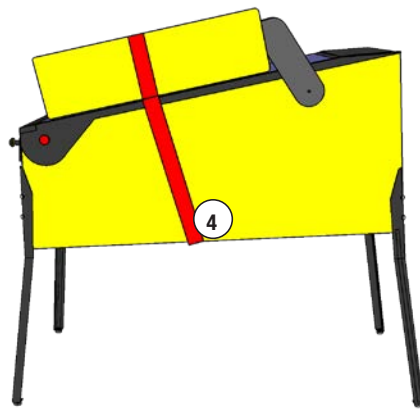
#### CAUTION

NEVER TRANSPORT THE GAME IN A MOVING VEHICLE WITH THE BACKBOX RAISED! TWO PEOPLE ARE REQUIRED TO REMOVE THE LEGS!

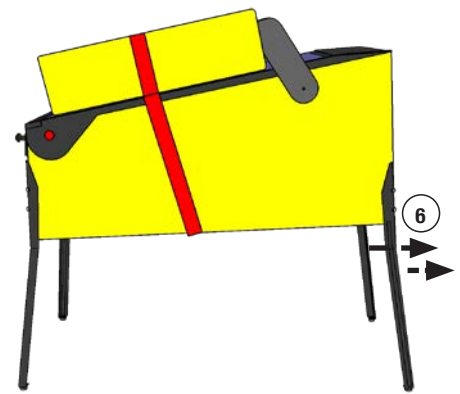
### 2. REMOVE THE LEGS AND STAND UP



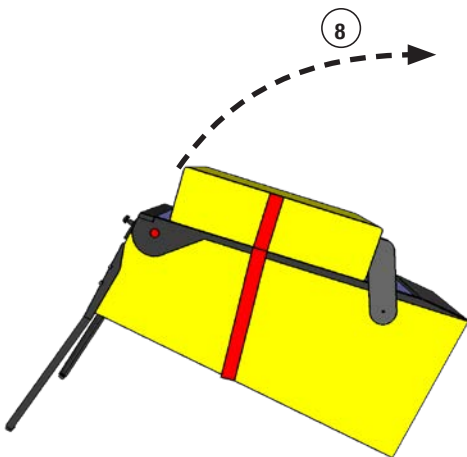
2. Remove the backbox securing bolts
3. Carefully lower the backbox onto the side rails. Use a piece of cardboard or suitable padding between the backbox and the game.



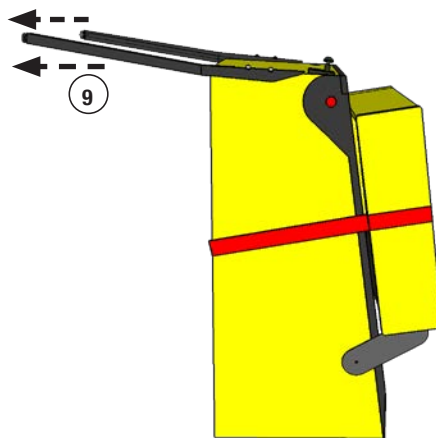
4. Securely strap the back box to the game
5. The game may be transported with the legs on. If the legs must be removed, follow the remaining steps.



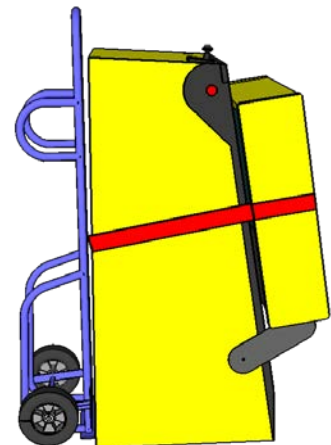
6. Remove the legs, rear legs first. Use a stool or a friend to support the rear of the game.
7. Rest the rear of the game on the ground.



8. Stand the game up on its back.



9. Remove the front two legs.



10. Secure all loose parts and transport with a hand truck in the upright position.

## 2. SPIKE PINBALL PLATFORM OVERVIEW

### 1.3 SPIKE SYSTEM AND NODE GUIDE

Node Address	Description	Location	Part Number
0	SPIKE CPU Node	Backbox	520-6936-00
1	Cabinet Node	Cabinet	520-5319-00
8	Lower Playfield 48V 8-Driver Node	Lower playfield	520-6935-00
8a	Lower Playfield Serial LED Extension	Lower playfield	520-6950-00
9	Mid Playfield 48V 4-Driver Node	Mid playfield	520-5329-00
9a	Trough Serial Opto Receiver Extension	Lower playfield ball trough	520-5345-00
10	Upper Mini Playfield 4-Driver 48V Node	Upper playfield	520-5329-00
11	Mid Playfield I/O Node	Mid playfield	520-5322-00

### WWE SPIKE NODE TABLE

### 1.4 SPIKE SYSTEM OVERVIEW

The SPIKE Pinball system is a rugged, distributed, and embedded platform custom-designed for the rigors of the pinball machine environment. SPIKE takes advantage of modern technologies to deliver an immersive pinball experience that supports modern features, reduces cabling, and increases serviceability and reliability.

A Stern Pinball machine based on the SPIKE system will have at least two nodes networked together with the SPIKE node bus, a custom industrial pinball control bus that is designed around industry standards and optimized for the pinball environment. The primary CPU node is networked to one or more input/output nodes over standard Category 5 UTP (unshielded twisted pair) ethernet cabling.

There are five primary types of nodes that are found in the game.

- CPU node (Node 0) - The primary node that controls other nodes in the system. Contains the primary game software for the system and provides SPIKE node bus power for other nodes.
- Cabinet 48V node (Node 1) - Specialized node with specific inputs and outputs for coin doors, tilt mechanisms, and other bottom-cabinet devices.
- 48V playfield node - Controls high power devices such as coils and flashers, and also supports a few switch and low-power outputs. Powered by the system 48V power supply.
- Light and switch node - High-density switch and low-power LED outputs, bus-powered from the node bus. These boards contain as many 32 switch inputs and light outputs.
- Node extensions - These sub-nodes add additional low-power input and outputs to a specific Power or I/O node and are connected with simple serial bus.

### 1.5 NODE BUS CABLING

The SPIKE node bus utilizes standard Ethernet-style RJ45 8-pin modular jacks, and off-the-shelf Category 5e or better ethernet cabling. The node bus is electrically different from Ethernet and does not utilize Ethernet or TCP/IP protocols or signaling standards. SPIKE nodes are not compatible with standard computer networking equipment.

**CAUTION:** Plugging a SPIKE Node or CPU board into a standard Ethernet port may damage one or both devices and void your warranty.

### 1.6 SYSTEM POWER

The SPIKE System is powered from an 48V DC power supply bus. Each SPIKE node converts this voltage to lower voltages required by the node and its specific components. A SPIKE 48V node typically controls high-power outputs such as game coil mechanisms and high-brightness LEDs. These powered nodes are supplied directly with 48V system power. SPIKE standard I/O nodes are low-power nodes that read switch inputs and output to standard-brightness LEDs. Standard I/O nodes use the node bus power, which is supplied by the main CPU node over the node bus modular jack connectors.

### COIN-DOOR SAFETY INTERLOCK

To protect the system and for user safety, power to the playfield is disabled when the front coin door is opened. 48V system power and 9V node bus power is disabled to all playfield components until the switch is closed.

### 1.7 SPIKE NODE ADDRESSES

Each SPIKE node has a unique address ranging from 0 to 15. Not all addresses are used in all games. Nodes can be of the same part number, so the address is specified on the DIP switches on each node. When replacing a node, be certain that the correct address is set. Nodes can have 3-position and 4-position DIP switches. Refer to the appropriate table to set the address for each type of Node. The correct address for a node can be found in the SPIKE node reference section of the manual or in the game diagnostic software. Address 0 is reserved for the backbox CPU node, where the game software resides. Address 1 is reserved for the cabinet node, located inside the coin door. These two nodes do not have DIP switches as their address is not configurable.

Address	1	2	3
8	OFF	OFF	OFF
9	OFF	OFF	ON

10	OFF	ON	OFF
11	OFF	ON	ON
12	ON	OFF	OFF
13	ON	OFF	ON
14	ON	ON	OFF
15	ON	ON	ON

Figure 1.7.1. SPIKE node addresses for nodes with 3-position DIP switches. Addresses 0-7 are not used by SPIKE nodes with 3-position DIP switches.

Address	1	2	3	4
2	ON	OFF	ON	ON
3	ON	OFF	OFF	ON
4	OFF	ON	ON	ON
5	OFF	ON	OFF	ON
6	OFF	OFF	ON	ON
7	OFF	OFF	OFF	ON
8	OFF	OFF	OFF	OFF
9	OFF	OFF	ON	OFF
10	OFF	ON	OFF	OFF
11	OFF	ON	ON	OFF
12	ON	OFF	OFF	OFF
13	ON	OFF	ON	OFF
14	ON	ON	OFF	OFF
15	ON	ON	ON	OFF

Figure 1.7.2. SPIKE node addresses for nodes with 4-position DIP switches. Addresses 0 and 1 are reserved for the CPU and Cabinet nodes, respectively.

## 1.8 SPIKE NODE PROGRAMMING

The SPIKE nodes are smart nodes that have on-board processors and run embedded code. The nodes are programmed automatically by the CPU node whenever software updates are installed to the CPU. When replacing a node, the CPU node will detect and update the node to the latest software with no user intervention. Always replace nodes with the power to the game turned OFF.

## 1.9 SPIKE SYSTEM TERMINOLOGY

### MULTI GENERAL ILLUMINATION LIGHTING

General Illumination Lighting is two or more lights powered by one control source. These are often a number of LEDs connected in parallel and the system controls these as one large LED. A missing LED will not affect these circuits, however a shorted LED can cause the entire string of LEDs to turn off.

### SINGLE LIGHTS

Single lights and LEDs are direct-controlled from SPIKE node boards. A common power source is grounded by individual transistors to turn individual LEDs on and off. Groups of LEDs, usually by node connector, share a common power source, so if a group of LEDs is out, check the wiring for the power source.

## FLASHERS

SPIKE games treat flashers the same as single LEDs that draw more power. Flashers are controlled from the same circuits that power regular lights.

## DRIVERS

A driver is a circuit that controls a high power-device such as a coil, magnet, or motor. Each device has a common 48V power source that is then connected to ground by a dedicated control transistor. Each driver is protected against shorting, static electricity, and over-current conditions. Take caution as 48V is always present on a device even when it is not energized.

## OPTOS

Certain types of optical switches (“optos”) require external signal conditioning. For these optos, they will interface to a SPIKE node via an opto signal conditioning board.

## 1.10 SYSTEM PROTECTIONS

**CAUTION:** Unless explicitly directed by an Authorized Stern Repair technician, perform ALL work on your pinball machine with the power disabled!

### INPUT/OUTPUT PROTECTIONS

SPIKE features built-in short-circuit, static electricity, and other protections to maximize reliability. If an LED, coil or other device shorts, it will be disabled but will not shut down the entire system in most circumstances. Groups of LEDs, coils, and switches often share common power supplies or other circuits, so it is possible that a bad device will affect the group of related devices and require removal or repair to fix the group. The system diagnostics will inform the technician of shorted or otherwise malfunctioning devices whenever possible. While the system is protected against permanent damage, it is strongly recommended to repair or replace these bad components as soon as possible to minimize downtime and maximize game earnings.

### FUSES

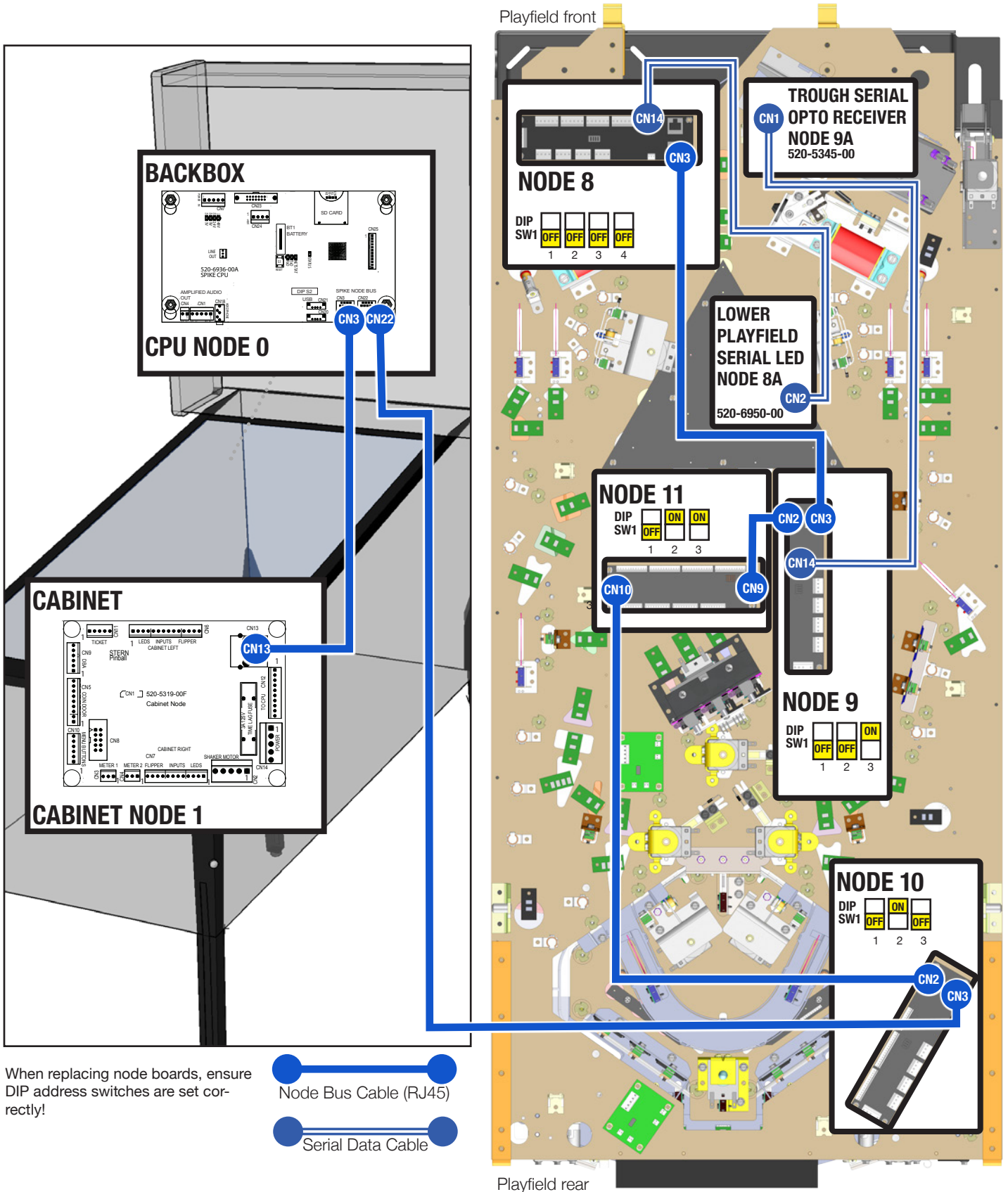
Nodes that have 48 V power are fused individually. Fuse voltage ratings are a safety rating and always must be higher than the circuit the fuse is protecting. Never replace a fuse with a lower voltage-rated fuse. Fuse current ratings must be replaced with the same current value. A higher current value fuse could cause catastrophic failures, and a lower-value fuse will cause premature fuse failures.

Fuse Rating (Amps)	Type	Part Number
3/4 A	Slow Blow MDL	200-5000-17
3 A	Slow Blow MDL	200-5000-08
4 A	Slow Blow MDL	200-5000-06
5 A	Slow Blow MDL	200-5000-01
7 A	Slow Blow MDL	200-5000-03
8 A	Slow Blow MDL	200-5000-05

**CAUTION:** Always replace fuses with the exact current specifications.

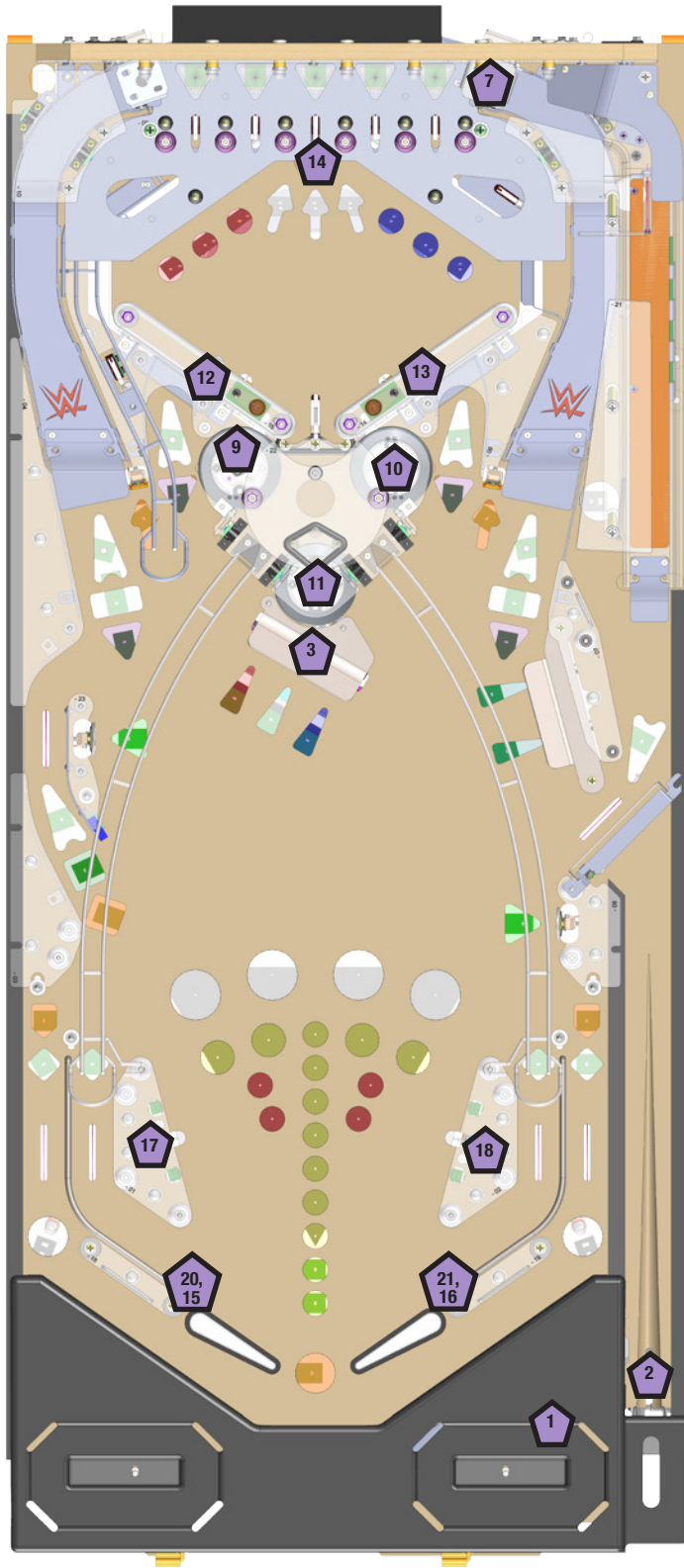


# 3. LIGHT, SWITCH, AND DRIVER REFERENCE



### 3.1 DRIVER REFERENCE

#### PLAYFIELD TOP



#### PLAYFIELD BOTTOM

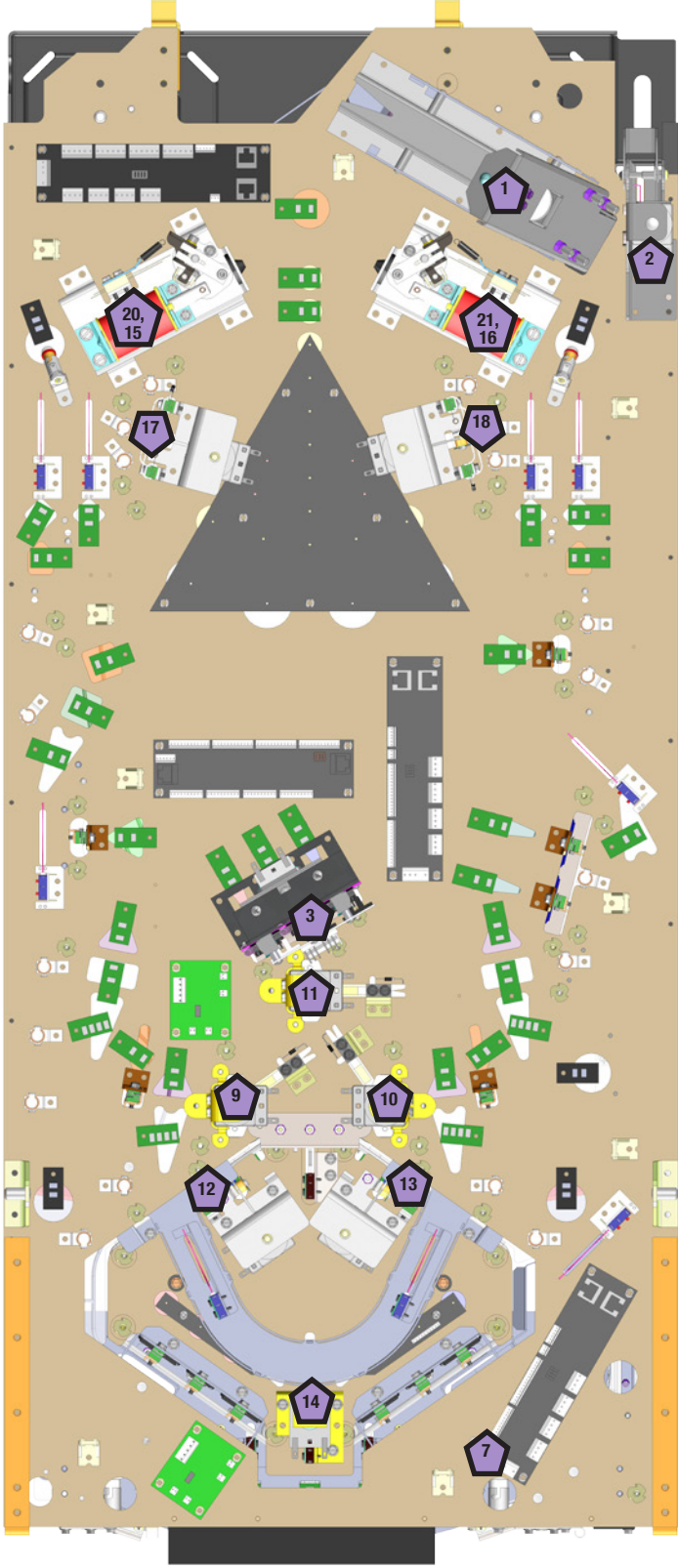


Figure 3.1.2. Playfield top component view

Figure 3.1.1. Playfield bottom component view, playfield shown in service position. Rear of game is at bottom of figure.



**DRIVER REFERENCE TABLE**

ID	Name	Node	Connector	Ret. Pin	Ret. Wire	Voltage	V+ Pin	V+ Color	Location	Type	Address	Part Number
1	Trough	8	CN8	5	ORG-GRY	48V	6	GRY-ORG	Playfield	Coil - 27-1500	8-DR-5	090-5004-ND
2	Auto Plunger	8	CN6	5	ORG-WHT	48V	6	GRY-ORG	Playfield	Coil - 23-800	8-DR-4	090-5001-ND
3	Center 3-Bank Drop Target Reset	9	CN11	3	YEL-WHT	48V	4	GRY-BLK	Playfield	Coil - 25-1240	9-DR-3	090-5034-ND
7	Ramp Control Gate Right	10	CN11	3	BLU-RED	48V	4	GRY-BRN	Back Panel	Coil - 32-1250	10-DR-3	090-5060-01-ND
8	Shaker Motor	1	CN2	1,2	BLU	48V	3,5	RED	Cabinet	Motor	1-DR-0	041-5029-04
9	Left Pop Bumper	9	CN5	3	ORG-RED	48V	4	GRY-BLK	Playfield	Coil - 26-1200	9-DR-0	090-5044-ND
10	Right Pop Bumper	9	CN7	3	ORG-BRN	48V	4	GRY-BLK	Playfield	Coil - 26-1200	9-DR-1	090-5044-ND
11	Bottom Pop Bumper	9	CN9	3	ORG-BLK	48V	4	GRY-BLK	Playfield	Coil - 26-1200	9-DR-2	090-5044-ND
12	Left Ring Slingshot	10	CN5	3	YEL-BLK	48V	4	GRY-BRN	Mini-PF	Coil - 26-1200	10-DR-0	090-5044-ND
13	Right Ring Slingshot	10	CN9	3	YEL-RED	48V	4	GRY-BRN	Mini-PF	Coil - 26-1200	10-DR-2	090-5044-ND
14	Ring Eject	10	CN7	3	YEL-BRN	48V	4	GRY-BRN	Mini-PF	Coil - 27-1500	10-DR-1	090-5004-ND
15	Left Flipper	8	CN5	3	ORG-YEL	48V	4	GRY-ORG	Playfield	Coil - 24-850	8-DR-0	090-5083-03-ND
16	Right Flipper	8	CN7	3	ORG-GRN	48V	4	GRY-ORG	Playfield	Coil - 24-850	8-DR-1	090-5083-03-ND
17	Left Slingshot	8	CN12	5	ORG-BLU	48V	6	GRY-ORG	Playfield	Coil - 26-1200	8-DR-7	090-5044-ND
18	Right Slingshot	8	CN10	5	ORG-VIO	48V	6	GRY-ORG	Playfield	Coil - 26-1200	8-DR-6	090-5044-ND
20	Left Flipper Hold	8	CN9	3	YEL-ORG	48V	4	GRY-ORG	Playfield	Coil - 31-3500	8-DR-2	090-5083-03-ND
21	Right Flipper Hold	8	CN11	3	YEL-GRN	48V	4	GRY-ORG	Playfield	Coil - 31-3500	8-DR-3	090-5083-03-ND
30	Meter 1	1	CN3	2	BLK	12V	1	RED	Cabinet	Digital Out	1-DR-2	500-9946-00
31	Meter 2	1	CN4	2	BLK	12V	1	RED	Cabinet	Digital Out	1-DR-3	500-9946-00
32	Ticket Dispenser	1	CN11	3		12V	1		Cabinet	Digital Out	1-DR-4	

Figure 3.2.1. Driver reference table.

**3.2 LIGHTING REFERENCE**

ID	Name	Node	Node Ext.	Conn.	Ret. Pin	Ret. Wire	Src. Pin	Src. Wire	Location	Type	Light Color	Address	Part Number
1	Start Button	1	-	CN6	3	YEL-BRN	1	REDv	Cabinet	Feature	White	1-LP-2	112-5033-08
2	Tournament Start Button	1	-	CN6	2	YEL-RED	1	RED	Cabinet	Feature	White	1-LP-3	112-5033-08
3	Shoot Again	8	8a	8a-CN1	3	RED-GRY	5	RED	Playfield	Feature	White	8a-LP-47	520-5307-00
4	100 Thousand	8	8a	8a-CN1	2	GRN-GRY	5	RED	Playfield	Feature	White	8a-LP-46	520-5307-00
5	200 Thousand	8	8a	8a-CN1	1	BLU-GRY	5	RED	Playfield	Feature	White	8a-LP-45	520-5307-00
6	300 Thousand	8	8a	CN14	D7	-	-	-	Playfield	Feature	White	8a-LP-20	520-6950-00
7	400 Thousand	8	8a	CN14	D6	-	-	-	Playfield	Feature	White	8a-LP-19	520-6950-00
8	500 Thousand	8	8a	CN14	D5	-	-	-	Playfield	Feature	White	8a-LP-18	520-6950-00
9	600 Thousand	8	8a	CN14	D4	-	-	-	Playfield	Feature	White	8a-LP-17	520-6950-00
10	700 Thousand	8	8a	CN14	D18	-	-	-	Playfield	Feature	White	8a-LP-30	520-6950-00
11	800 Thousand	8	8a	CN14	D17	-	-	-	Playfield	Feature	White	8a-LP-29	520-6950-00
12	900 Thousand	8	8a	CN14	D12	-	-	-	Playfield	Feature	White	8a-LP-25	520-6950-00
13	1 Million	8	8a	CN14	D3	-	-	-	Playfield	Feature	White	8a-LP-16	520-6950-00
14	2 Million	8	8a	CN14	D11	-	-	-	Playfield	Feature	White	8a-LP-24	520-6950-00
15	3 Million	8	8a	CN14	D16	-	-	-	Playfield	Feature	White	8a-LP-28	520-6950-00
16	4 Million	8	8a	CN14	D10	-	-	-	Playfield	Feature	White	8a-LP-23	520-6950-00
17	2X	8	8a	CN14	D14	-	-	-	Playfield	Feature	White	8a-LP-27	520-6950-00
18	3X	8	8a	CN14	D9	-	-	-	Playfield	Feature	White	8a-LP-22	520-6950-00
19	4X	8	8a	CN14	D13	-	-	-	Playfield	Feature	White	8a-LP-26	520-6950-00
20	5X	8	8a	CN14	D8	-	-	-	Playfield	Feature	White	8a-LP-21	520-6950-00
21	Special When Red(Left)	8	8a	8a-CN4	5	ORG-GRN	8	RED	Playfield	Feature	Red	8a-LP-43	112-5034-02
22	Special When Red(Right)	8	8a	8a-CN5	5	ORG-GRN	8	RED	Playfield	Feature	Red	8a-LP-38	112-5034-02
23	(Y)ES!	8	8a	8a-CN4	3	ORG-RED	8	RED	Playfield	Feature	White	8a-LP-41	520-5307-00

Continued on next page...



**LIGHTING REFERENCE**

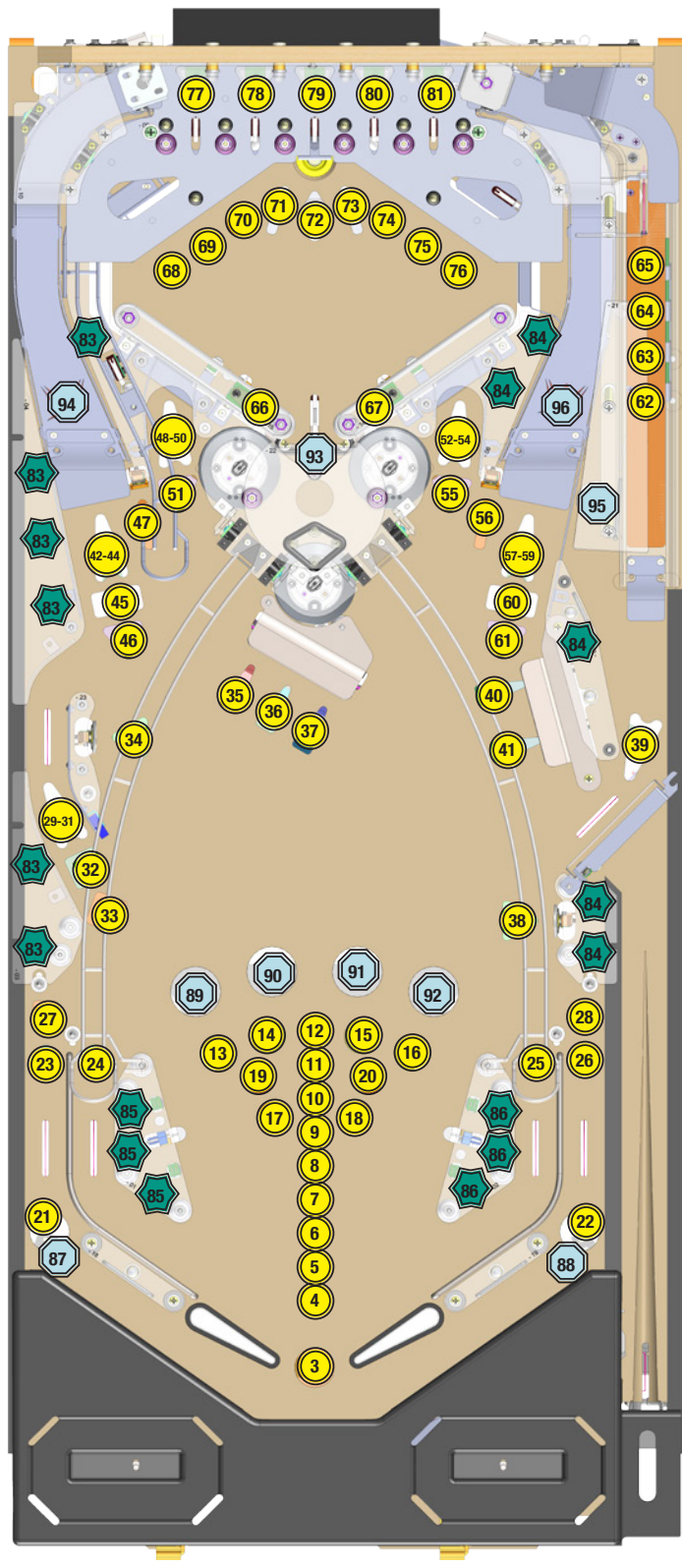


Figure 3.2.3. Playfield top view

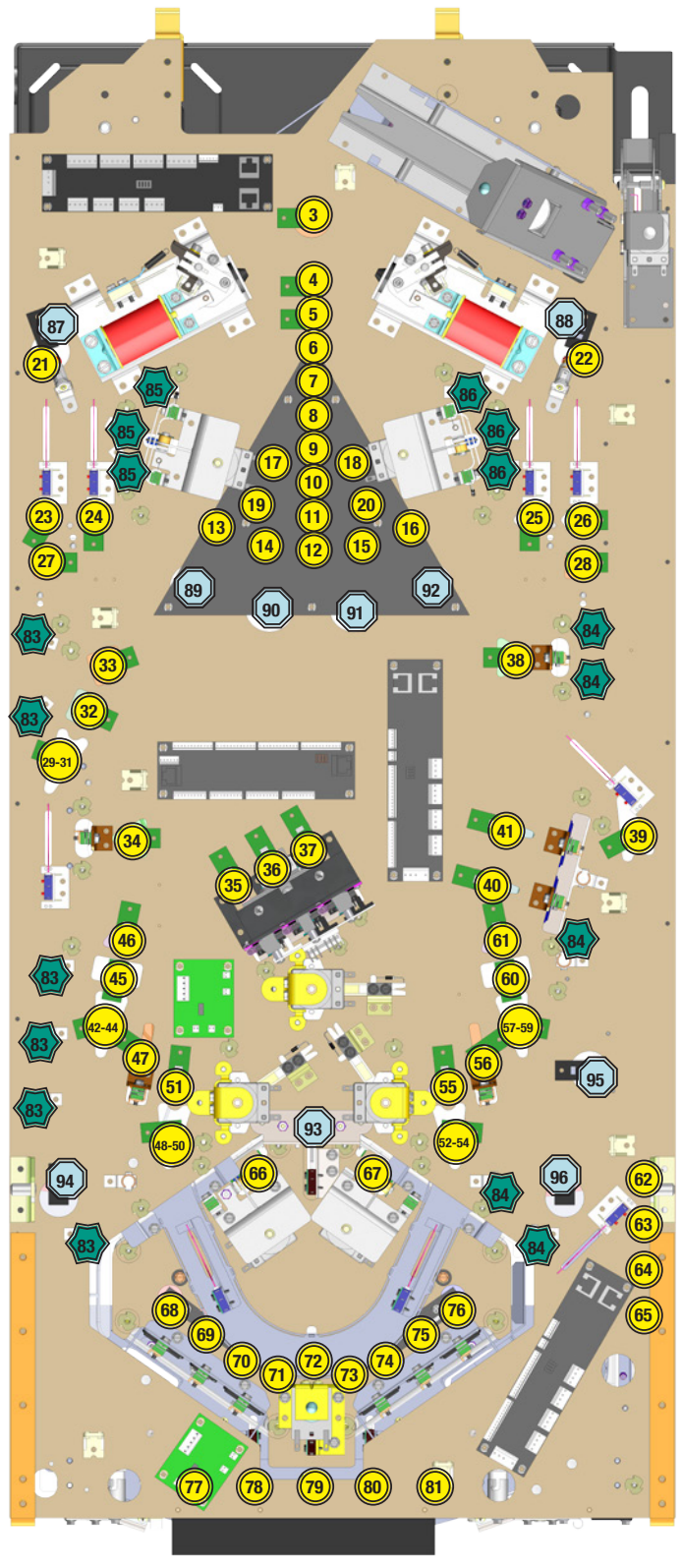


Figure 3.2.2. Playfield bottom, shown in upright service position.

## LIGHTING REFERENCE

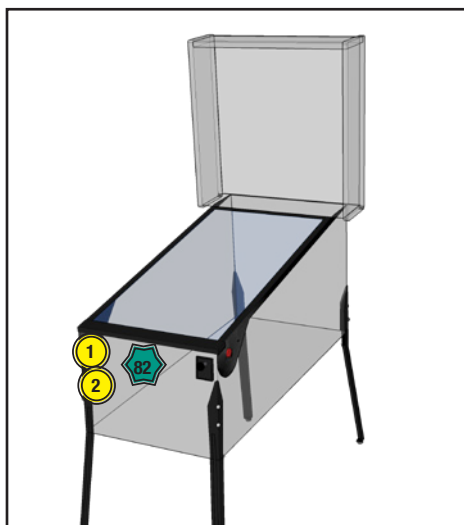





Figure 3.2.4. Cabinet lighting locations.



Figure 3.2.5. Playfield back panel lighting locations.

For detailed wire color, node board, pin-out, and lighting component information, locate the node that the light in question is connected to and refer to the node board detail section.

### LEGEND

-  Multi, General Illumination
-  Single, Low-Current
-  Flash, High-Current

## LIGHTING REFERENCE CONTINUED

ID	Name	Node	Node Ext.	Conn.	Ret. Pin	Ret. Wire	Src. Pin	Src. Wire	Location	Type	Light Color	Address	Part Number
24	Y(E)S!	8	8a	8a-CN4	1	ORG-BLK	8	RED	Playfield	Feature	White	8a-LP-40	520-5307-00
25	YE(S)!	8	8a	8a-CN5	1	ORG-BLK	8	RED	Playfield	Feature	White	8a-LP-35	520-5307-00
26	YES(!)	8	8a	8a-CN5	3	ORG-RED	8	RED	Playfield	Feature	White	8a-LP-36	520-5307-00
27	KICK OUT	8	8a	8a-CN4	4	ORG-YEL	8	RED	Playfield	Feature	White	8a-LP-42	520-5307-00
28	Break Hold	8	8a	8a-CN5	4	ORG-YEL	8	RED	Playfield	Feature	White	8a-LP-37	520-5307-00
29	Left Lane Arrow(Red)	11	-	CN2	7	RED-VIO	2	RED	Playfield	Feature	RGB	11-LP-3	520-5333-00
30	Left Lane Arrow(Green)	11	-	CN2	8	GRN-VIO	2	RED	Playfield	Feature	RGB	11-LP-4	520-5333-00
31	Left Lane Arrow(Blue)	11	-	CN2	9	BLU-VIO	2	RED	Playfield	Feature	RGB	11-LP-5	520-5333-00
32	Tag Team	11	-	CN2	10	YEL-BLK	3	RED	Playfield	Feature	White	11-LP-6	520-5307-00
33	Extra Ball	11	-	CN2	11	YEL-BRN	3	RED	Playfield	Feature	White	11-LP-7	520-5307-00
34	Light Kick Out	11	-	CN6	9	BRN-BLU	2	RED	Playfield	Feature	White	11-LP-21	520-5307-00
35	Center 3-Bank(Left)	9	-	CN16	2	BRN-ORG	1	YEL	Playfield	Feature	White	9-LP-1	520-5307-00
36	Center 3-Bank(Center)	9	-	CN16	3	BRN-YEL	1	YEL	Playfield	Feature	White	9-LP-2	520-5307-00
37	Center 3-Bank(Right)	9	-	CN16	4	BRN-GRN	1	YEL	Playfield	Feature	White	9-LP-3	520-5307-00
38	Light Break Hold	11	-	CN6	10	BRN-VIO	3	RED	Playfield	Feature	White	11-LP-22	520-5307-00
39	Right Lane Arrow	11	-	CN6	11	BRN-GRY	3	RED	Playfield	Feature	White	11-LP-23	520-5307-00
40	Right 2-Bank Target(Top)	11	-	CN8	10	ORG-VIO	3	RED	Playfield	Feature	White	11-LP-30	520-5307-00
41	Right 2-Bank Target(Bottom)	11	-	CN8	11	ORG-GRY	3	RED	Playfield	Feature	White	11-LP-31	520-5307-00
42	L. Ramp Arrow(Red)	11	-	CN2	4	RED-GRN	3	RED	Playfield	Feature	RGB	11-LP-0	520-5333-00
43	L. Ramp Arrow(Green)	11	-	CN2	5	GRN	3	RED	Playfield	Feature	RGB	11-LP-1	520-5333-00
44	L. Ramp Arrow(Blue)	11	-	CN2	6	BLU-GRN	3	RED	Playfield	Feature	RGB	11-LP-2	520-5333-00
45	Left Ramp(Ring)	11	-	CN6	7	BRN-YEL	2	RED	Playfield	Feature	White	11-LP-19	520-5307-00
46	Left Ramp(Ref)	11	-	CN6	8	BRN-GRN	2	RED	Playfield	Feature	White	11-LP-20	520-5307-00
47	Tag(Left)	9	-	CN16	5	BRN-GRY	1	YEL	Playfield	Feature	White	9-LP-4	520-5307-00
48	Left Orbit Arrow(Red)	9	-	CN16	7	RED-BRN	1	YEL	Playfield	Feature	RGB	9-LP-6	520-5333-00
49	Left Orbit Arrow(Green)	9	-	CN16	8	GRN-BRN	1	YEL	Playfield	Feature	RGB	9-LP-7	520-5333-00
50	Left Orbit Arrow(Blue)	9	-	CN16	9	BLU-BRN	1	YEL	Playfield	Feature	RGB	9-LP-8	520-5333-00
51	Left Orbit(Ref)	9	-	CN16	10	ORG-BRN	1	YEL	Playfield	Feature	White	9-LP-9	520-5307-00
52	Right Orbit Arrow(Red)	9	-	CN16	11	RED-ORG	1	YEL	Playfield	Feature	RGB	9-LP-10	520-5333-00

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**LIGHTING REFERENCE CONTINUED**

ID	Name	Node	Node Ext.	Conn.	Ret. Pin	Ret. Wire	Src. Pin	Src. Wire	Location	Type	Light Color	Address	Part Number
53	Right Orbit Arrow(Green)	9	-	CN16	12	GRN-ORG	1	YEL	Playfield	Feature	RGB	9-LP-11	520-5333-00
54	Right Orbit Arrow(Blue)	9	-	CN16	13	BLU-ORG	1	YEL	Playfield	Feature	RGB	9-LP-12	520-5333-00
55	Right Orbit (Ref)	9	-	CN16	14	ORG-BLK	1	YEL	Playfield	Feature	White	9-LP-13	520-5307-00
56	Tag(Right)	9	-	CN16	6	BRN-WHT	1	YEL	Playfield	Feature	White	9-LP-5	520-5307-00
57	Right Ramp Arrow(Red)	11	-	CN4	4	RED-GRY	2	RED	Playfield	Feature	RGB	11-LP-8	520-5333-00
58	Right Ramp Arrow(Green)	11	-	CN4	5	GRN-GRY	2	RED	Playfield	Feature	RGB	11-LP-9	520-5333-00
59	Right Ramp Arrow(Blue)	11	-	CN4	6	BLU-GRY	2	RED	Playfield	Feature	RGB	11-LP-10	520-5333-00
60	Right Ramp(Ring)	11	-	CN8	8	ORG-GRN	2	RED	Playfield	Feature	White	11-LP-28	520-5307-00
61	Right Ramp(Ref)	11	-	CN8	9	ORG-BLU	2	RED	Playfield	Feature	White	11-LP-29	520-5307-00
62	Ladder 1(bottom)	11	-	CN8	4	ORG-BLK	2	RED	Playfield	Feature	White	11-LP-24	520-5307-00
63	Ladder 2	11	-	CN8	5	ORG-BRN	2	RED	Playfield	Feature	White	11-LP-25	520-5307-00
64	Ladder 3	11	-	CN8	6	ORG-RED	2	RED	Playfield	Feature	White	11-LP-26	520-5307-00
65	Ladder 4(top)	11	-	CN8	7	ORG-YEL	2	RED	Playfield	Feature	White	11-LP-27	520-5307-00
66	Flipper When Lit(Left)	10	-	CN16	11	ORG-YEL	1	YEL	Mini-Playfield	Feature	White	10-LP-10	520-5307-00
67	Flipper When Lit(Right)	10	-	CN16	12	ORG-GRN	1	YEL	Mini-Playfield	Feature	White	10-LP-11	520-5307-00
68	Ring 1(Left)	10	-	CN16	2	YEL-BLK	1	YEL	Mini-Playfield	Feature	White	10-LP-1	520-6951-00
69	Ring 2	10	-	CN16	3	YEL-BRN	1	YEL	Mini-Playfield	Feature	White	10-LP-2	520-6951-00
70	Ring 3	10	-	CN16	4	YEL-RED	1	YEL	Mini-Playfield	Feature	White	10-LP-3	520-6951-00
71	Ring 4	10	-	CN16	5	YEL-ORG	1	YEL	Mini-Playfield	Feature	White	10-LP-4	520-6951-00
72	Ring 5	10	-	CN16	6	YEL-GRN	1	YEL	Mini-Playfield	Feature	White	10-LP-5	520-6951-00
73	Ring 6	10	-	CN16	7	YEL-BLU	1	YEL	Mini-Playfield	Feature	White	10-LP-6	520-6951-00
74	Ring 7	10	-	CN16	8	YEL-VIO	1	YEL	Mini-Playfield	Feature	White	10-LP-7	520-6951-00
75	Ring 8	10	-	CN16	9	YEL-GRY	1	YEL	Mini-Playfield	Feature	White	10-LP-8	520-6951-00
76	Ring 9(Right)	10	-	CN16	10	YEL-WHT	1	YEL	Mini-Playfield	Feature	White	10-LP-9	520-6951-00
77	Top lane 1(Left)	11	-	CN4	7	YEL-RED	3	RED	Playfield	Feature	White	11-LP-11	520-5307-00
78	Top lane 2	11	-	CN4	8	YEL-ORG	3	RED	Playfield	Feature	White	11-LP-12	520-5307-00
79	Top lane 3	11	-	CN4	9	YEL-GRN	3	RED	Playfield	Feature	White	11-LP-13	520-5307-00
80	Top lane 4	11	-	CN4	10	YEL-BLU	3	RED	Playfield	Feature	White	11-LP-14	520-5307-00
81	Top lane 5(Right)	11	-	CN4	11	YEL-VIO	3	RED	Playfield	Feature	White	11-LP-15	520-5307-00
82	Coin Door Gl(x2)	1	-	CN5	2	YEL	1	YEL-WHT	Coin Door	G.I.	White	1-LP-1	112-5033-08
83	Left Playfield Gl	9	-	CN13	1	RED-BLK	3	YEL-BLK	Playfield	G.I.	White/Red	9-LP-0	112-5034-08, 112-5033-02
84	Right Playfield Gl	10	-	CN13	1	GRN-BLK	3	YEL-BLK	Playfield/Back Panel	G.I.	White/Red	10-LP-0	112-5034-08, 112-5033-02
85	Left Slingshot Gl(x3)	8	-	CN12	1	BRN-BLU	2	YEL	Playfield	G.I.	White	8-LP-3	112-5034-08
86	Right Slingshot Gl(x3)	8	-	CN10	1	BRN-VIO	2	YEL	Playfield	G.I.	White	8-LP-2	112-5034-08
87	Left Outlane	8	8a	8a-CN4	6	ORG-BLU	8	RED	Playfield	Flash	White	8a-LP-44	520-6785-00
88	Right Outlane	8	8a	8a-CN5	6	ORG-BLU	8	RED	Playfield	Flash	White	8a-LP-39	520-6785-00
89	United States Champion	8	8a	CN14	D20	-	-	-	Playfield	Flash	White	8a-LP-33	199-6950-00
90	Tag Team Champion	8	8a	CN14	D23	-	-	-	Playfield	Flash	White	8a-LP-34	199-6950-00
91	Intercontinental Champion	8	8a	CN14	D21	-	-	-	Playfield	Flash	White	8a-LP-32	199-6950-00
92	World Heavyweight Champion	8	8a	CN14	D19	-	-	-	Playfield	Flash	White	8a-LP-31	199-6950-00
93	Pop Bumper	9	-	CN16	15	ORG-RED	1	YEL	Playfield	Flash	White	9-LP-14	520-6785-00
94	Left Ramp	11	-	CN6	4	BRN-BLK	2	RED	Playfield	Flash	White	11-LP-16	520-6785-00
95	Ladder(Bottom)	11	-	CN6	6	BRN-ORG	3	RED	Playfield	Flash	White	11-LP-18	520-6785-00
96	Right Ramp	11	-	CN6	5	BRN-RED	3	RED	Playfield	Flash	White	11-LP-17	520-6785-00
97	Top Lane(Left)	10	-	CN16	15	ORG-GRY	1	YEL	Back Pnl	Flash	White	10-LP-14	113-5045-08
98	Top Lane(Right)	10	-	CN16	16	ORG-WHT	1	YEL	Back Pnl	Flash	White	10-LP-15	113-5045-08
99	Bell	10	-	CN16	13	ORG-BLU	1	YEL	Back Pnl	Flash	White	10-LP-12	520-6785-00
100	Ladder	10	-	CN16	14	ORG-VIO	1	YEL	Back Pnl	Flash	White	10-LP-13	520-6785-00



### 3.3 SWITCH REFERENCE

ID	Name	Node	Node Ext	Conn.	Input Pin	Input Wire	GND Pin	Ground Wire	Location	Type	Address	Part Number
1	Left Return Lane	11	-	CN7	2	LGN-YEL	10	BLK-RED	Playfield	Rollover	11-SW-0	500-9935-04
2	Right Return Lane	11	-	CN5	2	PNK-BLK	10	BLK-GRY	Playfield	Rollover	11-SW-8	500-9935-04
3	Left Outlane	11	-	CN7	3	LGN-BLU	10	BLK-RED	Playfield	Rollover	11-SW-1	500-9935-04
4	Right Outlane	11	-	CN5	3	PNK-BRN	10	BLK-GRY	Playfield	Rollover	11-SW-9	500-9935-04
5	Left Slingshot	8	-	CN12	4	GRY-BLU	3	BLK-GRN	Playfield	Leaf	8-SW-7	180-5231-00
6	Right Slingshot	8	-	CN10	4	GRY-VIO	3	BLK-GRN	Playfield	Leaf	8-SW-6	180-5231-00
7	Center 3-Bank Drop Target Right	9	-	CN15	4	WHT-ORG	14	BLK-BLU	Playfield	Opto	9-SW-6	520-5252-13
8	Center 3-Bank Drop Target Center	9	-	CN15	3	WHT-RED	14	BLK-BLU	Playfield	Opto	9-SW-5	520-5252-13
9	Center 3-Bank Drop Target Left	9	-	CN15	2	WHT-BRN	14	BLK-BLU	Playfield	Opto	9-SW-4	520-5252-13
10	Left Flipper Button	8	-	CN9	2	GRY-BRN	1	BLK-GRN	Cabinet	Leaf	8-SW-2	180-5164-01
11	Right Flipper Button	8	-	CN11	2	GRY-RED	1	BLK-GRN	Cabinet	Leaf	8-SW-3	180-5164-01
12	Left Lane	11	-	CN7	5	LGN-GRY	10	BLK-RED	Playfield	Rollover	11-SW-3	500-9935-04
14	Left Orbit	9	-	CN15	9	WHT-GRY	14	BLK-BLU	Playfield	Rollover	9-SW-11	180-5230-01
15	Tournament Start Button	1	-	CN6	9	GRY-WHT	5	BLK-WHT	Cabinet	Micro	1-SW-12	180-5174-00
16	Trough 6	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-17	520-5344-00 tx 520-5345-00 rx
17	Trough 5	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-18	520-5344-00 tx 520-5345-00 rx
18	Trough 4	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-19	520-5344-00 tx 520-5345-00 rx
19	Trough 3	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-20	520-5344-00 tx 520-5345-00 rx
20	Trough 2	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-21	520-5344-00 tx 520-5345-00 rx
21	Trough 1	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-22	520-5344-00 tx 520-5345-00 rx
22	Trough Jam	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-23	520-5344-00 tx 520-5345-00 rx
23	Shooter Lane	8	-	CN6	4	GRY-WHT	3	BLK-GRN	Playfield	Rollover	8-SW-4	180-5157-01
24	Right Orbit	9	-	CN15	10	WHT	14	BLK-BLU	Playfield	Rollover	9-SW-12	180-5230-01
25	Left Ring Sling	10	-	CN5	2	GRY-BLK	1	BLK-VIO	Mini-Playfield	Leaf	10-SW-0	180-5231-00
26	Right Ring Sling	10	-	CN9	2	GRY-RED	1	BLK-VIO	Mini-Playfield	Leaf	10-SW-2	180-5231-00
27	Ring Eject	10	-	CN7	2	GRY-BRN	1	BLK-VIO	Mini-Playfield	Rollover	10-SW-1	180-5209-00
28	Bottom Ring Exit	10	-	CN11	2	GRY-ORG	1	BLK-VIO	Mini-Playfield	Rollover	10-SW-3	180-5057-00
29	Right 2-Bank Top	11	-	CN5	6	PNK-YEL	10	BLK-GRY	Playfield	Leaf, Target	11-SW-12	515-9784-05-00
30	Left Pop Bumper	9	-	CN5	2	BRN-RED	1	BLK-BLU	Playfield	Leaf	9-SW-0	180-5232-00
31	Right Pop Bumper	9	-	CN7	2	BRN	1	BLK-BLU	Playfield	Leaf	9-SW-1	180-5232-00
32	Bottom Pop Bumper	9	-	CN9	2	BRN-BLK	1	BLK-BLU	Playfield	Leaf	9-SW-2	180-5232-00
33	Right 2-Bank Bottom	11	-	CN5	7	PNK-GRN	10	BLK-GRY	Playfield	Leaf, Target	11-SW-13	515-9784-05-00
34	Right Ring Exit	10	-	CN15	13	LGN-ORG	14	BLK-VIO	Playfield	Rollover	10-SW-15	500-9935-04
35	Shooter Exit	11	-	CN5	5	PNK-ORG	10	BLK-GRY	Playfield	Rollover	11-SW-11	500-9935-04
36	Right single standup	11	-	CN5	4	PNK-RED	10	BLK-GRY	Playfield	Leaf, Target	11-SW-10	515-9786-07-00
37	Left single standup	11	-	CN7	4	LGN-VIO	10	BLK-RED	Playfield	Leaf, Target	11-SW-2	515-9786-07-00
38	Left ramp standup	9	-	CN15	7	WHT-BLU	14	BLK-BLU	Playfield	Leaf, Target	9-SW-9	515-9786-04-00
39	Right ramp standup	9	-	CN15	8	WHT-VIO	14	BLK-BLU	Playfield	Leaf, Target	9-SW-10	515-9786-04-00
41	Top lane 1	11	-	CN3	2	TAN-BLK	10	BLK-ORG	Playfield	Rollover	11-SW-16	180-5209-00
42	Top lane 2	11	-	CN3	3	TAN-RED	10	BLK-ORG	Playfield	Rollover	11-SW-17	180-5209-00
43	Top lane 3	11	-	CN3	4	TAN-ORG	10	BLK-ORG	Playfield	Rollover	11-SW-18	180-5209-00
44	Top lane 4	11	-	CN3	5	TAN-YEL	10	BLK-ORG	Playfield	Rollover	11-SW-19	180-5209-00
45	Top lane 5	11	-	CN3	6	TAN-GRN	10	BLK-ORG	Playfield	Rollover	11-SW-20	180-5209-00

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# SWITCH REFERENCE

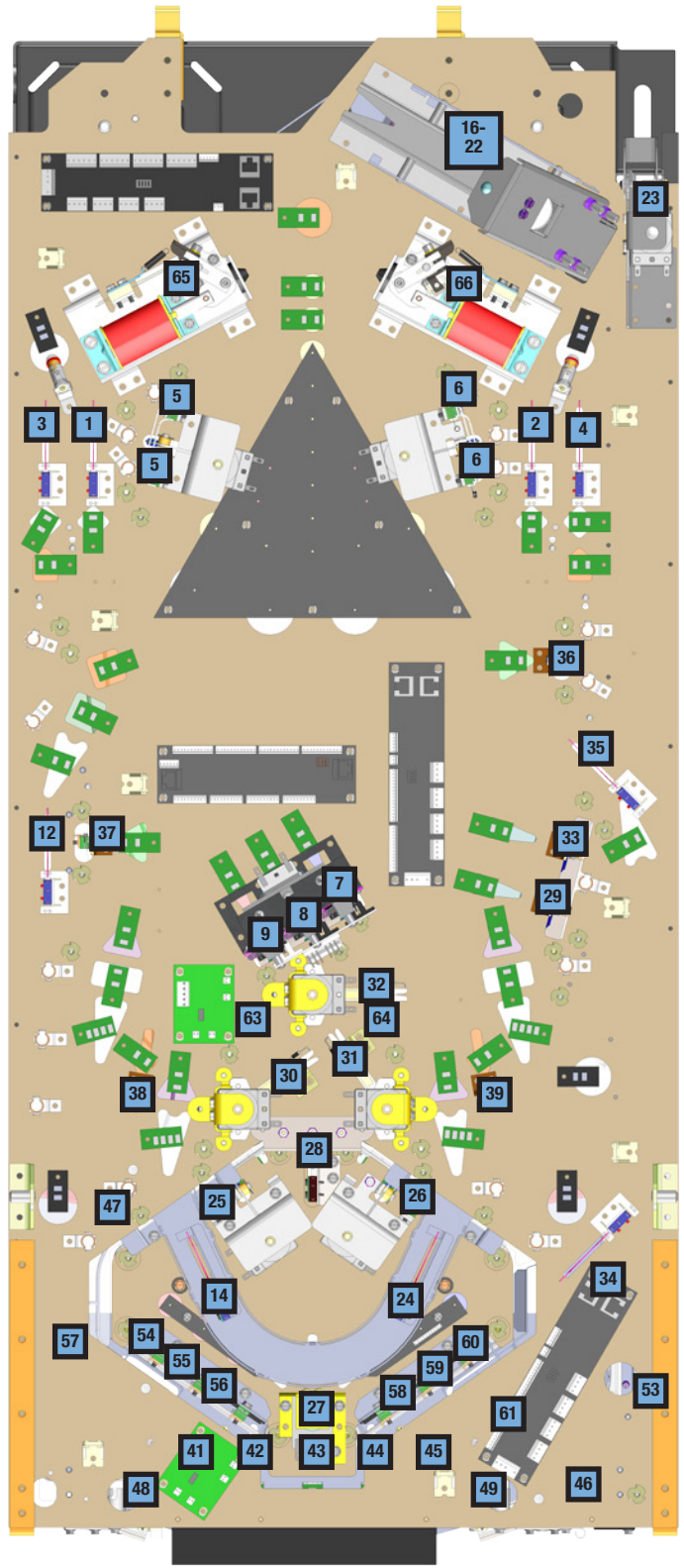
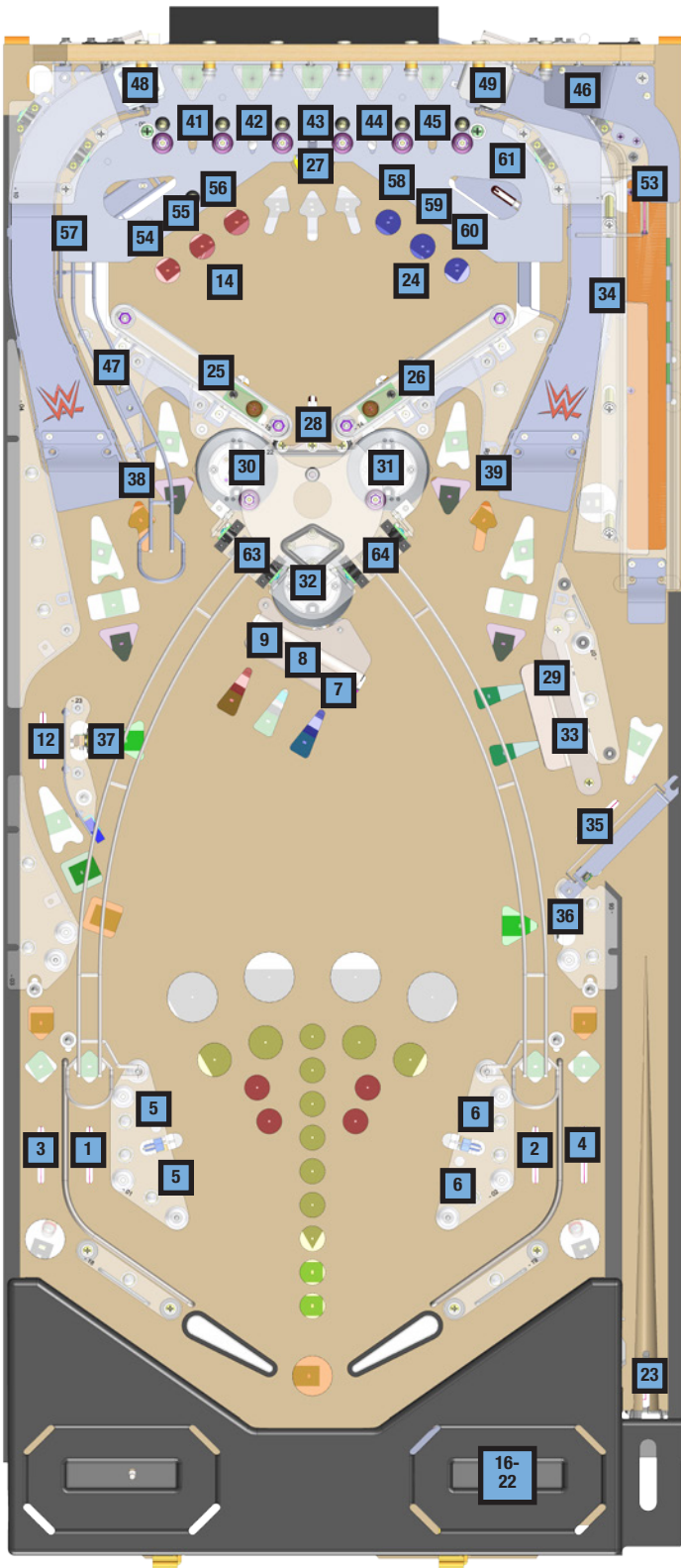


Figure 3.3.2. Switch locations, playfield top view

Figure 3.3.3. Switch locations, playfield bottom, shown in upright service position.



**SWITCH REFERENCE CONTINUED**

ID	Name	Node	Node Ext	Conn.	Input Pin	Input Wire	GND Pin	Ground Wire	Location	Type	Address	Part Number
46	Ladder exit	11	-	CN3	8	TAN-VIO	10	BLK-ORG	Playfield	Rollover	11-SW-22	180-5209-00
47	Left ring exit	10	-	CN15	11	LGN-BRN	14	BLK-VIO	Playfield	Rollover	10-SW-13	180-5209-00
48	Left Ramp Exit	9	-	CN15	11	BRN-BLU	14	BLK-BLU	Playfield	Opto	9-SW-13	500-6775-01
49	Right Ramp Exit	9	-	CN15	12	BRN-VIO	14	BLK-BLU	Playfield	Opto	9-SW-14	500-6775-01
53	Ladder 4	11	-	CN3	7	TAN-BLU	10	BLK-ORG	Playfield	Rollover	11-SW-21	180-5230-01
54	Ring standup left 1	10	-	CN15	2	WHT-BRN	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-4	515-9784-00-00
55	Ring standup left 2	10	-	CN15	3	WHT-RED	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-5	515-9783-00-00
56	Ring standup left 3	10	-	CN15	4	WHT-ORG	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-6	515-9784-00-00
57	Top lane Left exit	10	-	CN15	10	LGN-BLK	14	BLK-VIO	Playfield	Rollover	10-SW-12	180-5209-00
58	Ring standup Right 1	10	-	CN15	5	WHT-YEL	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-7	515-9784-00-00
59	Ring standup Right 2	10	-	CN15	6	WHT-GRN	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-8	515-9783-00-00
60	Ring standup Right 3	10	-	CN15	7	WHT-BLU	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-9	515-9784-00-00
61	Top lane right exit	10	-	CN15	12	LGN-RED	14	BLK-VIO	Playfield	Rollover	10-SW-14	180-5209-00
62	Start Button	1	-	CN6	10	GRY	5	BLK-WHT	Cabinet	Micro	1-SW-11	180-5174-00
63	Pop Bumper Stage Left Exit	9	-	CN15	5	WHT-YEL	14	BLK-BLU	Playfield	Opto	9-SW-7	500-6775-01
64	Pop Bumper Stage Right Exit	9	-	CN15	6	WHT-GRN	14	BLK-BLU	Playfield	Opto	9-SW-8	500-6775-01
65	Left Flipper EOS	8	-	CN5	2	GRY-YEL	1	BLK-GRN	Playfield	Leaf	8-SW-0	180-5149-00
66	Right Flipper EOS	8	-	CN7	2	GRY-GRN	1	BLK-GRN	Playfield	Leaf	8-SW-1	180-5149-00
67	Left Coin	1	-	CN5	9	PNK-BRN	3	BLK	Cabinet	Micro	1-SW-16	
68	Right Coin	1	-	CN5	8	PNK-RED	3	BLK	Cabinet	Micro	1-SW-18	
69	Center Coin	1	-	CN5	7	PNK-ORG	3	BLK	Cabinet	Micro	1-SW-17	
70	Fourth Coin	1	-	CN5	6	-	-	-	Cabinet	-	1-SW-19	
71	Fifth Coin	1	-	CN5	5	-	-	-	Cabinet	-	1-SW-20	
72	Tilt Pendulum	1	-	CN6	7	WHT	5	BLK-WHT	Cabinet	Plumb Bob	1-SW-14	
74	Upper Left Flipper Button	10	-	CN15	8	VIO	14	BLK-VIO	Cabinet	Leaf	10-SW-10	180-5164-01
75	Upper Right Flipper Button	10	-	CN15	9	VIO-WHT	14	BLK-VIO	Cabinet	Leaf	10-SW-11	180-5164-01
76	Ticket Notch	1	-	CN11	5	-	-	-	Cabinet	-	1-SW-8	
77	Slam Tilt	1	-	CN5	4	LGN-RED	3	BLK	Cabinet	-	1-SW-21	

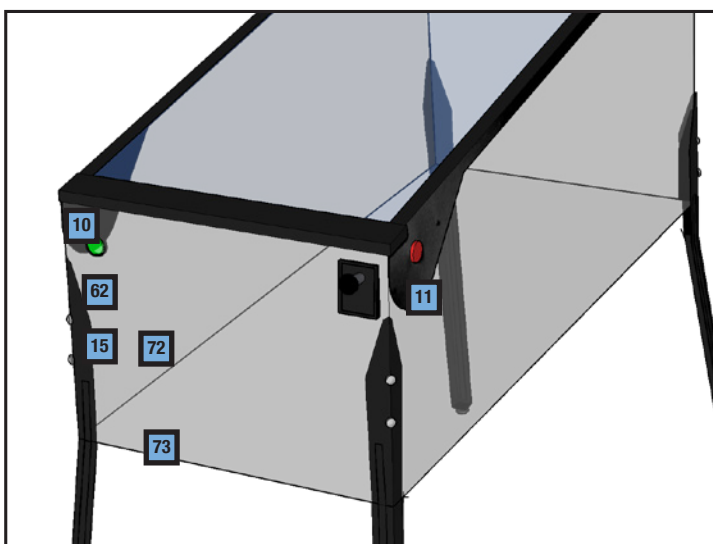


Figure 3.3.4. Cabinet switch locations.

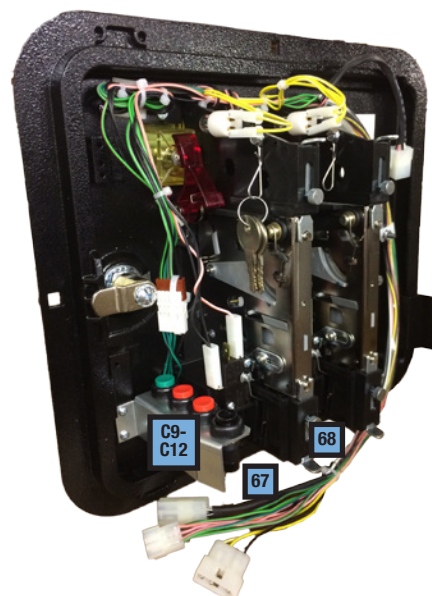


Figure 3.3.5. Coin door switch locations. Refer to Coin Door Reference for other parts.

## SWITCH REFERENCE TABLE CONTINUED

ID	Name	Node	Node Ext	Conn.	Input Pin	Input Wire	GND Pin	Ground Wire	Location	Type	Address	Part Number
C1	DIP 1	0	-	-	-	-	-	-	CPU Node		0-SW-0	-
C10	Service Plus	0	-	CN25	3	LGN-VIO	6	BLK	Coin Door		0-SW-10	180-5192-02
C11	Service Minus	0	-	CN25	2	LGN-BLU	6	BLK	Coin Door		0-SW-11	180-5192-02
C12	Service Back	0	-	CN25	1	LGN-BLK	6	BLK	Coin Door		0-SW-12	180-5192-00
C16	Power Interlock Sense	0	-	CN7	4	GRY-RED	1	BLK	Cabinet	Interlock	0-SW-16	180-5136-00
C2	DIP 2	0	-	-	-	-	-	-	CPU Node		0-SW-2	-
C3	DIP 3	0	-	-	-	-	-	-	CPU Node		0-SW-3	-
C4	DIP 4	0	-	-	-	-	-	-	CPU Node		0-SW-4	-
C5	DIP 5	0	-	-	-	-	-	-	CPU Node		0-SW-5	-
C6	DIP 6	0	-	-	-	-	-	-	CPU Node		0-SW-6	-
C7	DIP 7	0	-	-	-	-	-	-	CPU Node		0-SW-7	-
C8	DIP 8	0	-	-	-	-	-	-	CPU Node		0-SW-8	-
C9	Service Select	0	-	CN25	4	LGN-GRY	6	BLK	Coin Door		0-SW-9	180-5192-04

Figure 3.3.1. Switch reference table. See individual node pages in Section 3 for detailed pinouts and technical data.

# 4. ELECTRONIC PINOUTS AND SCHEMATICS

## 4.1 SPIKE CPU NODE 0

520-6936-00

### CONNECTORS

ID	Connector Type	Description
CN1	5-Pin .156" Header	Backbox 2-channel amplified speaker out
CN3	RJ45	SPIKE node bus - to cabinet node N1
CN4	2-Pin .156"	Cabinet 1-channel amplified speaker out
CN7	5-Pin .156" Header	48V supply from main power supply
CN18	3.5mm Stereo TRS jack	Headphone Jack
CN20	USB	USB connector - for software updates, audit dumps, and expansion modules
CN21	USB	USB connector - for software updates, audit dumps, and expansion modules
CN22	RJ45	SPIKE node bus - to playfield node, N8
CN23	14-Pin .100" Header	Dot matrix display connector
CN24	4-Pin .156" Header	5V DC and ground out to the LED display
CN25	12-Pin .100" Header	Dedicated switch inputs - service, volume switches

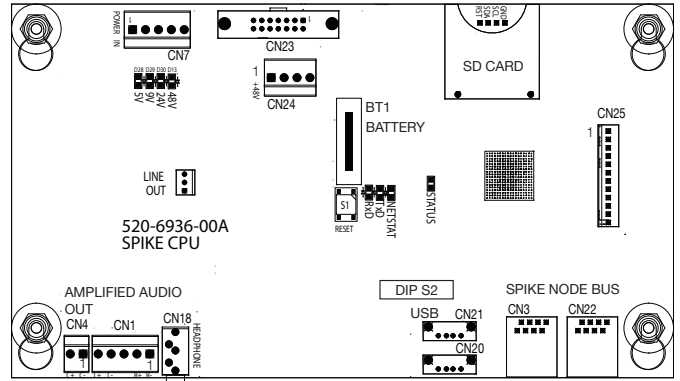


Figure 3.3.6. SPIKE CPU Node connector detail.

### COMPONENTS

ID	Name
S1	Reset Switch
S2	DIP Switches
SD CARD	For system SD card. Note: only to be removed if instructed to by Stern Service.
BT1	CR232 3V Lithium battery for game clock between power cycles

### COUNTRY CODES (DIP S2)

	DIP S2							
Country	1	2	3	4	5	6	7	8
USA	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Austria	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Australia	ON	OFF	ON	ON	OFF	OFF	OFF	OFF
Belgium	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
Canada 1	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
Canada 2	OFF	ON	OFF	ON	ON	OFF	OFF	OFF
Croatia	OFF	ON	ON	OFF	ON	OFF	OFF	OFF
Denmark	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
Finland	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
France	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
Germany	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
Greece	ON	ON	ON	ON	OFF	OFF	OFF	OFF
Italy	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
Japan	ON	OFF	ON	OFF	ON	OFF	OFF	OFF
Middle East	ON	ON	ON	OFF	ON	OFF	OFF	OFF
Netherlands	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
New Zealand	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
Norway	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
Portugal	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF
Russia	ON	OFF	OFF	ON	ON	OFF	OFF	OFF
S. Africa	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
Spain	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF
Sweden	ON	ON	OFF	ON	OFF	OFF	OFF	OFF
Switzerland	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
Taiwan	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF
United Kingdom	OFF	ON	ON	ON	OFF	OFF	OFF	OFF

Figure 3.3.7. Country code DIP switch settings.

### AUDIO PINOUTS

ID	Type	Pin	Description	Minimum Impedance	Max Power (RMS)
CN18	TRS 3.5mm Headphone Jack	Tip	Headphone Left	8 Ohms	200mW
		Ring	Headphone Right	8 Ohms	200mW
		Sleeve	Audio Ground	-	-
CN1	.156" 5-pin Header	1	Speaker Right Ground (-)	4 Ohms	-
		2	Speaker Right (+)	4 Ohms	20W
		3	n/c	-	-
		4	Speaker Left Ground (-)	4 Ohms	-
		5	Speaker Left (+)	4 Ohms	20W
CN4	.156" 2-pin Header	1	Woofers Ground (-)	8 Ohms	-
		2	Woofers Out (+)	8 Ohms	40W
CN27	.100" 3-pin header	1	Line Out Left (+)	600 Ohms	-
		2	Line Out Ground	-	-
		3	Line Out Right (-)	600 Ohms	-

Figure 3.3.8. Audio Pinouts

# SPIKE CPU NODE 0 CONTINUED

## STATUS LEDS

LED ID	Name	Color	Description
48V	+48V Supply In	Red	ON: Main system power is connected, OFF: No 48V system power. Check power supply connections, cables, and fuses.
24V	+24V Audio Power	Red	ON: Audio power supply is good, OFF: Audio power supply off, call tech support.
9V	+9V Node Bus Power	Red	ON: Node bus power supply is good, OFF: Node bus power supply bad, call tech support.
5V		Red	ON: Logic power supply is good. OFF: Logic power supply bad, call tech support.
TxD	Node bus transmit	Red	Node bus transmit activity
RxD	Node bus receive	Red	Node bus receive activity
Sta-tus	System status	Red	Constant double blink - game software running
Net-stat	Network status	Red	Communication bridge activity

## DIRECT SWITCH MAPPING (CN25)

The coin-door diagnostic switches are connected directly to the CPU node via the Cabinet Node. Note that both the CPU and Cabinet nodes are required for diagnostic switch operation.

ID	Name	Conn.	Input Pin	Input Wire	GND Pin	Ground Wire	Location	Type	Address	Part Number
C1	DIP 1	-	-	-	-	-	CPU Node		0-SW-0	-
C2	DIP 2	-	-	-	-	-	CPU Node		0-SW-2	-
C3	DIP 3	-	-	-	-	-	CPU Node		0-SW-3	-
C4	DIP 4	-	-	-	-	-	CPU Node		0-SW-4	-
C5	DIP 5	-	-	-	-	-	CPU Node		0-SW-5	-
C6	DIP 6	-	-	-	-	-	CPU Node		0-SW-6	-
C7	DIP 7	-	-	-	-	-	CPU Node		0-SW-7	-
C8	DIP 8	-	-	-	-	-	CPU Node		0-SW-8	-
C9	Service Select	CN25	4	LGN-GRY	6	BLK	Coin Door		0-SW-9	180-5192-04
C10	Service Plus	CN25	3	LGN-VIO	6	BLK	Coin Door		0-SW-10	180-5192-02
C11	Service Minus	CN25	2	LGN-BLU	6	BLK	Coin Door		0-SW-11	180-5192-02
C12	Service Back	CN25	1	LGN-BLK	6	BLK	Coin Door		0-SW-12	180-5192-00
C16	Playfield Power Interlock	CN7	4	GRY	5	GRY-RED	Cabinet	Interlock	0-SW-16	180-5136-00

## COIN DOOR SERVICE SWITCH WIRING

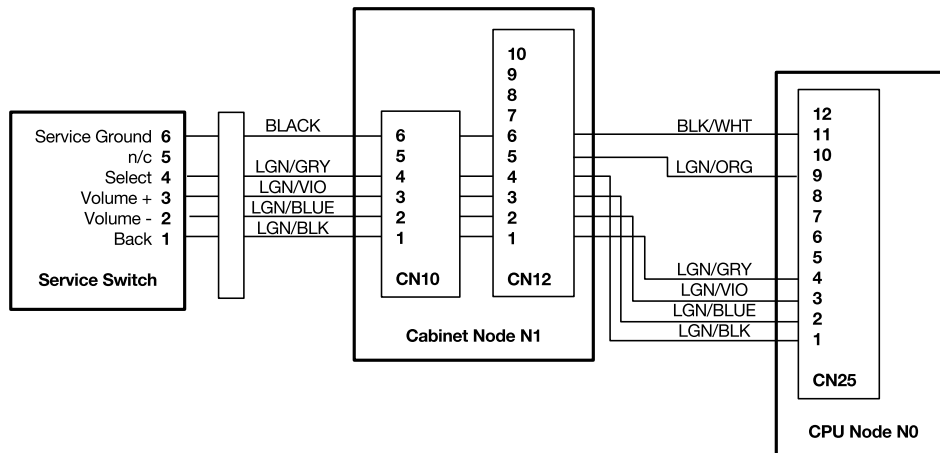


Figure 4.1.1. Service switch wiring. Note that the Cabinet Node must be present and CN10 and CN12 connected for the Coin Door Service Switches to function correctly.

## 4.2 CABINET NODE 1

520-5319-00

### SWITCH MAPPING

The cabinet node is hardcoded for address 1, so no address DIP switch setting is necessary. The coin door service switches use the cabinet board as a pass-through connector to the CPU node via CN10 and CN12. See the coin door service switch wiring diagram in the CPU Node section. The cabinet node must be connected for these switches to function, but cabinet node power is not required.

ID	Name	Conn.	Input Pin	Input Wire	GND Pin	Ground Wire	Location	Type	Address	Part Number
15	Tournament Start (optional)	CN6	9	GRY-WHT	5	BLK-WHT	Cabinet	Micro	1-SW-12	180-5174-00
62	Start Button	CN6	10	GRY	5	BLK-WHT	Cabinet	Micro	1-SW-11	180-5174-00
67	Coin 1	CN5	9	PNK-BRN	3	BLK	Cabinet	Micro	1-SW-16	
68	Coin 2	CN5	8	PNK-RED	3	BLK	Cabinet	Micro	1-SW-18	
69	Coin 3	CN5	7	PNK-ORG	3	BLK	Cabinet	Micro	1-SW-17	
70	Coin 4 (International)	CN5	6	-	-	-	Cabinet	-	1-SW-19	
71	Coin 5 (International)	CN5	5	-	-	-	Cabinet	-	1-SW-20	
72	Tilt Pendulum	CN6	5	WHT	7	BLK-WHT	Cabinet	Plumb Bob	1-SW-14	
76	Ticket Notch(optional)	CN11	5	-	-	-	Cabinet	-	1-SW-8	
77	Slam Tilt(optional)	CN5	4	LGN-RED	3	BLK	Cabinet	-	1-SW-21	

### LIGHTING MAPPING

ID	Description	Conn.	Ret. Pin	Ret. Wire	Src. Pin	Src. Wire	Location	Type	Light Color	Address	Part Number
1	Start Button	CN6	3	YEL-BRN	1	RED	Cabinet	Feature	White	1-LP-2	112-5033-08
2	Tournament Start (optional)	CN6	4	YEL-RED	1	RED	Cabinet	Feature	White	1-LP-3	112-5033-08
82	Coin Door Gl(x2)	CN5	2	YEL	1	YEL-WHT	Coin Door	G.I.	White	1-LP-1	112-5033-08

### DRIVER MAPPING

ID	Name	Connector	Return Pin	Return Wire	Voltage	Power Pin	Power Color	Location	Type	Address	Part Number
8	Shaker Motor	CN2	1-2	RED	48V	3-5	BLU	Cabinet	Motor	1-DR-0	041-5029-04
30	Meter 1	CN3	2		12V	1		Cabinet	Digital Out	1-DR-2	
31	Meter 2	CN4	2		12V	1		Cabinet	Digital Out	1-DR-3	
32	Ticket Dispenser	CN11	3		12V	1		Cabinet	Digital Out	1-DR-4	

### FUSE

ID	Description	Min Voltage	Current	Fuse P/N
F1	48V Supply, Slow-Blow AGC	125 VDC	3A	200-5000-08

### NODE BUS AND SERIAL CONNECTIONS

Connector	Destination
CN13 (RJ45)	0 - CPU Node

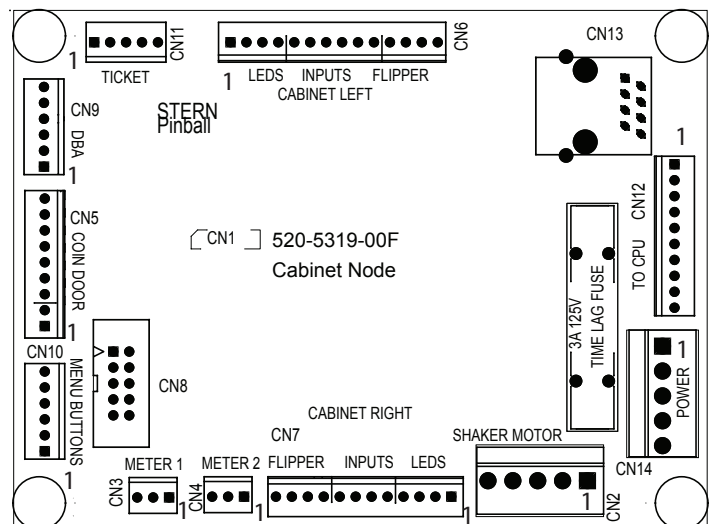


Figure 4.1.2. Cabinet node diagram 520-5319-00

# CABINET NODE 1 CONTINUED

## CABINET NODE PINOUT

ID	Type	Pin	Description	Wire Color
CN2	.156" 5-Pin Header Shaker Motor	1	Shaker Motor (-)	BLU
		2	Shaker Motor (-)	-
		3	Shaker Motor (+)	-
		4	Key	-
		5	Shaker Motor (+)	RED
CN3	.100" 3-Pin Header Meter 1	1	Meter 12V (+)	RED
		2	Meter (-)	BLK
		3	N/C	-
CN4	.100" 3-Pin Header Meter 2	1	Meter 12V (+)	RED
		2	Meter (-)	BLK
		3	N/C	-
CN5	.100" 9-Pin Header	1	5V Out	YEL/WHT
		2	Coin LED Out	YEL
		3	Ground	BLK
		4	Slam Tilt In	LGN/RED
		5	Coin 5	PNK/GRN*
		6	Coin 4	PNK/YEL*
		7	Coin 3	PNK/ORN*
		8	Coin 2	PNK/RED*
		9	Coin 1	PNK/BRN*
CN6	.100" 14-Pin Header Cabinet Left	1	5V LED Power	N/C
		2	Start 2 LED	N/C
		3	Start 1 LED	N/C
		4	Spare LED	N/C
		5	Ground	N/C
		6	Spare Left	N/C
		7	Tilt Input	N/C
		8	Door Open	N/C
		9	Start 2 Switch	N/C
		10	Start 1 Switch	N/C
		11	N/C	N/C
		12	N/C	N/C
		13	N/C	N/C
		14	N/C	N/C
CN7	.100" 12-Pin Header Cabinet Right	1	5V LED Power	N/C
		2	Plunge 2 LED	N/C
		3	Plunge 1 LED	N/C
		4	Spare LED 2	N/C
		5	Ground	N/C
		6	Spare Right In	N/C
		7	Plunge 2 Switch	N/C
		8	Plunge 1 Switch	N/C
		9	N/C	N/C
		10	N/C	N/C
		11	N/C	N/C
		12	N/C	N/C
CN9	.100" 6-Pin Header Dollar Bill Acceptor	1	Coin Enable/DBA Inhibit (-)	Opt.
		2	Coin Enable/DBA Inhibit (+)	Opt.
		3	Key	Opt.
		4	DBA 12V	Opt.
		5	Coin 6 / DBA Credit	Opt.
		6	Ground	Opt.
CN10	.100" 6-Pin Header Service Switch In	1	Service Back (To Coindoor)	LGN/BLK
		2	Service Down (To Coindoor)	LGN/BLU
		3	Service Up (To Coindoor)	LGN/VIO
		4	Service Select (To Coindoor)	LGN/GRY
		5	N/C	n/c
		6	Service Ground (To Coindoor)	BLK
CN11	.100" 5-Pin Header Ticket Dis- penser	1	12V	
		2	N/C	
		3	Ticket Dispenser Enable	
		4	Ground	
		5	Ticket Dispenser Notch	
CN12	.100" 10-Pin Header CPU Direct Switches	1	Service Back (To CPU)	GRN/BLK
		2	Service Down (To CPU)	GRN/BLU
		3	Service Up (To CPU)	GRN/VIO
		4	Service Select (To CPU)	GRN/GRY
		5	Power Present	-
		6	Service Ground (To CPU)	BLK/GRY
		7	N/C	-
		8	N/C	-
		9	N/C	-
		10	N/C	-
CN14	.156" 5-Pin Header Power Input	1	Ground	BLK
		2	Key	-
		3	N/C	-
		4	N/C	-
		5	48VDC In	GRY
*Varies by country model				

Figure 4.2.1. Cabinet node pinout 520-5319-00



### 4.3 LOWER PLAYFIELD 48V 8-DRIVER NODE 8

520-6935-00

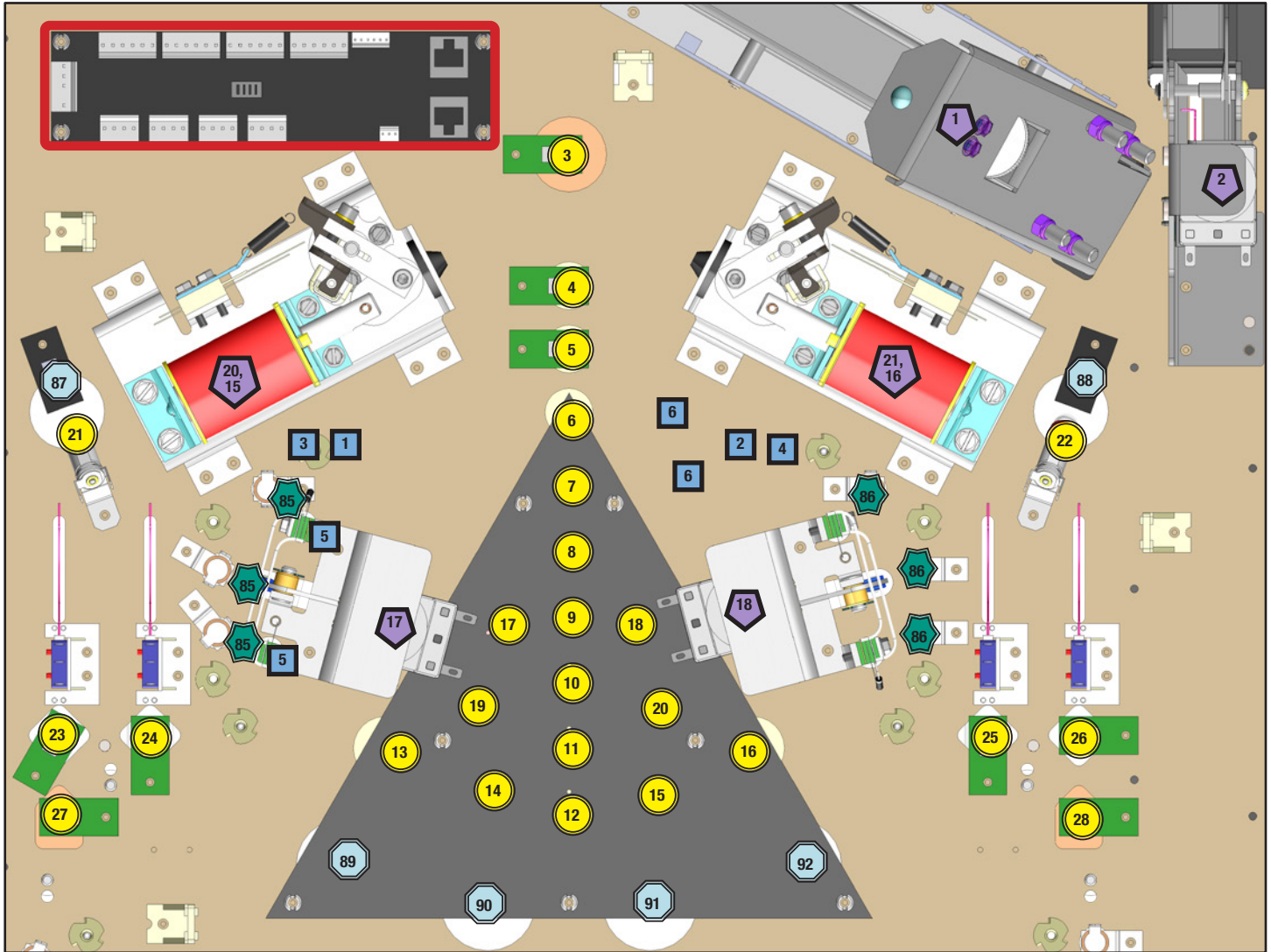


Figure 4.2.2. Lower playfield 48V 8-driver node (Node 8) playfield location

**10 11** Flipper button switches located on cabinet

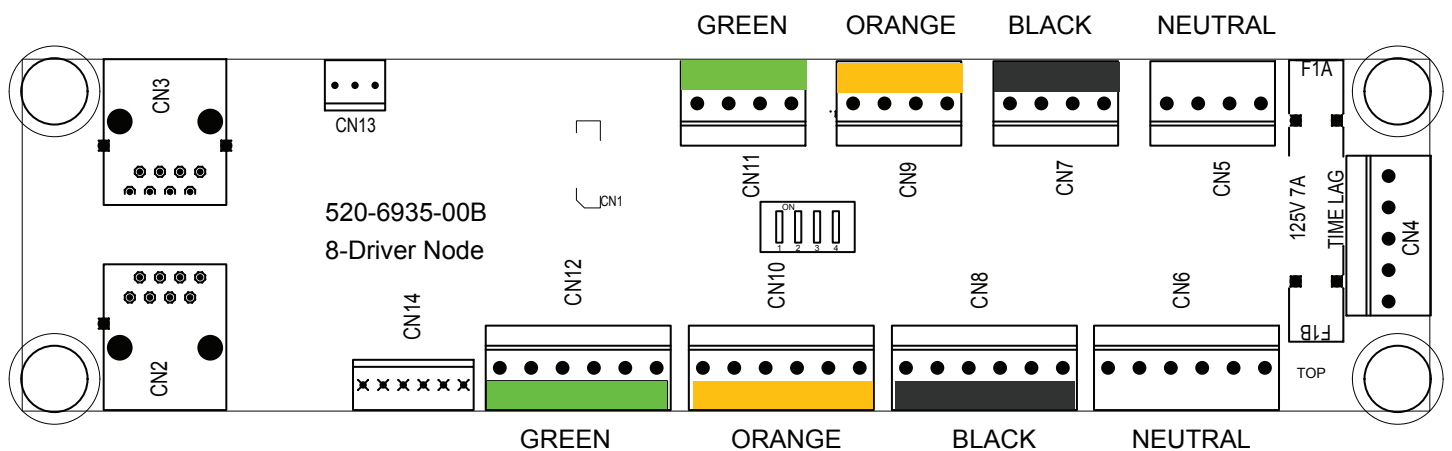


Figure 4.2.3. Lower playfield 48V 8-driver node (Node 8) playfield connector detail.

## LOWER PLAYFIELD 48V 8-DRIVER NODE 8

## NODE ADDRESS SETTING

Switches and lights designed Node Ext 8a are connected via serial bus on CN14 and controlled by Node 8.

DIP SW1	1	2	3	4
Node 8	OFF	OFF	OFF	OFF

## SWITCHES CONNECTED TO NODE 8

ID	Name	Node	Node Ext	Connector	Input Pin	Input Wire	Ground Pin	Ground Wire	Location	Type	Address	Part Number
5	Left Slingshot	8	-	CN12	4	GRY-BLU	3	BLK-GRN	Playfield	Leaf	8-SW-7	180-5231-00
6	Right Slingshot	8	-	CN10	4	GRY-VIO	3	BLK-GRN	Playfield	Leaf	8-SW-6	180-5231-00
10	Left Flipper 1	8	-	CN9	2	GRY-BRN	1	BLK-GRN	Cabinet	Leaf	8-SW-2	180-5164-01
11	Right Flipper 1	8	-	CN11	2	GRY-RED	1	BLK-GRN	Cabinet	Leaf	8-SW-3	180-5164-01
23	Shooter Lane	8		CN6	4	GRY-WHT	3	BLK-GRN	Playfield	Rollover	8-SW-4	180-5157-01
65	Left Flipper EOS	8		CN5	2	GRY-YEL	1	BLK-GRN	Playfield	Leaf	8-SW-0	180-5149-00
66	Right Flipper EOS	8		CN7	2	GRY-GRN	1	BLK-GRN	Playfield	Leaf	8-SW-1	180-5149-00

## LIGHTING CONNECTED TO NODE 8

ID	Description	Node	Node Ext.	Conn.	Return Pin	Return Wire	Supply Pin	Supply Wire	Location	Type	Light Color	Address	Part Number
3	Shoot again	8	8a	8a-CN1	3	RED-GRY	5	RED	Playfield	Feature	White	8a-LP-47	520-5307-00
4	Bonus 1	8	8a	8a-CN1	2	GRN-GRY	5	RED	Playfield	Feature	White	8a-LP-46	520-5307-00
5	Bonus 2	8	8a	8a-CN1	1	BLU-GRY	5	RED	Playfield	Feature	White	8a-LP-45	520-5307-00
6	Bonus 3	8	8a	CN14	D7	-	-	-	Playfield	Feature	White	8a-LP-20	520-6950-00
7	Bonus 4	8	8a	CN14	D6	-	-	-	Playfield	Feature	White	8a-LP-19	520-6950-00
8	Bonus 5	8	8a	CN14	D5	-	-	-	Playfield	Feature	White	8a-LP-18	520-6950-00
9	Bonus 6	8	8a	CN14	D4	-	-	-	Playfield	Feature	White	8a-LP-17	520-6950-00
10	Bonus 7	8	8a	CN14	D18	-	-	-	Playfield	Feature	White	8a-LP-30	520-6950-00
11	Bonus 8	8	8a	CN14	D17	-	-	-	Playfield	Feature	White	8a-LP-29	520-6950-00
12	Bonus 9	8	8a	CN14	D12	-	-	-	Playfield	Feature	White	8a-LP-25	520-6950-00
13	Bonus 10	8	8a	CN14	D3	-	-	-	Playfield	Feature	White	8a-LP-16	520-6950-00
14	Bonus 20	8	8a	CN14	D11	-	-	-	Playfield	Feature	White	8a-LP-24	520-6950-00
15	Bonus 30	8	8a	CN14	D16	-	-	-	Playfield	Feature	White	8a-LP-28	520-6950-00
16	Bonus 40	8	8a	CN14	D10	-	-	-	Playfield	Feature	White	8a-LP-23	520-6950-00
17	Bonus x2	8	8a	CN14	D14	-	-	-	Playfield	Feature	White	8a-LP-27	520-6950-00
18	Bonus x3	8	8a	CN14	D9	-	-	-	Playfield	Feature	White	8a-LP-22	520-6950-00
19	Bonus x4	8	8a	CN14	D13	-	-	-	Playfield	Feature	White	8a-LP-26	520-6950-00
20	Bonus x5	8	8a	CN14	D8	-	-	-	Playfield	Feature	White	8a-LP-21	520-6950-00
21	Left special(Red)	8	8a	8a-CN4	5	ORG-GRN	8	RED	Playfield	Feature	Red	8a-LP-43	112-5034-02
22	Right special(Red)	8	8a	8a-CN5	5	ORG-GRN	8	RED	Playfield	Feature	Red	8a-LP-38	112-5034-02
23	Left Outlane	8	8a	8a-CN4	3	ORG-RED	8	RED	Playfield	Feature	White	8a-LP-41	520-5307-00
24	Left Return Lane	8	8a	8a-CN4	1	ORG-BLK	8	RED	Playfield	Feature	White	8a-LP-40	520-5307-00
25	Right Return Lane	8	8a	8a-CN5	1	ORG-BLK	8	RED	Playfield	Feature	White	8a-LP-35	520-5307-00
26	Right Outlane	8	8a	8a-CN5	3	ORG-RED	8	RED	Playfield	Feature	White	8a-LP-36	520-5307-00
27	Ball save(left)	8	8a	8a-CN4	4	ORG-YEL	8	RED	Playfield	Feature	White	8a-LP-42	520-5307-00
28	Ball save(Right)	8	8a	8a-CN5	4	ORG-YEL	8	RED	Playfield	Feature	White	8a-LP-37	520-5307-00
84	Left Slingshot Gl(x3)	8	-	8a-CN12	1	BRN-BLU	2	YEL	Playfield	G.I.	White	8-LP-03	112-5034-08
85	Right Slingshot Gl(x3)	8	-	8a-CN10	1	BRN-VIO	2	YEL	Playfield	G.I.	White	8-LP-02	112-5034-08
86	Left Outlane	8	8a	8a-CN4	6	ORG-BLU	8	RED	Playfield	Flash	White	8a-LP-44	520-6785-00
87	Right Outlane	8	8a	8a-CN5	6	ORG-BLU	8	RED	Playfield	Flash	White	8a-LP-39	520-6785-00
88	US Title	8	8a	CN14	D20	-	-	-	Playfield	Flash	White	8a-LP-33	199-6950-00
89	Tag team title	8	8a	CN14	D23	-	-	-	Playfield	Flash	White	8a-LP-34	199-6950-00



90	Intercont. title	8	8a	CN14	D21	-	-	-	Playfield	Flash	White	8a-LP-32	199-6950-00
91	Heavy weight title	8	8a	CN14	D19	-	-	-	Playfield	Flash	White	8a-LP-31	199-6950-00

## DRIVERS CONNECTED TO NODE 8

ID	Description	Node	Connector	Return Pin	Return Wire	48V Power Pin	48V Power Color	Location	Type	Address	Part Number
1	Trough	8	CN8	3	ORG-GRY	4	GRY-ORG	Playfield	Coil - 27-1500	8-DR-5	090-5004-ND
2	Auto Launch	8	CN6	5	ORG-WHT	6	GRY-ORG	Playfield	Coil - 23-800	8-DR-4	090-5001-ND
15	Left Flipper	8	CN5	3	ORG-YEL	4	GRY-ORG	Playfield	Coil - 24-850	8-DR-0	090-5083-03-ND
16	Right Flipper	8	CN7	3	ORG-GRN	4	GRY-ORG	Playfield	Coil - 24-850	8-DR-1	090-5083-03-ND
17	Left Slingshot	8	CN12	5	ORG-BLU	6	GRY-ORG	Playfield	Coil - 26-1200	8-DR-7	090-5044-ND
18	Right Slingshot	8	CN10	5	ORG-VIO	6	GRY-ORG	Playfield	Coil - 26-1200	8-DR-6	090-5044-ND
20	Left Flipper Hold	8	CN9	3	YEL-ORG	CN5-4*	GRY-ORG	Playfield	Coil - 31-3500	8-DR-2	090-5083-03-ND
21	Right Flipper Hold	8	CN11	3	YEL-GRN	CN7-4*	GRY-ORG	Playfield	Coil - 31-3500	8-DR-3	090-5083-03-ND

\* The Left and Right Flipper Holds (20, 21) share the same +48V supply as the Left and Right Flipper power coils (15,16).

## FUSES

ID	Description	Min Voltage	Current	Fuse P/N
F1	48V Supply, Slow-Blow AGC	125 VDC	7A	200-5000-03

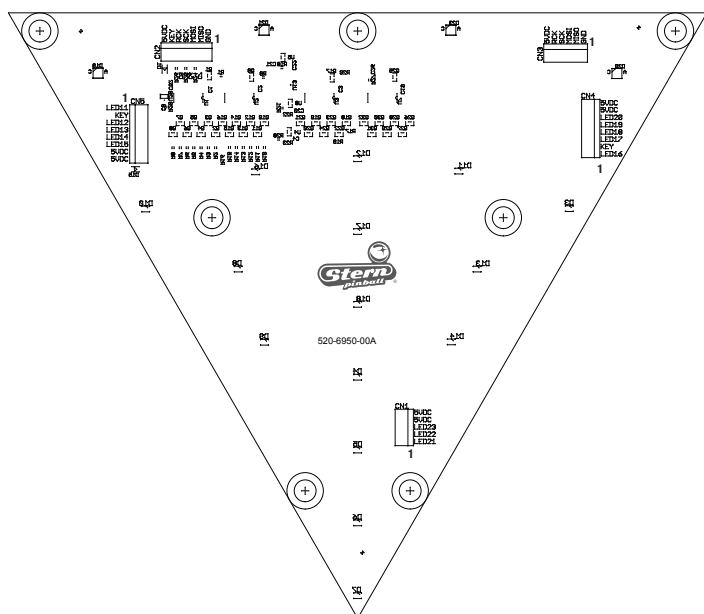
## NODE BUS AND SERIAL CONNECTIONS

Connector	Destination
CN2 (RJ45)	N9 - Mid-Playfield 4-Coil 48V Node
CN3 (RJ45)	No Connection
CN14	N8a - Lower Playfield Serial LED

## 4.4 LOWER PLAYFIELD SERIAL LED (NODE 8A)

### 520-6950-00

The Lower Playfield LED Board is controlled by the Lower Playfield 48V 8-Driver Node 8.



## PINOUT

ID	Type	Pin	Description	Wire Color
CN1	.100 in 7-Pin Housing Plug: 045-5259-07	1	+5 VDC LED Supply	RED
		2	+5 VDC LED Supply	
		3	LED21	
		4	LED22	
		5	LED23	
CN2	.100 in 7-Pin Housing Plug: 045-5107-07	1	Ground	BLK
		2	MISO Output Data	VIO/BLK
		3	MOSI Input Data	VIO/BRN
		4	SCK Serial Clock	VIO/RED
		5	RCK Register Clock	VIO/ORG
		6	n/c	-
		7	+5 VDC IN	RED
CN3	n/c - not used	-	-	-
CN4	.100 in 8-Pin Housing Plug: 045-5107-08	1	LED16	ORG/BLK
		2	KEY	-
		3	LED17	ORG/RED
		4	LED18	ORG/YEL
		5	LED19	ORG/GRN
		6	LED20	ORG/BLU
		7	n/c	-
		8	+5 VDC LED Supply	RED
CN5	.100 in 8-Pin Housing Plug: 045-5107-08	1	LED11	ORG/BLK
		2	KEY	-
		3	LED12	ORG/RED
		4	LED13	ORG/YEL
		5	LED14	ORG/GRN
		6	LED15	ORG/BLU
		7	n/c	-
		8	+5 VDC LED Supply	RED

Figure 4.4.1. Lower Playfield LED Board, Connector-side view.

### 4.5 MID PLAYFIELD 4-DRIVER 48V NODE 9

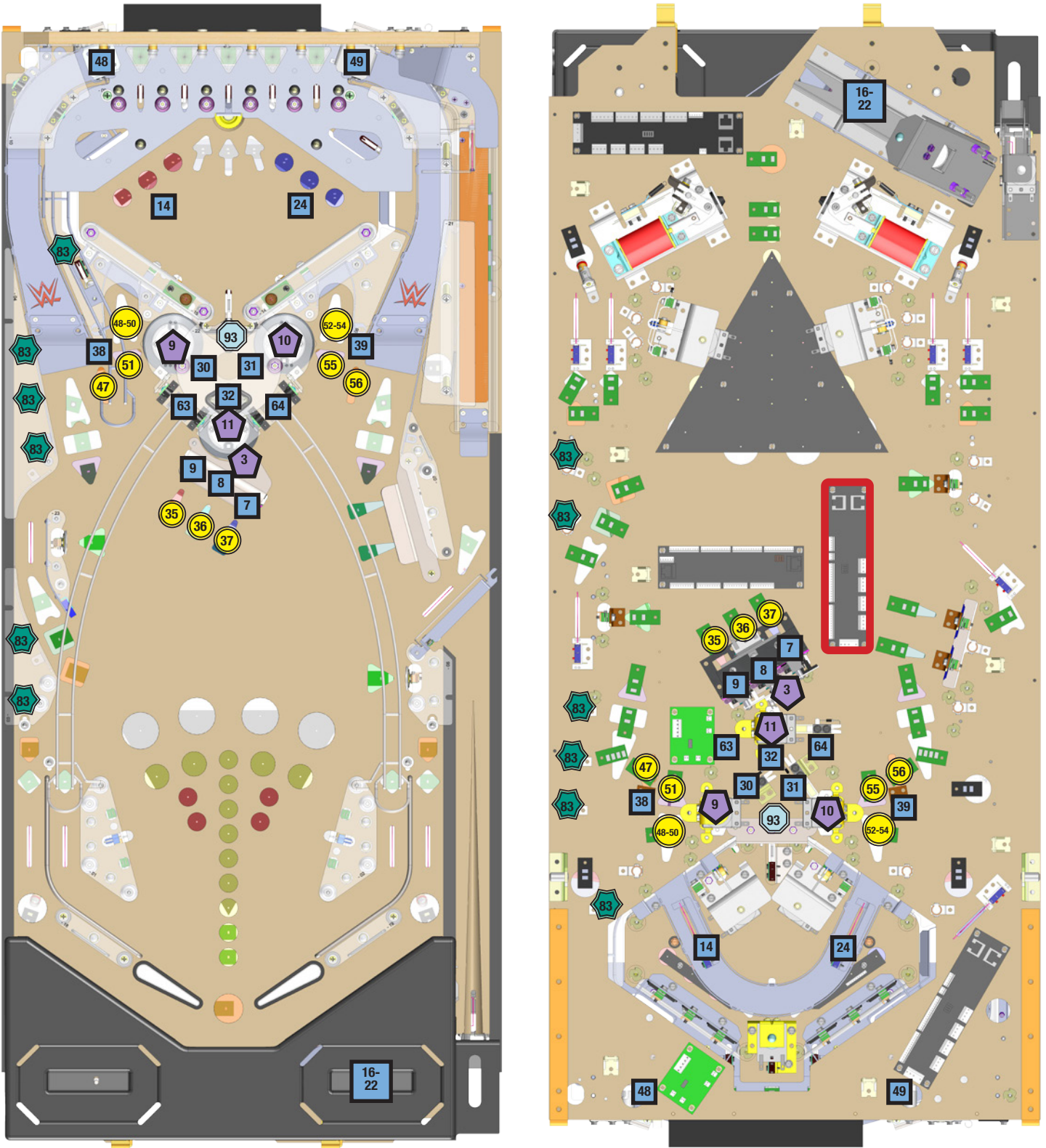


Figure 4.5.1. Mid Playfield 4-driver 48V Node (Node 9) playfield location and relevant lighting, switches, and drivers.

# MID PLAYFIELD 4-DRIVER 48V NODE (N9, N9A) CONTINUED

520-5329-00

Node 9 controls the trough opto serial board, Node N9a.

## NODE ADDRESS SETTING

DIP SW1	1	2	3
Node 9	ON	OFF	OFF

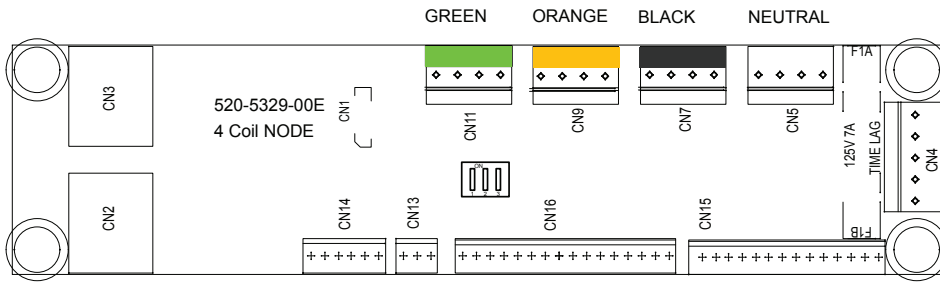


Figure 4.5.2. Mid Playfield 4-driver 48V Node (Node 9)connector detail.

## SWITCH MAPPING

ID	Name	Node	Node Ext	Con- nector	Input Pin	Input Wire	Ground Pin	Ground Wire	Location	Type	Address	Part Number
7	3-Bank Target Right	9	-	CN15	4	WHT-ORG	14	BLK-BLU	Playfield	Opto	9-SW-6	520-5252-13
8	3-Bank Target Center	9	-	CN15	3	WHT-RED	14	BLK-BLU	Playfield	Opto	9-SW-5	520-5252-13
9	3-Bank Target Left	9	-	CN15	2	WHT-BRN	14	BLK-BLU	Playfield	Opto	9-SW-4	520-5252-13
14	Left Orbit	9	-	CN15	9	WHT-GRY	14	BLK-BLU	Playfield	Rollover	9-SW-11	180-5230-01
16	Trough 6	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-17	520-5344-00 tx 520-5345-00 rx
17	Trough 5	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-18	520-5344-00 tx 520-5345-00 rx
18	Trough 4	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-19	520-5344-00 tx 520-5345-00 rx
19	Trough 3	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-20	520-5344-00 tx 520-5345-00 rx
20	Trough 2	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-21	520-5344-00 tx 520-5345-00 rx
21	Trough 1	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-22	520-5344-00 tx 520-5345-00 rx
22	Trough Jam	9	9a	CN14	-	-	-	-	Playfield	Opto	9a-SW-23	520-5344-00 tx 520-5345-00 rx
24	Right Orbit	9		CN15	10	WHT	14	BLK-BLU	Playfield	Rollover	9-SW-12	180-5230-01
30	Left Pop Bumper	9		CN5	2	BRN-RED	1	BLK-BLU	Playfield	Leaf	9-SW-0	180-5232-00
31	Right Pop Bumper	9		CN7	2	BRN	1	BLK-BLU	Playfield	Leaf	9-SW-1	180-5232-00
32	Bottom Pop Bumper	9		CN9	2	BRN-BLK	1	BLK-BLU	Playfield	Leaf	9-SW-2	180-5232-00
38	Left ramp standup	9		CN15	7	WHT-BLU	14	BLK-BLU	Playfield	Leaf, Target	9-SW-9	515-9786-04-00
39	Right ramp standup	9		CN15	8	WHT-VIO	14	BLK-BLU	Playfield	Leaf, Target	9-SW-10	515-9786-04-00
48	Left Ramp Exit	9		CN15	11	BRN-BLU	14	BLK-BLU	Playfield	Opto	9-SW-13	500-6775-01
49	Right Ramp Exit	9		CN15	12	BRN-VIO	14	BLK-BLU	Playfield	Opto	9-SW-14	500-6775-01
63	Pop bumper stage left	9		CN15	5	WHT-YEL	14	BLK-BLU	Playfield	Opto	9-SW-7	500-6775-01
64	Pop bumper stage right	9		CN15	6	WHT-GRN	14	BLK-BLU	Playfield	Opto	9-SW-8	500-6775-01

## LIGHTING MAPPING

ID	Description	Node	Node Ext.	Conn.	Return Pin	Return Wire	Supply Pin	Supply Wire	Location	Type	Light Color	Address	Part Number
35	Center 3Bank left	9	-	CN16	2	BRN-ORG	1	YEL	Playfield	Feature	White	9-LP-1	520-5307-00
36	Center 3Bank Mid	9	-	CN16	3	BRN-YEL	1	YEL	Playfield	Feature	White	9-LP-2	520-5307-00
37	Center 3Bank Right	9	-	CN16	4	BRN-GRN	1	YEL	Playfield	Feature	White	9-LP-3	520-5307-00
47	Light lock(left)	9	-	CN16	5	BRN-GRY	1	YEL	Playfield	Feature	White	9-LP-4	520-5307-00
48	Left orbit arrow(Red)	9	-	CN16	7	RED-BRN	1	YEL	Playfield	Feature	RGB	9-LP-6	520-5333-00



# ELECTRONIC PINOUTS AND SCHEMATICS

49	Left orbit arrow(Grn)	9	-	CN16	8	GRN-BRN	1	YEL	Playfield	Feature	RGB	9-LP-7	520-5333-00
50	Left orbit arrow(Blu)	9	-	CN16	9	BLU-BRN	1	YEL	Playfield	Feature	RGB	9-LP-8	520-5333-00
51	Left orbit (Ref)	9	-	CN16	10	ORG-BRN	1	YEL	Playfield	Feature	White	9-LP-9	520-5307-00
52	Right orbit arrow(Red)	9	-	CN16	11	RED-ORG	1	YEL	Playfield	Feature	RGB	9-LP-10	520-5333-00
53	Right orbit arrow(Grn)	9	-	CN16	12	GRN-ORG	1	YEL	Playfield	Feature	RGB	9-LP-11	520-5333-00
54	Right orbit arrow(Blu)	9	-	CN16	13	BLU-ORG	1	YEL	Playfield	Feature	RGB	9-LP-12	520-5333-00
55	Right orbit (Ref)	9	-	CN16	14	ORG-BLK	1	YEL	Playfield	Feature	White	9-LP-13	520-5307-00
56	Light lock(Right)	9	-	CN16	6	BRN-WHT	1	YEL	Playfield	Feature	White	9-LP-5	520-5307-00
82	Left Playfield GI	9	-	CN13	1	RED-BLK	3	YEL-BLK	Playfield	G.I.	White/Red	9-LP-0	112-5034-08, 112-5033-02
92	Pop Bumper	9	-	CN16	15	ORG-RED	1	YEL	Playfield	Flash	White	9-LP-14	520-6785-00

## DRIVER MAPPING

ID	Description	Node	Connector	Return Pin	Return Wire	48V Power Pin	48V Power Color	Location	Type	Address	Part Number
3	Center 3 Bank drop reset	9	CN1	3	YEL-WHT	4	GRY-BLK	Playfield	Coil - 25-1240	9-DR-3	090-5034-ND
9	Left Pop Bumper	9	CN5	3	ORG-RED	4	GRY-BLK	Playfield	Coil - 26-1200	9-DR-0	090-5044-ND
10	Right Pop Bumper	9	CN7	3	ORG-BRN	4	GRY-BLK	Playfield	Coil - 26-1200	9-DR-1	090-5044-ND
11	Bottom Pop Bumper	9	CN9	3	ORG-BLK	4	GRY-BLK	Playfield	Coil - 26-1200	9-DR-2	090-5044-ND

## FUSE

ID	Description	Min Voltage	Current	Fuse P/N
F1	48V Supply, Slow-Blow AGC	125 VDC	7A	200-5000-03

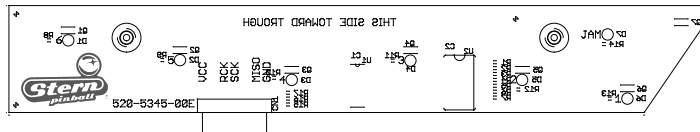
## NODE BUS AND SERIAL CONNECTIONS

Connector	Destination
CN2 (RJ45)	11 - Mid-Playfield 4-Driver 48V Node
CN3 (RJ45)	8 - Lower Playfield 8-Driver 48V Node
CN14	N9a - Trough Serial Opto Receiver

## 4.6 TROUGH SERIAL OPTO RECEIVER

### 520-5345-00

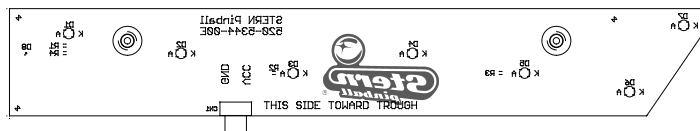
The trough serial opto receiver is connected and controlled via Node 9.



ID	Type	Pin	Description	Wire Color
CN1	.100 in 7-Pin Housing Plug: 045-5107-07	1	Ground	BLK
		2	MISO Output Data	VIO/BLK
		3	MOSI Input Data	VIO/BRN
		4	SCK Serial Clock	VIO/RED
		5	RCK Register Clock	VIO/ORG
		6	n/c	-
		7	+5 VDC IN	RED

## 4.7 TROUGH SERIAL OPTO TRANSMITTER

### 520-5344-00



ID	Type	Pin	Description	Wire Color
CN1	.100 in 7-Pin Housing Plug: 045-5107-07	1	Ground	BLK
		2	+5 VDC IN	RED

# 4.8 UPPER MINI PLAYFIELD 4-DRIVER 48V NODE 10

520-5329-00

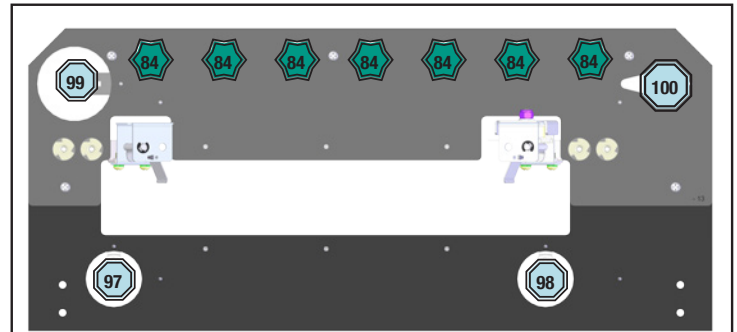
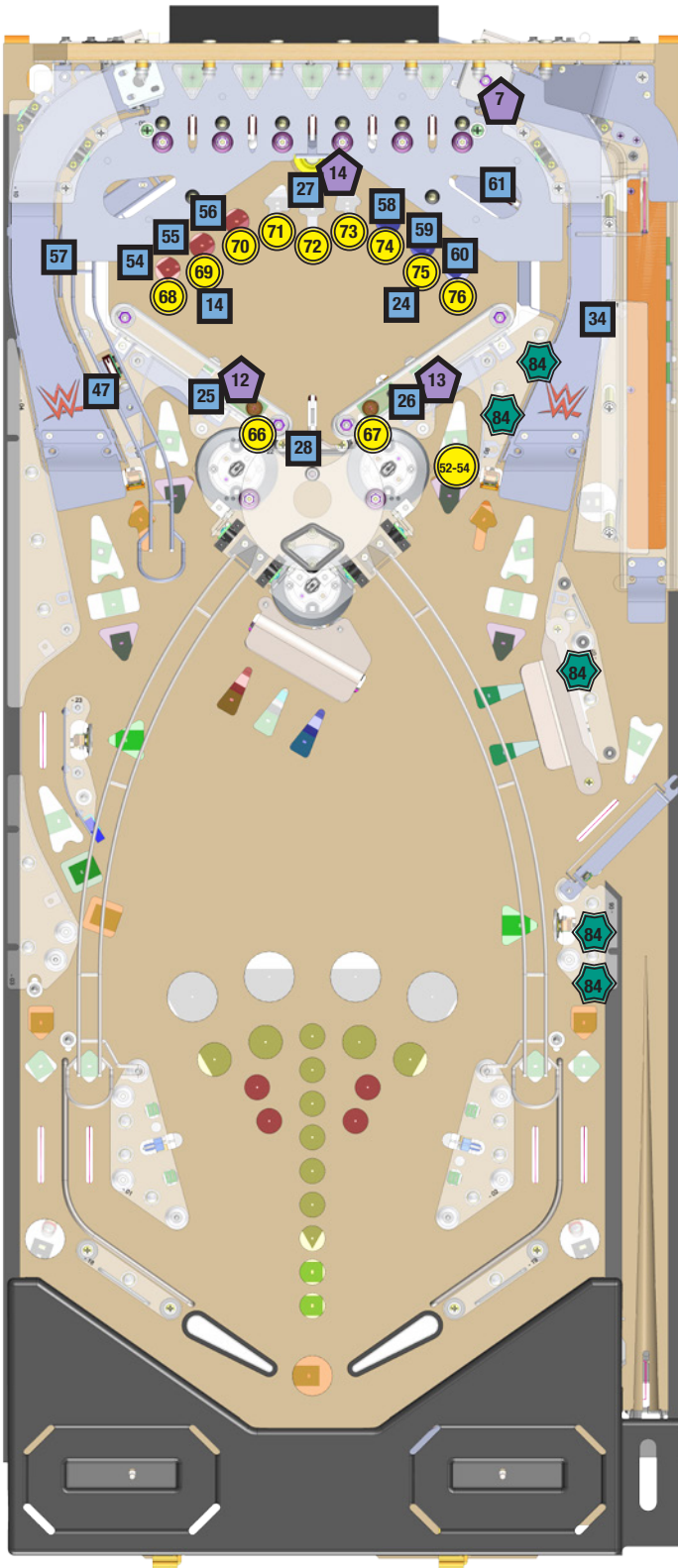


Figure 4.8.1. Back panel detail for Upper Mini Playfield 4-driver 48V Node 10 connections.



Figure 4.8.2. Upper Mini Playfield 4-driver 48V node 10 playfield location and relevant lighting, switches, and drivers.

UPPER MINI PLAYFIELD 4-DRIVER 48V NODE 10 CONTINUED

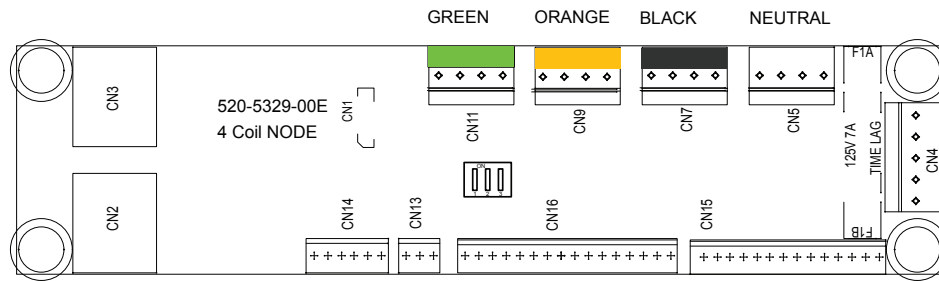


Figure 4.8.3. Upper mini playfield 4-drive 48V node connector detail, 520-5329-00.

NODE ADDRESS SETTING

DIP SW1	1	2	3
Node 11	OFF	ON	OFF

SWITCHES CONNECTED TO NODE 10

ID	Name	Connector	Input Pin	Input Wire	Ground Pin	Ground Wire	Location	Type	Address	Part Number
25	Left Ring Sling	CN5	2	GRY-BLK	1	BLK-VIO	Mini-Playfield	Leaf	10-SW-0	180-5231-00
26	Right Ring Sling	CN9	2	GRY-RED	1	BLK-VIO	Mini-Playfield	Leaf	10-SW-2	180-5231-00
27	Ring Eject	CN7	2	GRY-BRN	1	BLK-VIO	Mini-Playfield	Rollover	10-SW-1	180-5209-00
28	Bottom Ring Exit	CN11	2	GRY-ORG	1	BLK-VIO	Mini-Playfield	Rollover	10-SW-3	180-5057-00
34	Right Ring Exit	CN15	13	LGN-ORG	14	BLK-VIO	Playfield	Rollover	10-SW-15	500-9935-04
47	Left ring exit	CN15	11	LGN-BRN	14	BLK-VIO	Playfield	Rollover	10-SW-13	180-5209-00
54	Ring standup left 1	CN15	2	WHT-BRN	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-4	515-9784-00-00
55	Ring standup left 2	CN15	3	WHT-RED	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-5	515-9783-00-00
56	Ring standup left 3	CN15	4	WHT-ORG	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-6	515-9784-00-00
57	Top lane Left exit	CN15	10	LGN-BLK	14	BLK-VIO	Playfield	Rollover	10-SW-12	180-5209-00
58	Ring standup Right 1	CN15	5	WHT-YEL	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-7	515-9784-00-00
59	Ring standup Right 2	CN15	6	WHT-GRN	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-8	515-9783-00-00
60	Ring standup Right 3	CN15	7	BLU-BLK	14	BLK-VIO	Mini-Playfield	Leaf, Target	10-SW-9	515-9784-00-00
61	Top lane right exit	CN15	12	LGN-RED	14	BLK-VIO	Playfield	Rollover	10-SW-14	180-5209-00
74	Left Flipper 2	CN15	8	VIO	14	BLK-VIO	Cabinet	Leaf	10-SW-10	180-5164-01
75	Right Flipper 2	CN15	9	VIO-WHT	14	BLK-VIO	Cabinet	Leaf	10-SW-11	180-5164-01

LIGHTING CONNECTED TO NODE 10

ID	Description	Conn.	Return Pin	Return Wire	Supply Pin	Supply Wire	Location	Type	Light Color	Address	Part Number
66	Flipper when lit(left)	CN16	11	ORG-YEL	1	YEL	Mini-Playfield	Feature	White	10-LP-10	520-5307-00
67	Flipper when lit(right)	CN16	12	ORG-GRN	1	YEL	Mini-Playfield	Feature	White	10-LP-11	520-5307-00
68	Ring 1(left)	CN16	2	YEL-BLK	1	YEL	Mini-Playfield	Feature	White	10-LP-1	520-6951-00
69	Ring 2	CN16	3	YEL-BRN	1	YEL	Mini-Playfield	Feature	White	10-LP-2	520-6951-00
70	Ring 3	CN16	4	YEL-RED	1	YEL	Mini-Playfield	Feature	White	10-LP-3	520-6951-00
71	Ring 4	CN16	5	YEL-ORG	1	YEL	Mini-Playfield	Feature	White	10-LP-4	520-6951-00
72	Ring 5	CN16	6	YEL-GRN	1	YEL	Mini-Playfield	Feature	White	10-LP-5	520-6951-00
73	Ring 6	CN16	7	YEL-BLU	1	YEL	Mini-Playfield	Feature	White	10-LP-6	520-6951-00
74	Ring 7	CN16	8	YEL-VIO	1	YEL	Mini-Playfield	Feature	White	10-LP-7	520-6951-00
75	Ring 8	CN16	9	YEL-GRY	1	YEL	Mini-Playfield	Feature	White	10-LP-8	520-6951-00
76	Ring 9(Right)	CN16	10	YEL-WHT	1	YEL	Mini-Playfield	Feature	White	10-LP-9	520-6951-00
83	Right Playfield GI	CN13	1	GRN-BLK	3	YEL-BLK	Playfield/Back Panel	G.I.	White/Red	10-LP-0	112-5034-08, 112-5033-02
96	Top Lane Left	CN16	15	ORG-GRY	1	YEL	Back Pnl	Flash	White	10-LP-14	113-5045-08
97	Top Lane Right	CN16	16	ORG-WHT	1	YEL	Back Pnl	Flash	White	10-LP-15	113-5045-08
98	Bell	CN16	13	ORG-BLU	1	YEL	Back Pnl	Flash	White	10-LP-12	520-6785-00
99	Ladder	CN16	14	ORG-VIO	1	YEL	Back Pnl	Flash	White	10-LP-13	520-6785-00



## UPPER MINI PLAYFIELD 4-DRIVER 48V NODE 10 CONTINUED

## DRIVERS CONNECTED TO NODE 10

ID	Description	Connector	Return Pin	Return Wire	48V Power Pin	48V Power Color	Location	Type	Address	Part Number
7	Ramp Control Gate(RT)	CN11	3	BLU-RED	4	GRY-BRN	Back Panel	Coil - 32-1250	10-DR-3	090-5060-01-ND
12	Left Slingshot(Ring)	CN5	3	YEL-BLK	4	GRY-BRN	Mini-PF	Coil - 26-1200	10-DR-0	090-5044-ND
13	Right Slingshot(Ring)	CN9	3	YEL-RED	4	GRY-BRN	Mini-PF	Coil - 26-1200	10-DR-2	090-5044-ND
14	Ring Eject	CN7	3	YEL-BRN	4	GRY-BRN	Mini-PF	Coil - 27-1500	10-DR-1	090-5004-ND

## FUSES

ID	Description	Min Voltage	Current	Fuse P/N
F1	48V Supply, Slow-Blow AGC	125 VDC	7A	200-5000-03

## NODE BUS AND SERIAL CONNECTIONS

Connector	Destination
CN2 (RJ45)	N11 - Upper Playfield Light and Switch Node
CN3 (RJ45)	N0 - CPU Node

## 4.9 UPPER PLAYFIELD LIGHTING AND SWITCH NODE 11

## 520-5322-00

## SWITCHES CONNECTED TO NODE 11

ID	Name	Connector	Input Pin	Input Wire	Ground Pin	Ground Wire	Location	Type	Address	Part Number
1	Left Return Lane	CN7	2	LGN-YEL	10	BLK-RED	Playfield	Rollover	11-SW-0	500-9935-04
2	Right Return Lane	CN5	12	PNK-BLK	10	BLK-GRY	Playfield	Rollover	11-SW-8	500-9935-04
3	Left Outlane	CN7	3	LGN-BLU	10	BLK-RED	Playfield	Rollover	11-SW-1	500-9935-04
4	Right Outlane	CN5	3	PNK-BRN	10	BLK-GRY	Playfield	Rollover	11-SW-9	500-9935-04
12	Left Lane	CN7	5	LGN-GRY	10	BLK-RED	Playfield	Rollover	11-SW-3	500-9935-04
29	Right 2-Bank Top	CN5	6	PNK-YEL	10	BLK-GRY	Playfield	Leaf, Target	11-SW-12	515-9784-05-00
33	Right 2-Bank Bottom	CN5	7	PNK-GRN	10	BLK-GRY	Playfield	Leaf, Target	11-SW-13	515-9784-05-00
35	Shooter Exit	CN5	5	PNK-ORG	10	BLK-GRY	Playfield	Rollover	11-SW-11	500-9935-04
36	Right single standup	CN5	4	PNK-RED	10	BLK-GRY	Playfield	Leaf, Target	11-SW-10	515-9786-07-00
37	Left single standup	CN7	4	LGN-VIO	10	BLK-RED	Playfield	Leaf, Target	11-SW-2	515-9786-07-00
41	Top lane 1	CN3	2	TAN-BLK	10	BLK-ORG	Playfield	Rollover	11-SW-16	180-5209-00
42	Top lane 2	CN3	3	TAN-RED	10	BLK-ORG	Playfield	Rollover	11-SW-17	180-5209-00
43	Top lane 3	CN3	4	TAN-ORG	10	BLK-ORG	Playfield	Rollover	11-SW-18	180-5209-00
44	Top lane 4	CN3	5	TAN-YEL	10	BLK-ORG	Playfield	Rollover	11-SW-19	180-5209-00
45	Top lane 5 (Right)	CN3	6	TAN-GRN	10	BLK-ORG	Playfield	Rollover	11-SW-20	180-5209-00
46	Ladder exit	CN3	8	TAN-VIO	10	BLK-ORG	Playfield	Rollover	11-SW-22	180-5209-00
53	Ladder 4	CN3	7	TAN-BLU	10	BLK-ORG	Playfield	Rollover	11-SW-21	180-5230-01

## LIGHTING CONNECTED TO NODE 11

ID	Description	Conn.	Return Pin	Return Wire	Supply Pin	Supply Wire	Location	Type	Light Color	Address	Part Number
29	Left lane arrow(Red)	CN2	7	RED-VIO	2	RED	Playfield	Feature	RGB	11-LP-3	520-5333-00
30	Left lane arrow(Grn)	CN2	8	GRN-VIO	2	RED	Playfield	Feature	RGB	11-LP-4	520-5333-00
31	Left lane arrow(Blu)	CN2	9	BLU-VIO	2	RED	Playfield	Feature	RGB	11-LP-5	520-5333-00
32	Lock	CN2	10	YEL-BLK	3	RED	Playfield	Feature	White	11-LP-6	520-5307-00
33	Extra Ball	CN2	11	YEL-BRN	3	RED	Playfield	Feature	White	11-LP-7	520-5307-00
34	Left standup target	CN6	9	BRN-BLU	2	RED	Playfield	Feature	White	11-LP-21	520-5307-00
38	Right standup target	CN6	10	BRN-VIO	3	RED	Playfield	Feature	White	11-LP-22	520-5307-00
39	Right Lane arrow	CN6	11	BRN-GRY	3	RED	Playfield	Feature	White	11-LP-23	520-5307-00
40	Right 2 Bank target(Top)	CN8	10	ORG-VIO	3	RED	Playfield	Feature	White	11-LP-30	520-5307-00



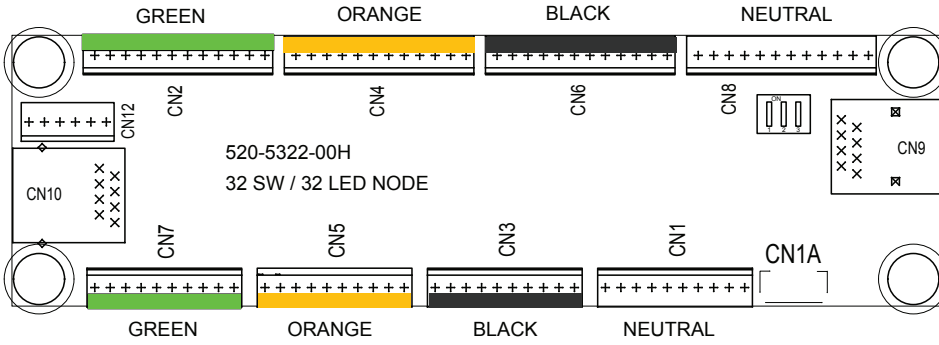


Figure 4.10.2. Upper Playfield Lighting and Switch Node 11 connector layout.

**NODE ADDRESS SETTING**

<b>DIP SW1</b>	<b>1</b>	<b>2</b>	<b>3</b>
Node 11	OFF	ON	ON

**NODE BUS AND SERIAL CONNECTIONS**

Connector	Destination
CN10 (RJ45)	N10- Upper Mini Playfield 4-Driver 48V Node
CN9 (RJ45)	N9 - Mid Playfield 4-Driver 48V Nodev

ID	Description	Conn.	Return Pin	Return Wire	Supply Pin	Supply Wire	Location	Type	Light Color	Address	Part Number
41	Right 2 Bank target(Bot)	CN8	11	ORG-GRY	3	RED	Playfield	Feature	White	11-LP-31	520-5307-00
42	L. Ramp arrow(Red)	CN2	4	RED-GRN	3	RED	Playfield	Feature	RGB	11-LP-0	520-5333-00
43	L. Ramp arrow(Grn)	CN2	5	GRN	3	RED	Playfield	Feature	RGB	11-LP-1	520-5333-00
44	L. Ramp arrow(Blu)	CN2	6	BLU-GRN	3	RED	Playfield	Feature	RGB	11-LP-2	520-5333-00
45	Left Ramp(ring)	CN6	7	BRN-YEL	2	RED	Playfield	Feature	White	11-LP-19	520-5307-00
46	Left Ramp(ref)	CN6	8	BRN-GRN	2	RED	Playfield	Feature	White	11-LP-20	520-5307-00
57	R.Ramp arrow(Red)	CN4	4	RED-GRY	2	RED	Playfield	Feature	RGB	11-LP-8	520-5333-00
58	R.Ramp arrow(Grn)	CN4	5	GRN-GRY	2	RED	Playfield	Feature	RGB	11-LP-9	520-5333-00
59	R.Ramp arrow(Blu)	CN4	6	GRN-BLU	2	RED	Playfield	Feature	RGB	11-LP-10	520-5333-00
60	Right Ramp(ring)	CN8	8	ORG-GRN	2	RED	Playfield	Feature	White	11-LP-28	520-5307-00
61	Right Ramp(ref)	CN8	9	ORG-BLU	2	RED	Playfield	Feature	White	11-LP-29	520-5307-00
62	Ladder 1(bottom)	CN8	4	ORG-BLK	2	RED	Playfield	Feature	White	11-LP-24	520-5307-00
63	Ladder 2	CN8	5	ORG-BRN	2	RED	Playfield	Feature	White	11-LP-25	520-5307-00
64	Ladder 3	CN8	6	ORG-RED	2	RED	Playfield	Feature	White	11-LP-26	520-5307-00
65	Ladder 4(top)	CN8	7	ORG-YEL	2	RED	Playfield	Feature	White	11-LP-27	520-5307-00
77	Top lane 1(left)	CN4	7	YEL-RED	3	RED	Playfield	Feature	White	11-LP-11	520-5307-00
78	Top lane 2	CN4	8	YEL-ORG	3	RED	Playfield	Feature	White	11-LP-12	520-5307-00
79	Top lane 3	CN4	9	YEL-GRN	3	RED	Playfield	Feature	White	11-LP-13	520-5307-00
80	Top lane 4	CN4	10	YEL-BLU	3	RED	Playfield	Feature	White	11-LP-14	520-5307-00
81	Top lane 5(right)	CN4	11	YEL-VIO	3	RED	Playfield	Feature	White	11-LP-15	520-5307-00
93	Left Ramp	CN6	4	BRN-BLK	2	RED	Playfield	Flash	White	11-LP-16	520-6785-00
94	Ladder bottom	CN6	6	BRN-ORG	3	RED	Playfield	Flash	White	11-LP-18	520-6785-00
95	Right Ramp	CN6	5	BRN-RED	3	RED	Playfield	Flash	White	11-LP-17	520-6785-00

**4.10 UPPER MINI PLAYFIELD LED BOARD**

**520-6951-00**

The Upper Mini Playfield LED board is direct-driven from Node 11.

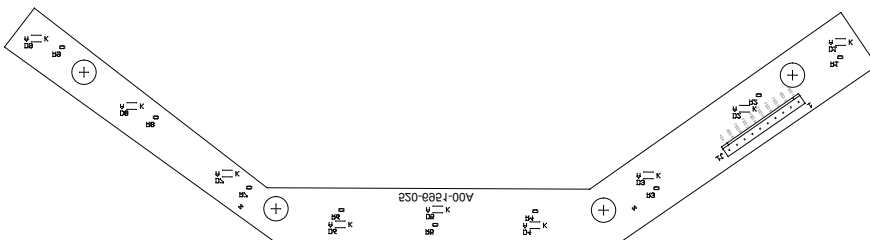


Figure 4.10.1. Upper Mini PLYfield LED Board, connector-side view and pinout.

**PINOUT**

ID	Type	Pin	Description	Wire Color
J1	.100 in 10-Pin Housing Plug; 045-5259-10	1	+5 VDC LED Power In	YEL
		2	LED 9	YEL/BLK
		3	LED 8	YEL/BRN
		4	LED 7	YEL/RED
		5	LED 6	YEL/ORG
		6	LED 5	YEL/GRN
		7	LED 4	YEL/BLU
		8	LED 3	YEL/VIO
		9	LED 2	YEL/GRY
		10	LED 1	YEL/WHT





# UPPER PLAYFIELD LIGHTING AND SWITCH NODE 11 CONTINUED

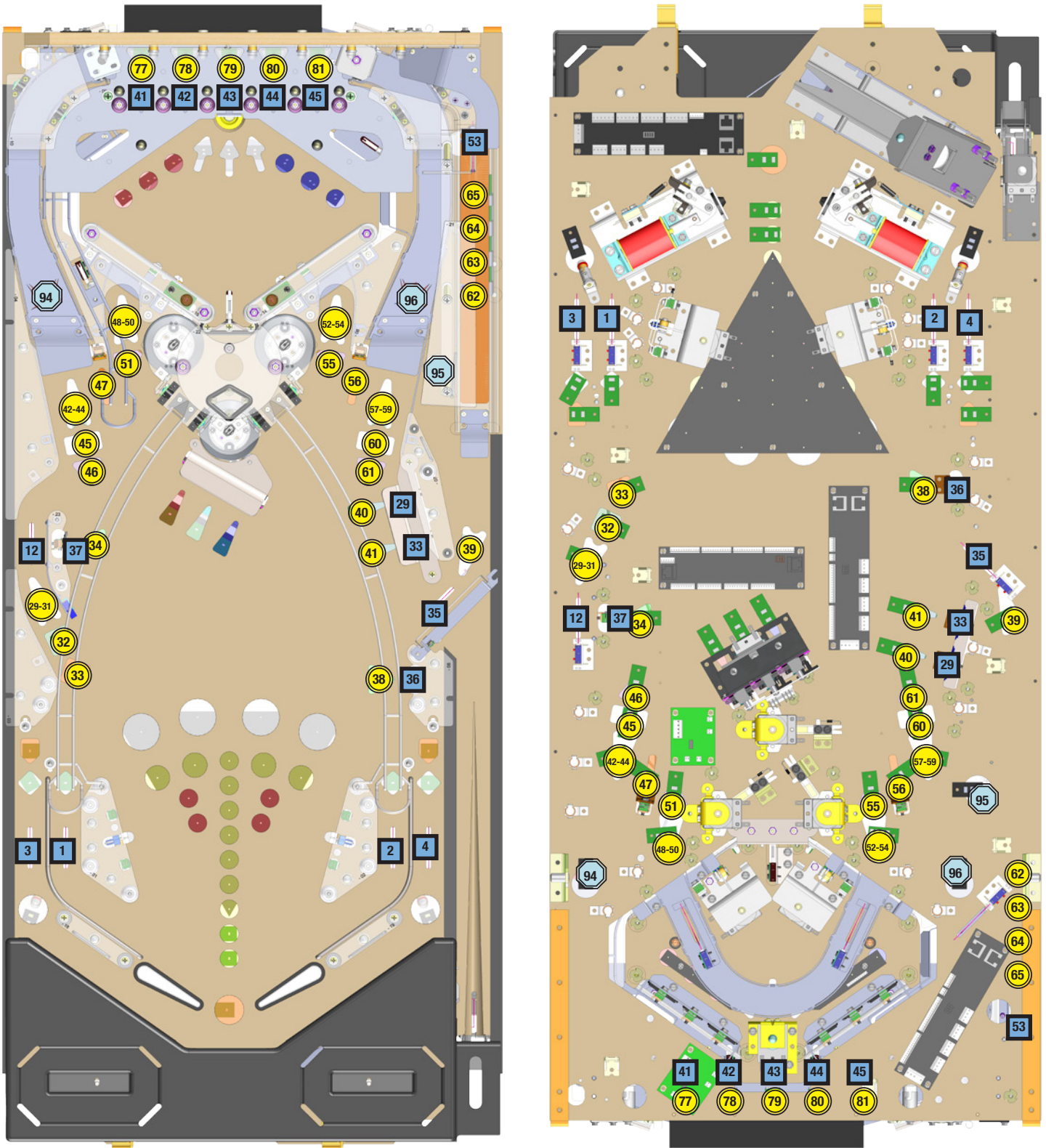


Figure 4.10.3. Upper playfield lighting and switch node 11 lighting, drivers, and switches.

## 4.11 OPTO AMPLIFIER WIRING

### 520-5239-01

There are two opto amplifiers in WWE. One is connected to the pair of optos on top of the pop bumpers, the other is on the rear orbit shots on the upper playfield.

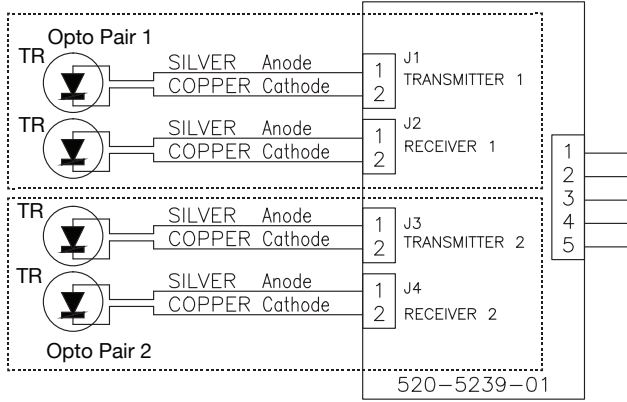


Figure 4.13.4. Opto amplifier 500-5239-01 schematic.

### POP BUMPER OPTO AMPLIFIER PINOUTS

ID	Type	Pin	Description	Wire Color
J1	2-Pin .100" Plug	1	Transmitter 1 Anode (+)	Silver
		2	Transmitter 1 Cathode (-)	Copper
J2	2-Pin .100" Plug	1	Receiver 1 Anode (+)	Silver
		2	Receiver 1 Cathode (-)	Copper
J3	2-Pin .100" Plug	1	Transmitter 2 Anode (+)	Silver
		2	Transmitter 2 Cathode (-)	Copper
J4	2-Pin .100" Plug	1	Receiver 2 Anode (+)	Silver
		2	Receiver 2 Cathode (-)	Copper
J5	5-Pin .156" Plug	1	Switch 64, Node 9 CN15-P6	WHT/GRN
		2	Switch 63, Node 9 CN15-P5	WHT/YEL
		3	Ground, Node 9 CN15-P14	BLK/BLU
		4	Ground, Node 9 CN15-P14	BLK/BLU
		5	5VDC Power Node 9 CN15-P1	RED
TR	-	-	Opto Transceiver 500-6775-01	

Figure 4.13.2. Pop bumper opto amplifier 500-5239-01 pinout

### UPPER PLAYFIELD OPTO AMPLIFIER PINOUTS

ID	Type	Pin	Description	Wire Color
J1	2-Pin .100" Plug	1	Sw 48 Trans. 1 Anode (+)	Silver
		2	Sw 48 Trans. 1 Cathode (-)	Copper
J2	2-Pin .100" Plug	1	Receiver 1 Anode (+)	Silver
		2	Receiver 1 Cathode (-)	Copper
J3	2-Pin .100" Plug	1	Transmitter 2 Anode (+)	Silver
		2	Transmitter 2 Cathode (-)	Copper
J4	2-Pin .100" Plug	1	Receiver 2 Anode (+)	Silver
		2	Receiver 2 Cathode (-)	Copper
J5	5-Pin .156" Plug	1	Switch 48, Node 9, CN15-P11	BRN/BLU
		2	Switch 49, Node 9, CN15-P12	BRN/VIO
		3	Ground, Node 9, CN15-P14	BLK/BLU
		4	Ground, Node 9, CN15-P14	BLK/BLU
		5	5VDC Power, Node 9, CN15-P1	RED
TR	-	-	Opto Transceiver 500-6775-01	

Figure 4.13.1. Upper playfield opto amplifier 500-5239-01 pinout

## 4.13 BACKBOX INTERCONNECT BLOCK DIAGRAM

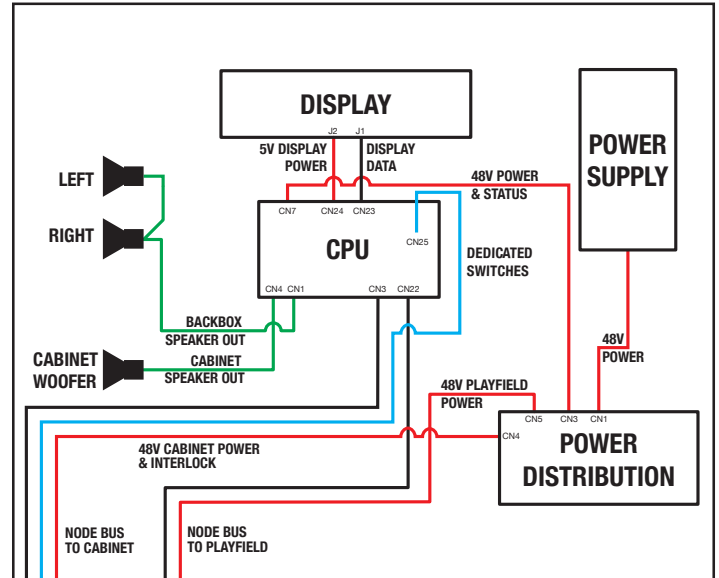
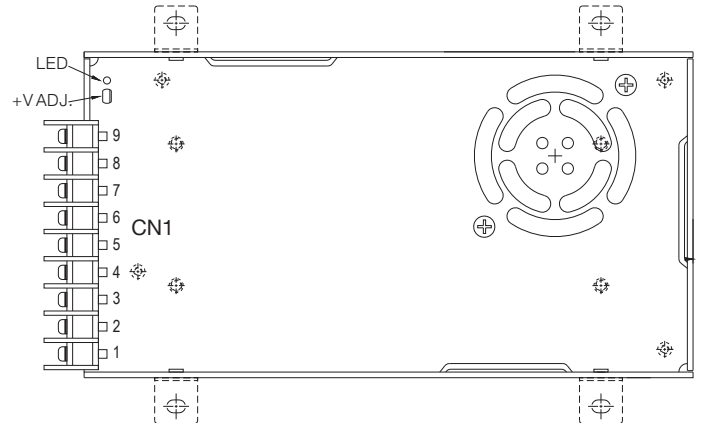


Figure 4.13.3. Backbox interconnect diagram

## 4.12 MAIN POWER SUPPLY

### 011-5001-00

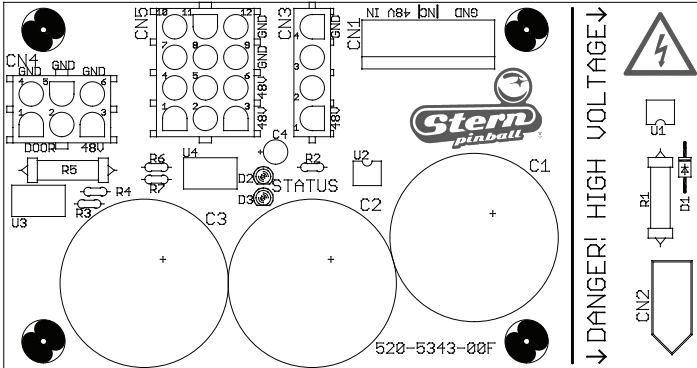


### PINOUT

ID	Type	Pin	Description	Wire Color
CN1	Screw Terminal	1	AC Line Hot In	BLK
		2	AC Line Neutral In	WHT
		3	Earth Ground In	GRN
		4	DC Ground	BLK
		5	DC Ground	BLK
		6	DC Ground	BLK
		7	+48 V System Power	GRY
		8	+48 V System Power	GRY
		9	+48 V System Power	GRY

## 4.14 POWER DISTRIBUTION BOARD

520-5343-00



### PINOUT

ID	Type	Pin	Description	Wire Color
CN1	.156 in 7-Pin Housing Plug: 045-5259-07 Pin: 055-5331-00 Key: 060-5013-00	1	+48 VDC IN	GRY
		2	+48 VDC IN	GRY
		3	+48 VDC IN	GRY
		4	Key (n/c)	-
		5	Ground	BLK
		6	Ground	BLK
		7	Ground	BLK
CN2	.093 in 3-Pos Plug Plug: 045-5003-03 Pin: 055-5013-09	1	Line In (100-240 VAC)	BLK
		2	Neutral	WHT
		3	Earth Ground	GRN
CN3	0.084 in 4-Pos Plug Plug: 045-5200-04 Pin: 055-5033-08	1	+48 VDC to CPU Node	GRY
		2	Door Interlock Switch Status	GRY/RED
		3	Line Voltage Status	VIO
		4	Ground	BLK
CN4	0.084 in 6-Pos Plug Plug: 045-5200-06 Pin: 055-5033-08	1	Door Interlock Switch +48V	GRY
		2	Door Interlock Switch +48V	GRY
		3	Switched 48V Out (to Node 1)	GRY/YEL
		4	Door Interlock Return Ground	GRY/RED
		5	Door Interlock Return Ground	GRY/RED
		6	Ground (to Node 1)	BLK
CN5	0.084 in 12-Pos Plug Plug: 045-5200-12 Pin: 055-5033-08	1	Switched 48V Node Power	GRY
		2	Switched 48V Node Power	GRY
		3	Switched 48V Node Power	GRY
		4	Switched 48V Node Power	GRY
		5	Switched 48V Node Power	GRY
		6	Switched 48V Node Power	GRY
		7	Node Ground	BLK
		8	Node Ground	BLK
		9	Node Ground	BLK
		10	Node Ground	BLK
		11	Node Ground	BLK
		12	Node Ground	BLK

Figure 4.14.1. Power Distribution Board 520-5343-00 pinout

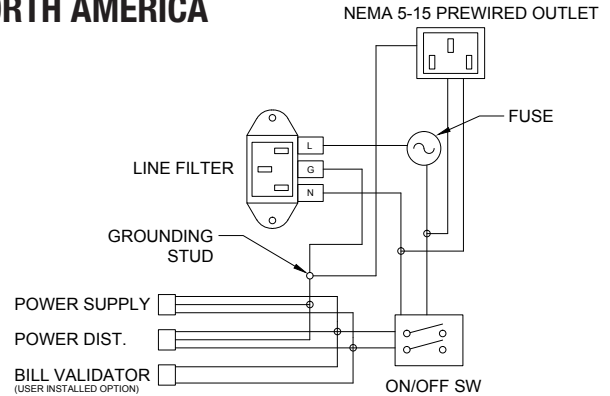
## 4.15 POWER PLUG WIRING

### CAUTION

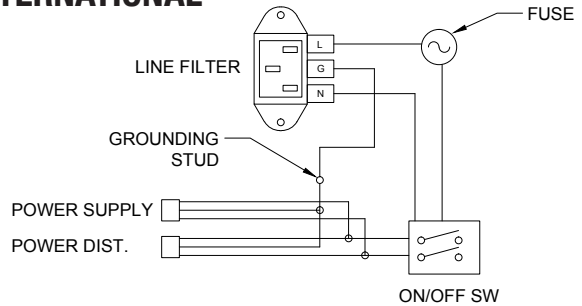
TO MAINTAIN SAFETY, GROUND WIRE FROM LINE FILTER IS TO BE MOUNTED FIRST ON GROUNDING STUD AND SECURED WITH NUT. ALL OTHER GROUNDS MAY THEN BE ATTACHED TO GROUNDING STUD.

REPLACE ALL FUSES WITH CORRECT CURRENT RATINGS!

### NORTH AMERICA



### INTERNATIONAL



### LINE CORDS

Part Number	Description
034-6012-00	Line Cord, 3m, 5-15P USA
034-6012-01	Line Cord, 3m, CEE77P EUROPE
034-6012-02	Line Cord, 3m, BS1363P United Kingdom
034-6012-03	Line Cord, 3m, AS-NZS4417P Australia
034-6012-04	Line Cord, 3m, CEI23-16P Italy
034-6012-05	Line Cord, 3m, SEV1011P Switzerland
034-6012-06	Line Cord, 3m, JIS8303P Japan
034-6012-07	Line Cord, 3m, SI32P Israel
034-6012-08	Line Cord, 3m, BS546P S Africa, India
034-6012-09	Line Cord, 3m, IS6538P S. India

### LINE FUSES

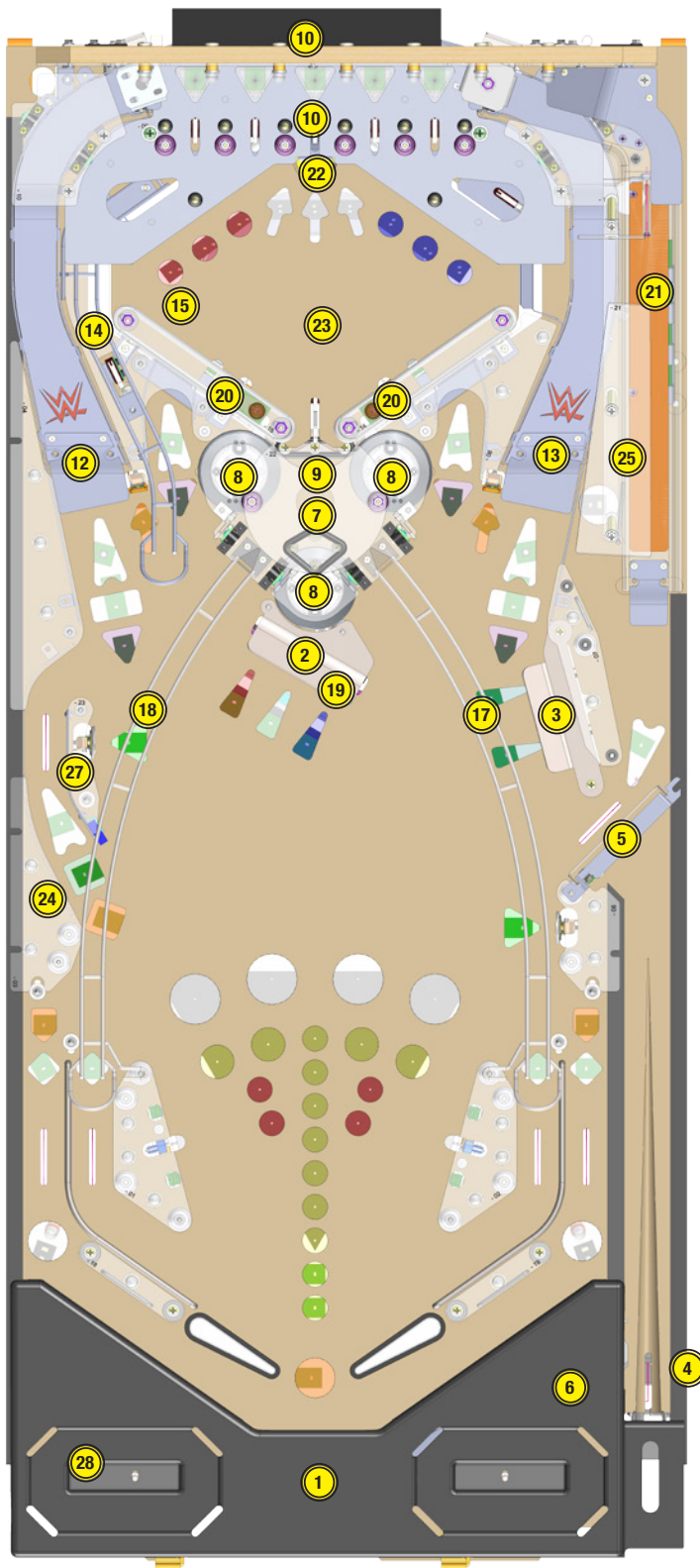
Line Voltage (Region)	Fuse Current	Type	Part Number
120V (North America)	8 A	Slow Blow MDL	200-5000-05
220/240v (Europe, Australia, UK)	5 A	Slow Blow MDL	200-5000-01

Figure 4.15.1. Standard fuses for line connections, 120V and 240V



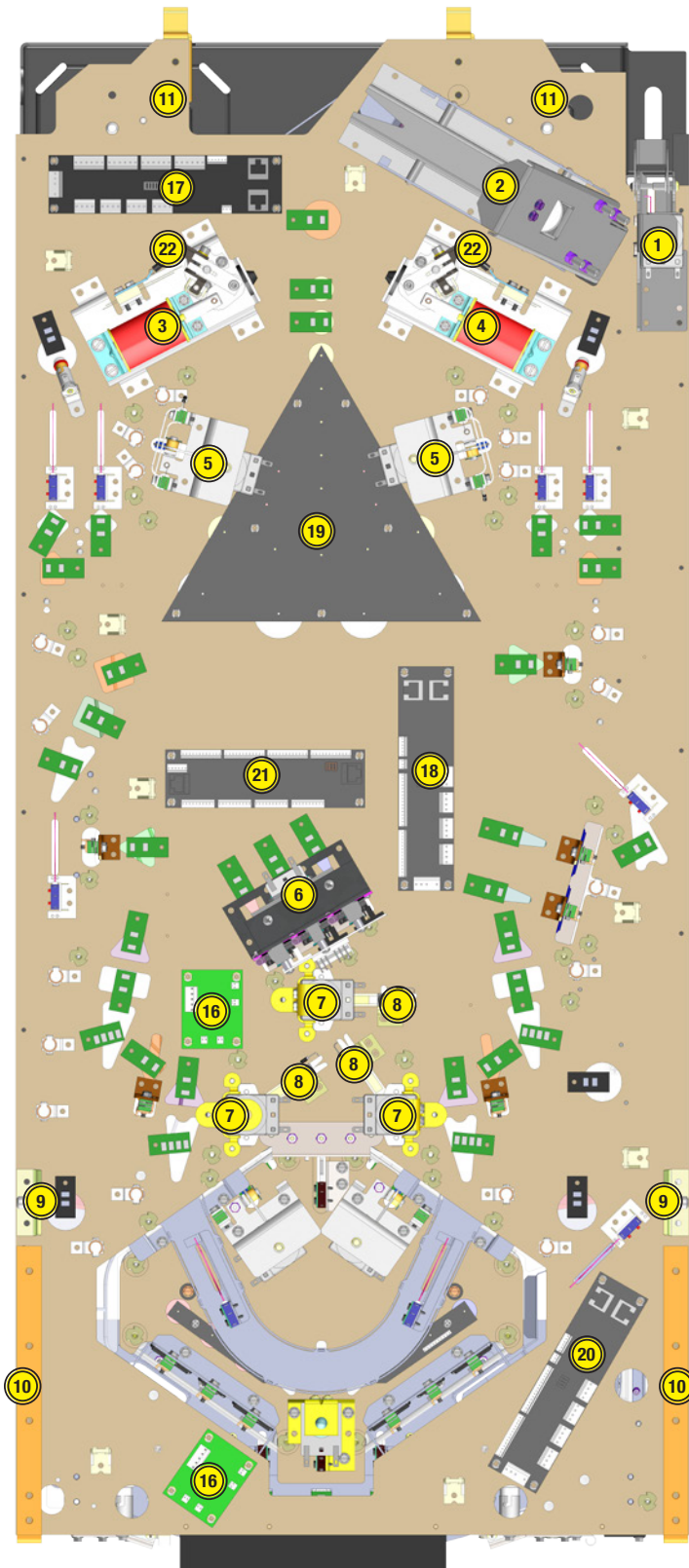
## 5. PARTS REFERENCE

### 5.1 PLAYFIELD TOP PARTS



ID	Part Number	Description	Qty
1	545-5995-02	Playfield Arch Black	1
2	535-1069-00	Drop Target Ball Deflector	1
3	535-1137-00	Two Bank Deflector	1
4	516-0036-00	Bubble Level Prime Assy	1
5	511-7636-00	Shooter One Way Gate Assembly	1
6	260-5000-00	Steel Balls 1.0625 DIA	4
7	511-7603-00	Jet Bumper Assembly	1
8	516-0033-02	Pop Top Assy Red LED's	3
9	511-7627-00	Pop Bumper Flasher Assembly	1
10	525-9700-00	Back Panel Wood	1
11	500-9885-00	Back Panel Assembly	1
12	500-9886-00	Left Ramp Assembly	1
13	500-9887-00	Right Ramp Assembly	1
14	511-7608-08	Left Ring Exit Wire Ramp Assembly	1
15	500-9918-00	Bottom Orbit Assembly	1
16	535-1058-04	Left Return Lane Wire Ramp	1
17	535-1058-05	Right Return Lane Wire Ramp	1
18	500-9921-00	Top Lanes Assembly	1
19	500-9923-00	Stand Up Target 3-Bank Assembly	1
20	500-9924-XX	Sling Shot Single Switch Assy	2
21	500-9929-00	Ladder Assembly Assembly	1
22	500-6868-00	Vertical Upkicker Assy Angled Tip	1
23	500-9919-00	Mini Playfield Assembly	1
24	535-1021-01	Ball Guide #1	1
25	535-1021-03	Ball Guide #3	1
26	511-7572-00	Ball Guide Switch Assembly	1
27	511-7572-04	Ball Guide Assembly #4	1
28	755-51G1-12-Y	Instruction card ENG/SPA	1

## 5.2 PLAYFIELD BOTTOM PARTS



ID	Part Number	Description	Qty
1	500-9818-00	Auto Launch Assembly	1
2	500-9820-04	Ball Trough Assembly	1
3	500-6543-83-ND	Left Flipper Assembly	1
4	500-6543-82-ND	Right Flipper Assembly	1
5	500-9920-01	Slingshot assembly (26-1200)	2
6	500-7216-03	3-bank drop target assembly	1
7	515-6459-04-ND	Pop bumper assembly	3
8	500-9934-01	Pop Bumper Switch	3
9	500-5329-03	Pivot Slide Bracket	2
10	535-5988-01	Edge Slide Bracket	2
11	500-7172-00	Playfield Supports Assy	2
12	500-9905-05-00	1-1/2" Rect Target Antiloft/ND -Blue	2
13	500-9907-04-00	1/2" Target Anti-Sway/ND -Green	2
14	500-9910-07-00	1" RD Target Antiloft/ND -Light -Yellow	2
15	500-9935-04	RT Lite Rollover sw no Diode	7
16	500-6775-01	Opto Amplifier Board	2
17	520-6935-00	Lower Playfield 8-Driver 48V Node 8	1
18	520-5329-00	Mid Playfield 4-Driver Node 9	1
19	520-6950-00	Lower Playfield Serial LED	1
20	520-5329-00	Upper Mini Playfield 4-Driver 48V Node 10	1
21	520-5322-00	Upper-Playfield Lighting and Switch Node 11	1
22	545-5721-00	Flipper base insulator	2

Refer to lighting, switches, node, and driver reference pages for detailed part numbers.

### 5.3 PLAYFIELD RUBBER PARTS

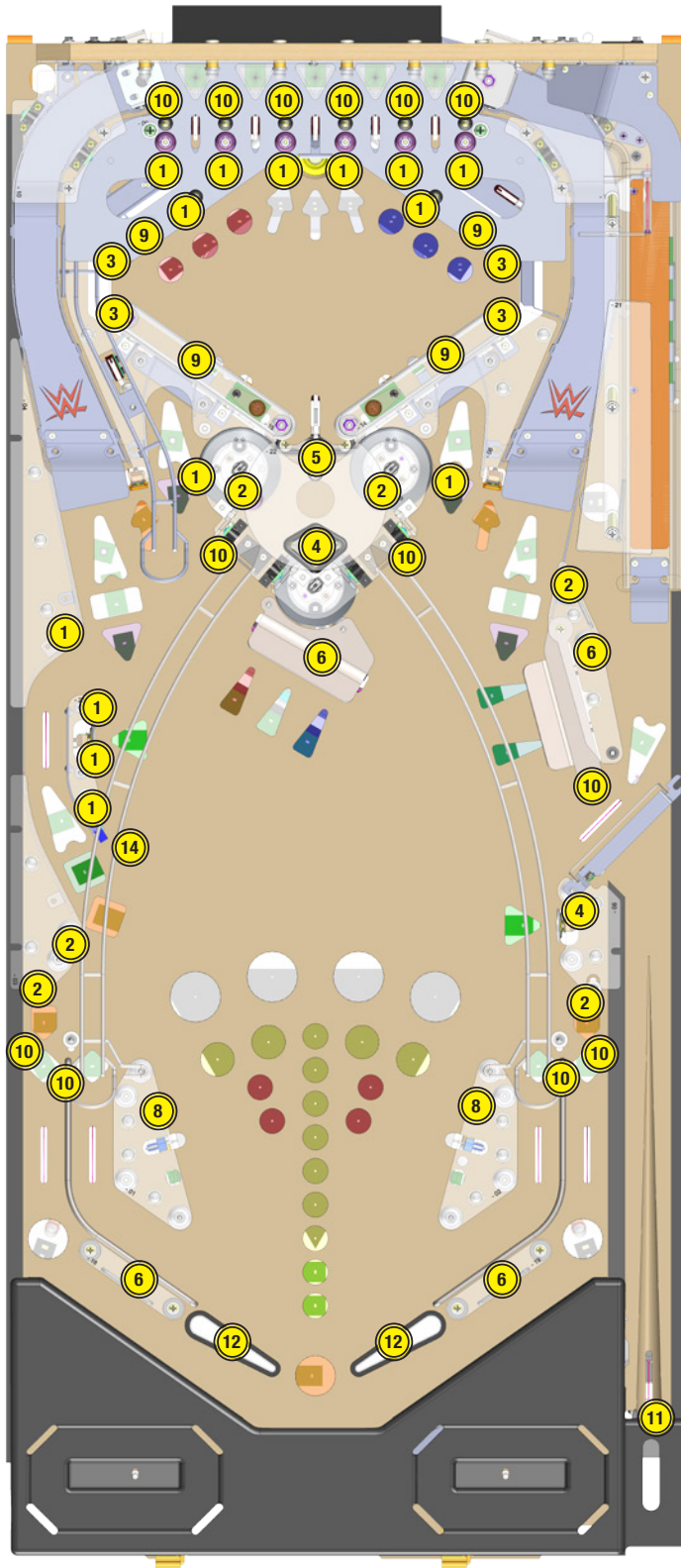


Figure 5.3.2. Rubber o-ring part locations

#### RUBBER O-RINGS

ID	Qty	Size (ID)	Size (OD)	Durometer	Color	Part Number
1	13	3/16"		50	Black	545-5348-01
-	-	3/16"		40	Black	545-5348-01-40
-	-	3/16"		40	White	545-5348-51
2	5	5/16"		50	Black	545-5348-02
-	-	5/16"		40	Black	545-5348-02-40
-	-	5/16"		40	White	545-5348-52
-	-	3/8"		50	Black	545-5348-03
-	-	7/16"		50	Black	545-5348-18
3	8	7/16"		40	White	545-5348-68
4	1	3/4"		50	Black	545-5348-04
-	-	3/4"		40	Black	545-5348-04-40
-	-	3/4"		40	White	545-5348-54
5	-	1"		50	Black	545-5348-05
-	-	1"		40	Black	545-5348-05-40
-	-	1"		40	White	545-5348-55
-	-	1-1/4"		50	Black	545-5348-06
-	-	1-1/4"		40	White	545-5348-56
-	-	1-1/2"		50	Black	545-5348-07
-	-	1-1/2"		40	Black	545-5348-07-40
-	-	1-1/2"		40	White	545-5348-57
6	2	1-3/4"		50	Black	545-5348-21
-	-	1-3/4"		50	Black	545-5348-21
-	-	2"		50	Black	545-5348-08
-	-	2"		40	Black	545-5348-08-40
7	6	2"		40	White	545-5348-58
8	2	2-1/2"		50	Black	545-5348-09
-	-	2-1/2"		40	Black	545-5348-09-40
-	-	2-1/2"		40	White	545-5348-59
-	-	2-3/4"		50	Black	545-5348-20
-	-	3"		50	Black	545-5348-10
9	8	3"		40	White	545-5348-60
-	-	3-1/2"		50	Black	545-5348-11
-	-	3/8"		50	Black	545-5348-19
-	-	3/8"		40	White	545-5348-69
10	18	7/16"		50	Black	545-5348-17
-	-	7/16"		40	Black	545-5348-17-40
-	-	7/16"		40	White	545-5348-67

Figure 5.3.1. Rubber o-ring part numbers and usage. ID: Inner Diameter, OD: Outer Diameter, Durometer: Higher number is firmer, less bounce, and more durable.

ID	Qty	Description	Color	Part Number
11	3	Plunger Tip (Two used on Playfield Supports)	Black	545-5276-00
12	2	Flipper Rubber	Black	545-5277-00
13	4	Bumper Pad (Located on Flipper and other assemblies under playfield)	Black	545-5105-00
14	1	Square Edge Rubber	Blue	626-5057-01

Figure 5.3.3. Other rubber part numbers and usage



## 5.4 RUBBER SIZE CHART

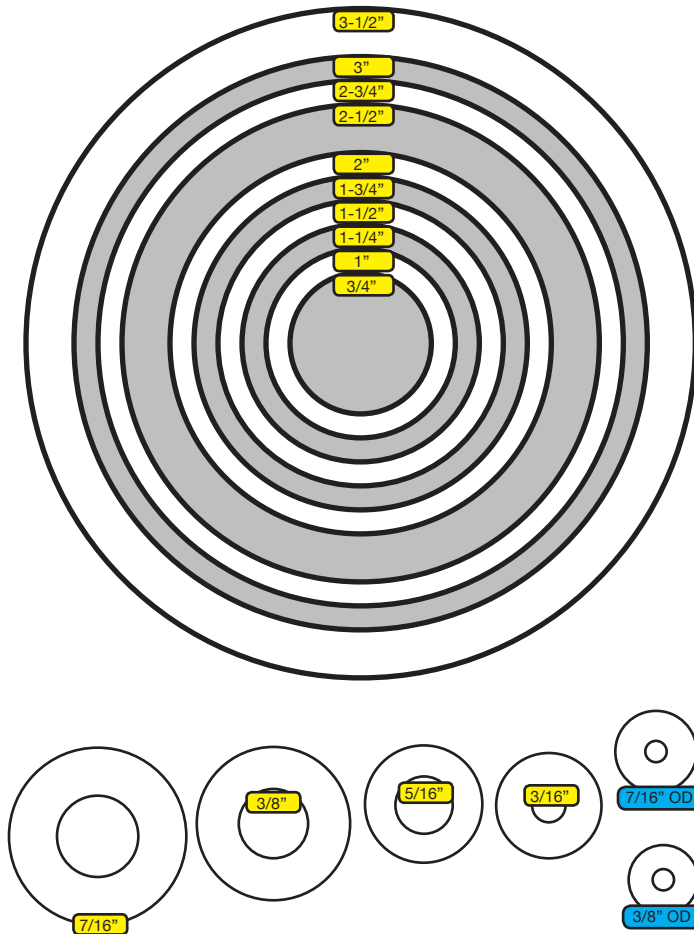


Figure 5.3.4. Rubber ring inner diameter sizing tool. Hold ring up to chart and read largest size on inside of ring. Dimensions are Inner Diameter (ID) unless otherwise noted as Outer Diameter (OD).

## 5.5 PLAYFIELD NUTS

Part Number	Description	Qty
240-5002-00	6-32 T-NUT	44
240-5003-01	PAL NUT FLP/ST BTN METAL	2
240-5005-00	6-32 NYLON STOP NUT	63
240-5008-00	6-32 KEPS NUT	19
240-5101-00	8-32 T-NUT	18
240-5102-00	8-32 NYL STP NUT .219 TO .239 WHT	40
240-5104-00	8-32 KEPS NUT	18
240-5202-00	10-24 HEX NUT	2
240-5203-00	10-32 STOP NUT	9
240-5207-00	10-24 KEPS NUT	10
240-5300-00	1/4-20 FLANGE NUT	10
240-5303-00	4-40 NYLON STOP NUT	6
240-5308-00	3/8 X 16 HEX NUT (SEE DWG)	4
240-5318-00	4-40 KEPS NUT	2
240-5336-00	3/8-16 ELASTIC STOP NUT	2

## 5.6 LIGHTING COMPONENTS

Part Number	Description	Qty
077-5000-00	SOCKET STAPLE DOWN 2 LUGS REV A	7
077-5035-00	SCKT 3/LUG LNG SHELL 45ø BRKT	2
077-5106-00	SOCKET REVERSE MT 9/32 2 LUG 89	2
077-5206-00	SCKT - POP BUMPER LAMP REV-A	3
077-5223-00	SOCKET 2 V/LUG SHORT REV A	21
112-5033-02	DBL LED WEDGE BASE (RED)	3
112-5033-08	DBL LED WEDGE BASE (WHT)	2
112-5034-02	DOUBLE LED BAYONET RED	2
112-5034-08	DOUBLE LED BAYONET WHITE	28
113-5045-08	8-ELEMENT +5V FLAT BAYONET -WHITE	2
520-5307-00	SINGLE LED PCB	38
520-5333-00	TRI-COLOR LED BOARDS c	5
520-6785-00	PCB FLASH LAMP REV A	8

## 5.7 SCREWS AND FIN SHANKS

Part Number	Description	Qty
237-5501-00	6-32 X 3/8 PPH MS (ZINC)	6
237-5510-00	6-32 X 1 1/2 PPH MS (ZINC)	8
237-5511-00	6-32 X 1 3/4 PPH MS (ZINC)	11
237-5515-00	6-32 X 3 PHIL PAN MS ZINC	4
237-5602-00	8-32 X 1/2 PHIL PAN MS ZINC	4
237-5800-00	#6 X 1/2 PHIL FLAT AB ZINC	8
237-5804-00	#6 X 1 1/4 PHIL FLAT A ZINC	20
237-5805-00	#6 X 1/2 PHIL PAN AB B/O	9
237-5809-00	#6 X 1/2 PTH A (ZINC)	20
237-5822-00	#8 X 3/4 PFH (ZINC)	2
237-5826-00	#5 X 7/8 PRH AB (ZINC)	6
237-5830-00	#4 X 3/8 PFH (ZINC)	4
237-5840-00	#4 X 1/2 PFH (ZINC)	12
237-5880-00	#6 X 3/8 PPH ZI TYPE-25 REV A	12
237-5883-00	6-32 X 1 1/4 FIN SHNK SPKR SCR ZC	4
237-5890-00	8-32 X 7/8 UNSLOTTED HWH MS ZINC	4
237-5909-00	4-40 X 1/4 PPH MS EXT SEMS ZINC	4
237-5921-04	6-32 X 7/8 F/SHK SCR BLNT PT RV C	21
237-5937-02	2-56X1/2 UNS SER HWH #4HD TR3 B/O	29
237-5975-00	8-32 X 3/8 SL SER HWH SW ZI WAX	8
237-5975-02	8-32 X 3/4 SL SER HWH SW ZI WAX	8
237-5975-03	8-32 X 5/8 SL SER HWH SW ZI WAX	4
237-5975-04	8-32 X 1/4 SL SER HWH SW ZI WAX	2
237-5976-01	6-32 X 1/4 SLOT SER HWH SW ZI WAX	6
237-5976-02	6-32 X 3/8 HWH SWAGE (SER) ZN	6
237-5976-04	6-32 X 5/8 SLOT SER HWH SW ZI WAX	46
237-5985-00	10-32 X 3/8 SLT SER HWH SW ZI WAX	5
237-5993-00	#8 X 1/2 PHIL PAN AB B/O	4
237-6003-00	8-32 X 1 SLOT HWH MX ZINC	2
237-6033-00	10-32 X 1/2 PHIL PAN MS ZINC	3
237-6116-01	PEM STUD 1/4-X1" FH 0420-16 BLK O	2
237-6144-00	10-32X3/4 SHCS 18-8SS MC92196A272	4
237-6146-00	6-32 X 2 PHIL FLAT MS ZINC	4
237-6151-00	4-40X5/16 PFH UC MS Z MC91099A160	6
237-6154-01	4-40 X 3/8 PTH BLACK	4
237-6169-00	4-40 X 1/4 PPHD NO SEMS	4
237-6240-128	THREADED ROD 3/8-16 X 8" REV A	2
237-6296-06	METRIC 4MM X 6MM LONG PPH MS	4

## 5.8 PLAYFIELD SPACERS

Part Number	Description	Qty
254-5000-01	SPACER .175 ID 3/8 OD "A" .500 B/G	2
254-5000-07	SPACER .175 ID 3/8 OD "A" .750 B/G	1
254-5000-09	SPACER .175 ID 3/8 OD "A" .250 B/G	6
254-5000-18	SPACER .175 ID 3/8 OD "A" .187 B/G	8
254-5000-19	SPACER .175 ID 3/8 OD "A" .125 B/G	8
254-5008-22	H/S 4 5/8 X 1/4 6-32 TAP SEE XX	1
254-5008-26	H/S 3 1/4 X 1/4 6-32 TAP SEE XX	4
254-5008-34	H/S 1 5/16 X 1/4 6-32 TAP SEE XX	2
254-5042-00	SPCR NT HEX 1/2 OD 1/4-20 B0 RV B	2
254-5080-00	SPACER #8 X 1/4" REV A	2
254-5086-01	NYLON SPACER 1/2" OD X 1" LG	4
254-5086-01	NYLON SPACER 1/2" OD X 1" LG	4
550-5017-01N	INSERT - TRIANGLE (CLEAR) SB	5
550-5017-01N	INSERT - TRIANGLE (CLEAR) SB	5
550-5034-01	JEWEL POST GROOVED (CLEAR) REV B	17
550-5052-01	MINI JEWEL POST - CLEAR RV B	12
550-5059-01	PLASTIC POST - CLEAR REV C	23
550-7361-07	LENS -LED ORANGE	2
550-7366-00	RING POST WWE REV B	12

## 5.9 PLAYFIELD POSTS

ID	Part Number	Description	Qty
1	530-5005-00	MINI POST 1" MACH THRD REV F	7
2	530-5008-00	POST FASTENING SCREW	6
3	530-5012-02	POST FASTENING SCREW #6-32 TOP	19
4	530-5285-01	HEX SPCR 1-7/8 X 3/8 8-32 THRD	2



# 5.10 BACKBOX PARTS

500-9902-G1

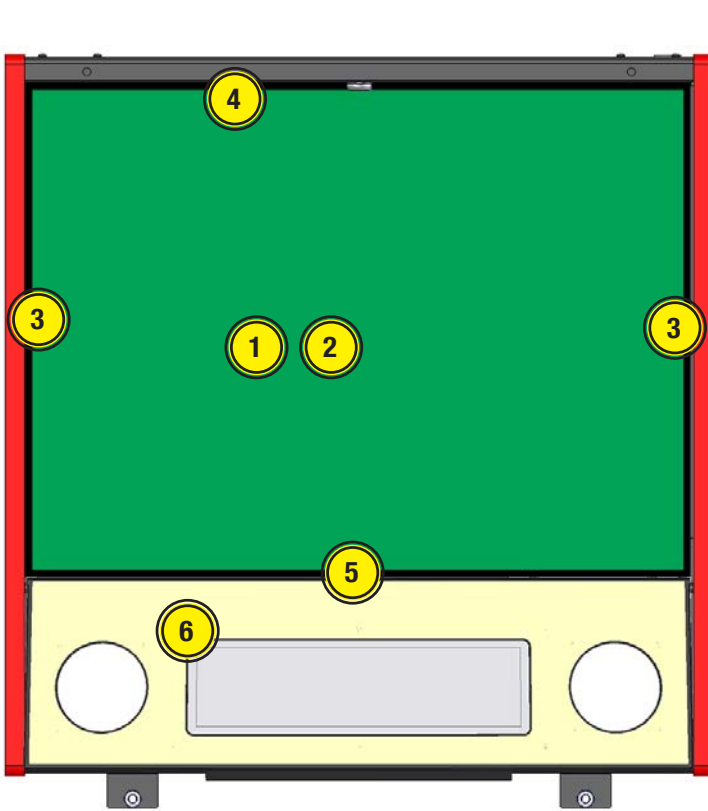


Figure 5.10.1. Backbox external assemblies and components

## EXTERNAL

ID	Part Number	Description	Qty
1	830-52G1-00	Translite Art	1
2	660-5038-02	Back Glass	1
3	545-5018-14	Plastic Extrusion 18-1/8"	2
4	545-5018-15	Glass Channel 26"	1
5	545-6313-01	Glass lift Channel 26"	1
6	500-9854-G1	Speaker Panel Assembly	1

Figure 5.10.2. \* Replacement decals are available as sets only, p/n 802-5001-G1

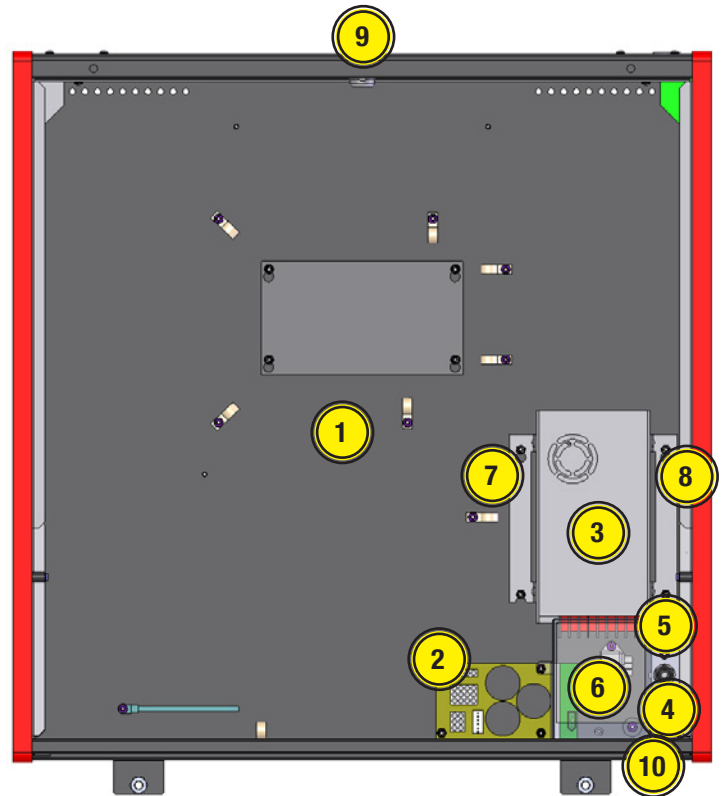


Figure 5.10.3. Backbox internal assemblies and components

## INTERNAL

ID	Part Number	Description	Qty
1	520-6936-00	CPU Node Board	1
2	520-5343-00	Power Distribution Board	1
3	011-5001-00	Power Supply 48V/320W	1
4	515-9769-00	Utility Outlet (USA)	1
5	205-5001-00	Fuse Holder-Screw in	1
6	535-0772-00	Cover AC	1
7	535-0879-01	Power supply bracket	1
8	535-0879-00	Power supply bracket	1
9	355-5168-00	Backbox Lock, 5/8 in	1
10	180-5001-03	Power Switch	1
	034-6012-00	Line Cord-3M 5-15P/C13RA*	1

Figure 5.10.4. Backbox parts bill of materials.

\* Line Cord connects to rear and varies by country. Refer to power supply reference for international line cord options.

## 5.11 SPEAKER PANEL PARTS

500-9854-G1

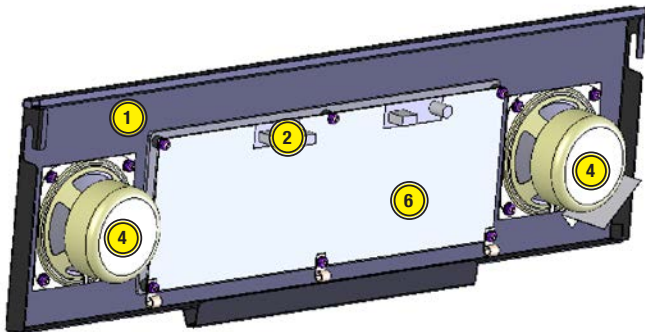


Figure 5.11.1. Speaker panel back

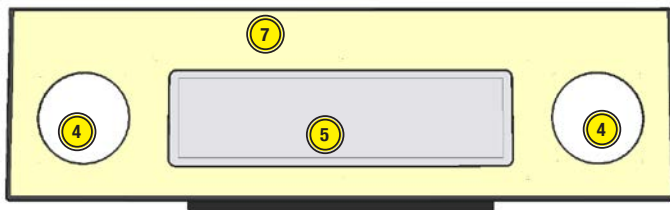


Figure 5.11.2. Speaker panel front

ID	Part Number	Description	Qty
1	515-9763-00	Speaker Panel	1
2	520-5052-15	Red LED Matrix Display	1
3	031-5004-02	Speaker 4 in 8 OHM	2
4	535-8081-01	Speaker Grill 4X4	2
5	545-7849-00	Display Lens	1
6	545-7856-00	Fische Paper LED Display	1
7	820-8369-G1	WWE Speaker Panel Decal	1

Figure 5.11.3. 500-9854-G1 Speaker panel bill of materials

## 5.12 CABINET DECALS

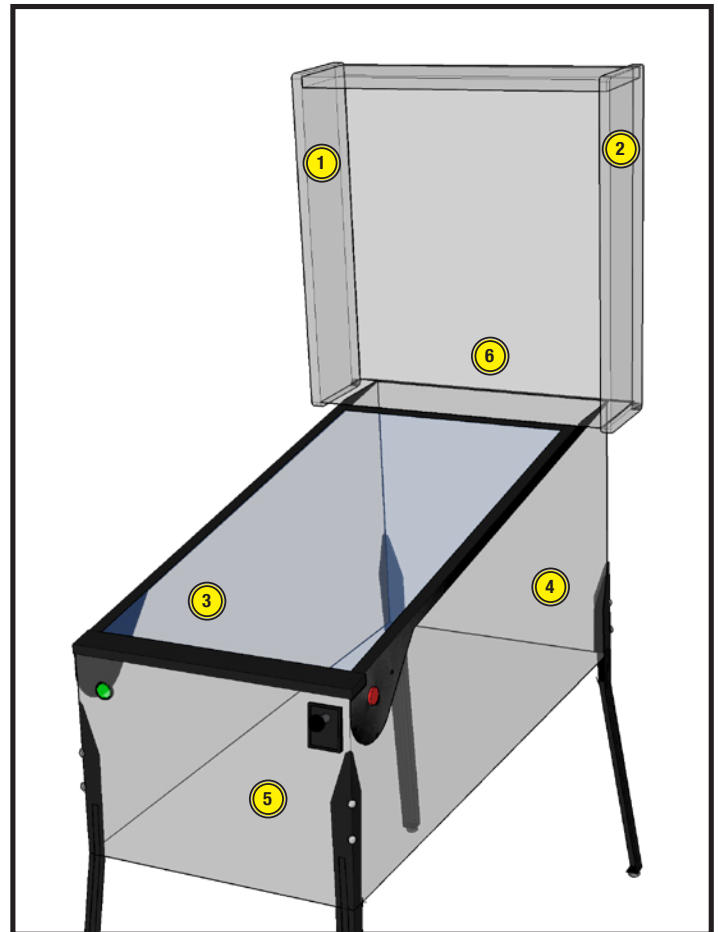


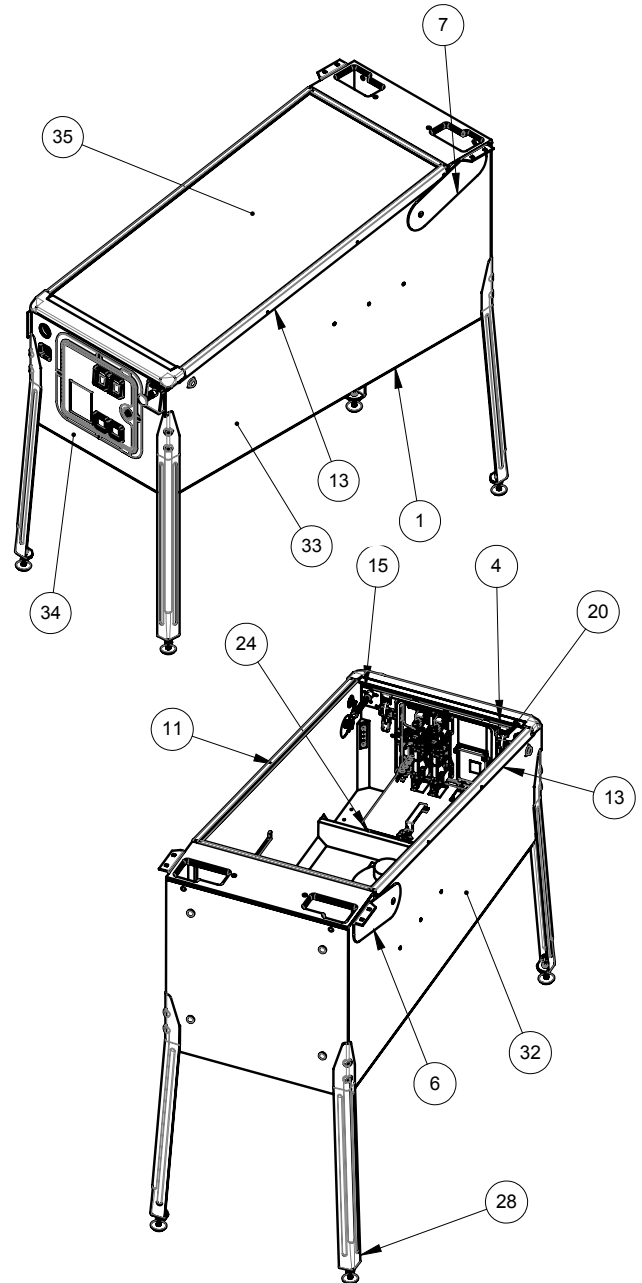
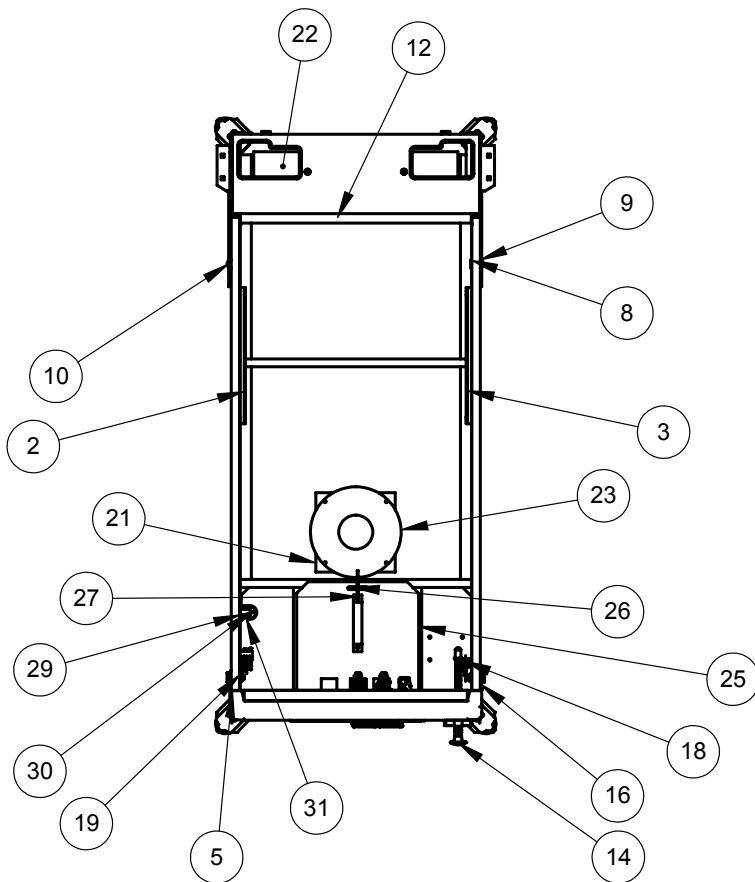
Figure 5.12.1. Cabinet decal locations

ID	Part Number	Description	Qty
1	820-66G1-01	Decal Backbox - Left	1
2	820-66G1-02	Decal Backbox - Right	1
3	820-66G1-03	Decal Cabinet Left	1
4	820-66G1-04	Decal Cabinet Right	1
5	820-66G1-05	Decal Cabinet Front	1
6	820-8369-G1	Speaker Panel Decal	1
	820-5000-G1	WWE Cabinet Decal Replacement Set *	

Figure 5.12.2. Replacement decal part numbers.

\* Cabinet replacement decals are only available in complete sets. Replacement set does not include speaker panel decal, order separately.

### 5.13 CABINET PARTS



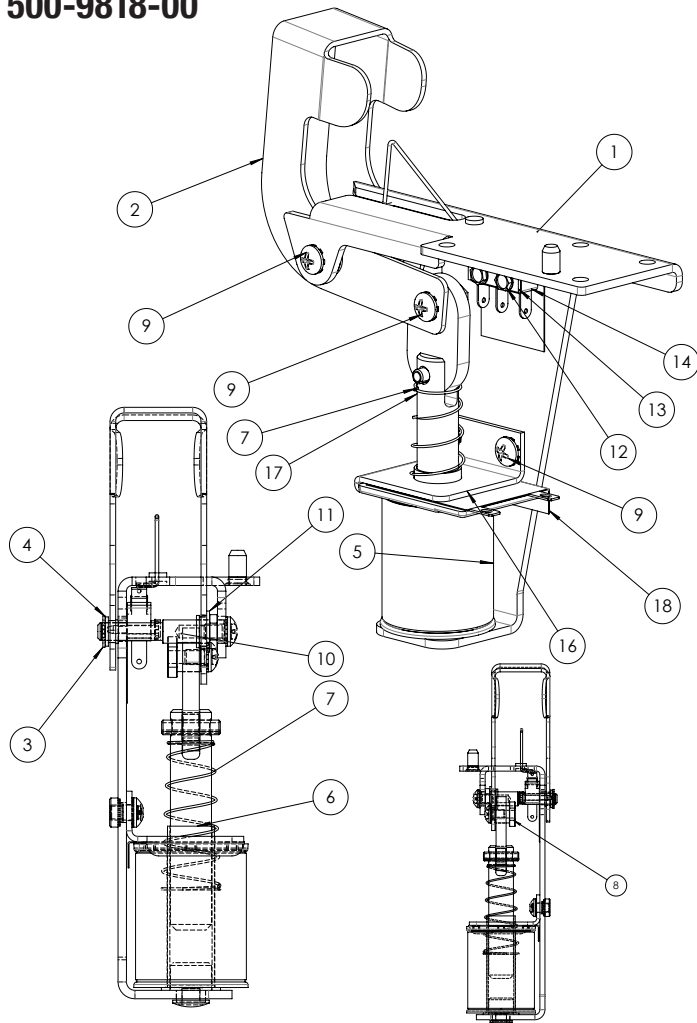
ID	Part Number	Description	Qty
1	525-5844-00	CABINET	1
2	535-5989-00	SLIDE & PIVOT BRACKET - LEFT SIDE	1
3	535-5990-00	SLIDE & PIVOT BRACKET - RIGHT SIDE	1
4	535-0399-00	CABINET BRACKET, PF SUPPORT	1
5	500-6882-03-00	FRONT MOLDING ASSEMBLY, LATCHED - BLACK	1
6	535-7999-00	PIVOT HINGE, LEFT - BLACK	1
7	535-7999-01	PIVOT HINGE, RIGHT - BLACK	1
8	254-5042-00	SPACER NUT, HEX, 1/2"OD, 1/4-20	2
9	242-5084-00	WASHER, 1/2" I.D., 3/16" THK	2
10	231-5014-00	1/4-20 X 7/8" CARRIAGE BOLT	2
11	545-5017-00	PLASTIC CHANNEL	2
12	545-5038-00	GLASS CHANNEL REAR EXTRUSION	1
13	535-7297-02	SIDE ARMOR - BLACK WRINKLE	2
14	500-6146-00-07	BALL SHOOTER ASSEMBLY	1
15	535-5027-01	PLUNGER SUPPORT PLATE, NOTCHED	1
16	500-5026-32	FLIPPER BUTTON ASSY (RED)	2
17	501-5018-173	COIN DOOR ASSEMBLY (USA)	1
-	501-5018-700	COIN DOOR C120/SR3,EUROPE*	-
-	501-5018-704	COIN DOOR, AUSTRALIA*	-
-	501-5018-711	COIN DOOR, CANADA*	-
-	501-5018-706	COIN DOOR, ITALY*	-
18	180-5160-01	SINGLE FLIPPER SWITCH	1
19	180-5160-00	FLIPPER SWITCH, DOUBLE	1
20	355-5038-00	DRAW LATCH, OVER CENTER CLAMP	2

ID	Part Number	Description	Qty
21	545-5072-03	GRILL - SPEAKER / VENT	1
22	545-5072-02	GRILL - SPEAKER / VENT	1
23	031-5007-01	SPEAKER, CABINET 8" ROUND, 4 OHM	1
24	545-5090-00	CASH BOX - PLASTIC	1
25	535-5013-03	CASH BOX COVER	1
26	535-7562-00	CASH BOX LOCK BRACKET	1
27	535-7772-00	HAIR PIN CLIP	1
28	500-5921-XX	LEG ASSEMBLY	4
29	516-0007-00	TILT ASSEMBLY	1
32	820-66G1-03	DECAL, CABINET LEFT, WWE PRO	1
33	820-66G1-04	DECAL, CABINET RIGHT, WWE PRO	1
34	820-66G1-05	DECAL, CABINET FRONT, WWE PRO	1
		* Not shown, shipped on international games.	



### 5.14 AUTO LAUNCH ASSEMBLY

500-9818-00

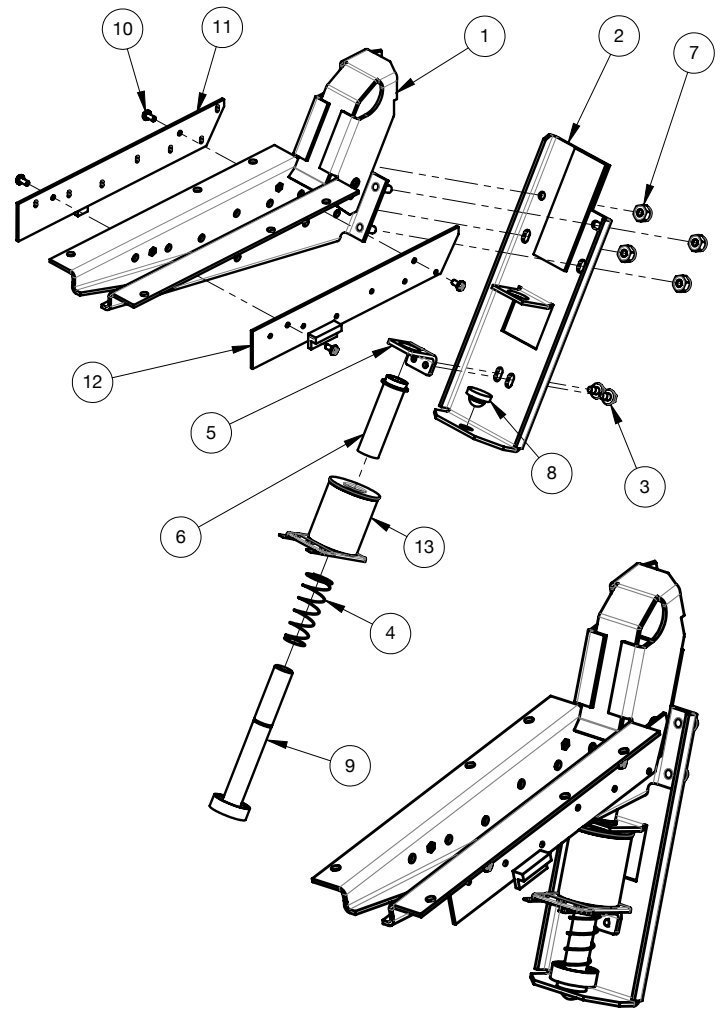


ID	Part Number	Description	Qty
1	515-9689-00	MAIN BRKT: AUTO-PLUNGER	1
2	535-0728-00	KICKER ARM, AUTO-PLUNGER	1
3	270-5001-00	RETAINING E-RING, 3/16" SHAFT OD	1
4	545-5352-00	NYLINER, 3/16" SHAFT	1
5	090-5001-ND	COIL - 23-800, NO DIODE	1
6	545-5411-00	COIL SLEEVE	1
7	266-5020-00	COMPRESSION SPRING-CONICAL	1
8	530-7834-00	PIN: KICKER ARM, AUTO-PLUNGER	1
9	232-5300-00	SCREW, 8-32 X 1/4" PPH SEMS	4
10	530-7835-00	PIVOT, AUTO-PLUNGER	1
11	545-5423-00	NYLINER, 1/4" SHAFT, 4L1-FF	1
12	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	2
13	535-6539-00	SWITCH BODY PROTECT PLATE	1
14	180-5157-01	SHOOTER SWITCH - SHORT ARM	1
15	545-6268-00	FISCHE PAPER	1
16	535-0762-00	COIL BRACKET-AUTOPLUNGER	1
17	515-6304-03	PLUNGER / LINK ASSEMBLY	1
18	545-0762-00	FISCHE PAPER: AUTO-LAUNCHER	1

Figure 5.14.1. Auto Launch Assembly 500-9818-00 bill of materials.

### 5.15 BALL TROUGH ASSEMBLY

500-9820-00

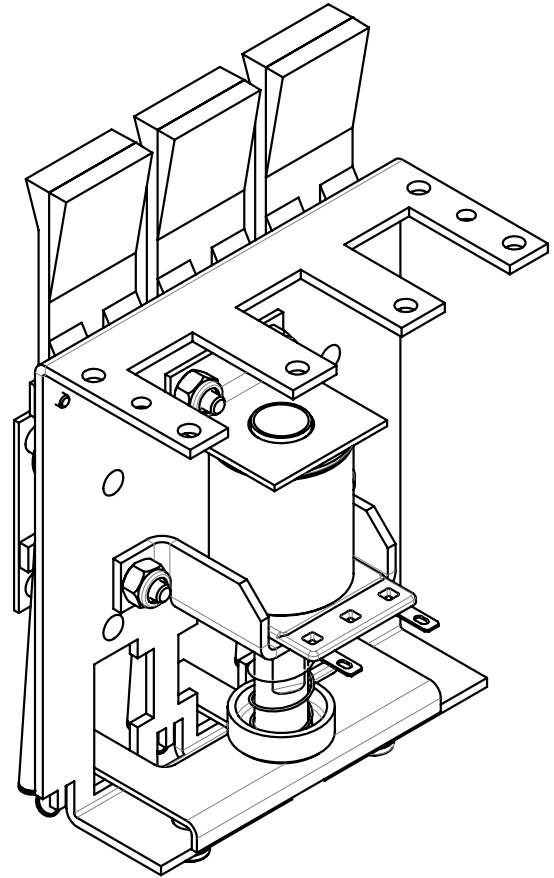
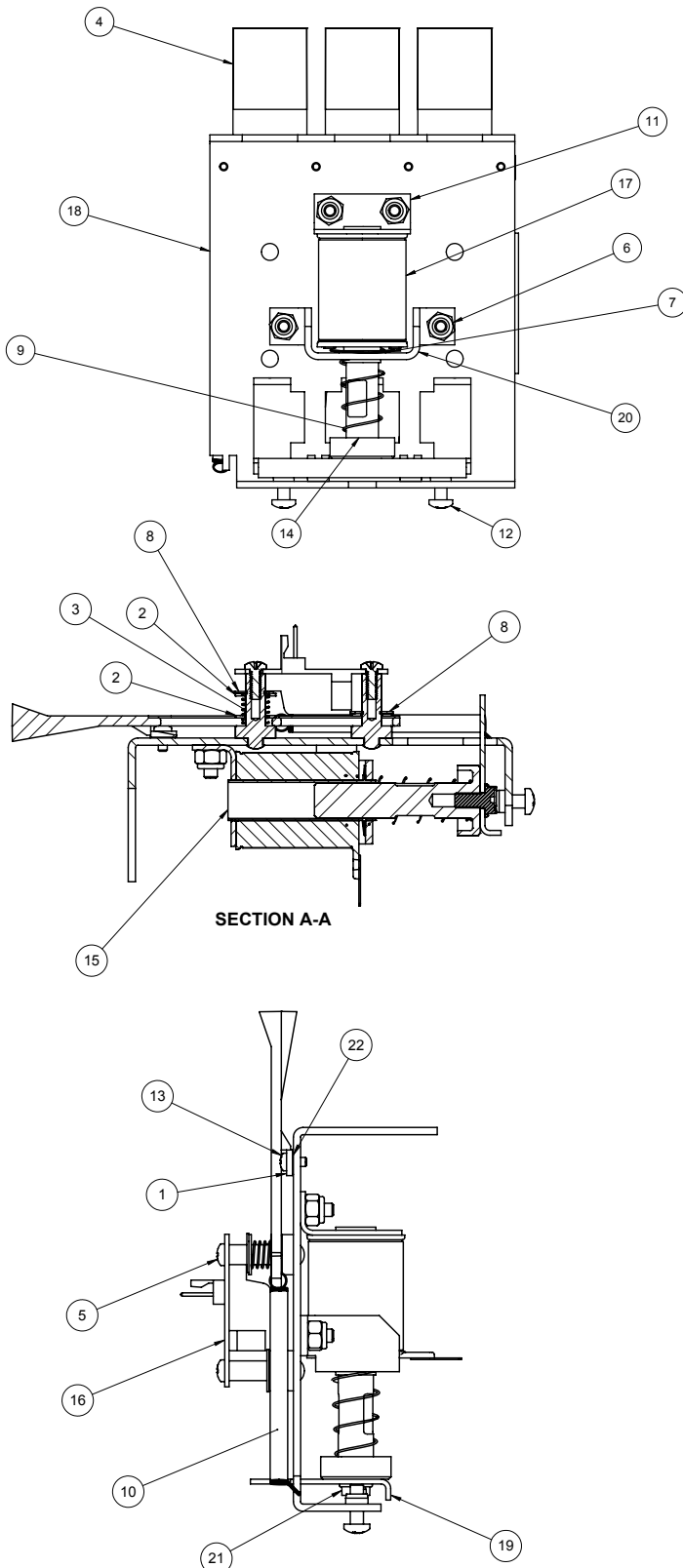


ID	Part Number	Description	Qty
1	515-7811-00	MAIN BRKT. BALL TROUGH	1
2	515-7812-00	COIL BRACKET, BALL TROUGH	1
3	237-5975-04	SCREW, 8-32 X 1/4" HWH SWAGE SERR	2
4	266-5020-00	COMPRESSION SPRING-CONICAL	1
5	535-5203-03	COIL RETAINING BRACKET	1
6	545-5076-01	COIL SLEEVE	1
7	240-5102-00	8-32 NYLON LOCK NUT	4
8	545-5105-00	RUBBER BUMPER	1
9	515-7309-01	PLUNGER ASSEMBLY	1
10	237-5909-00	SCREW, 4-40 X 1/4" PPH SEMS	4
11	520-5344-00	TROUGH BOARD #1 - ILED TRANSMITTER	1
12	520-5345-00	TROUGH BOARD #2 - RECEIVER	1
13	090-5004-ND	COIL 27-1500 - NO DIODE	1
98*	605-5006-00	SHRINK TUBING 1/8"	.42 FT.
99*	036-5611-11-F5	CABLE TROUGH OPTOS	1

Figure 5.15.1. Ball trough assembly - 500-9820-00 bill of materials.

## 5.16 3-BANK DROP TARGET ASSEMBLY

500-7216-03-G1

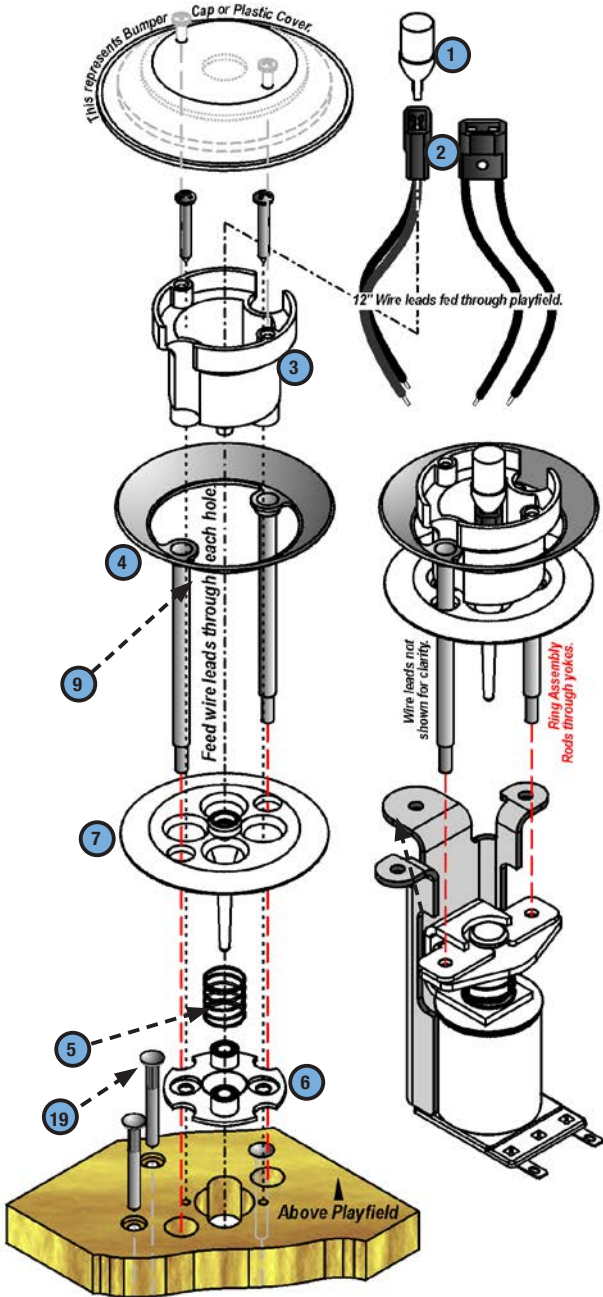


ID	Part Number	Description	Qty
1	545-6163-03	LEDGE, 3-BANK DROP TARGET	1
2	242-5091-00	WASHER, 1/2 X 17/64 X .03 - DT	9
3	266-5089-00	SPRING COMPRESSION - DT	3
4	545-6305-00	TARGET - ROLLOVER - BLACK	3
5	237-5501-00	SCREW, 6-32 X 3/8" PPH MS ZINC	6
6	240-5102-00	8-32 NYLON LOCK NUT	4
7	269-5002-00	SPRING WASHER	1
8	270-5002-00	RETAINING RING - 1/4"	6
9	266-5020-00	COMPRESSION SPRING-CONICAL	1
10	265-5003-02	TARGET RESET SPRING	3
11	535-9959-00	STOP BRKT	1
12	237-5602-00	SCREW, 8-32 X 1/2" PPH MS,Zinc	2
13	237-6169-00	SCREW, 4-40 X 1/4 PPH MS	4
14	530-5757-00	PLUNGER - D.T. ASSY.	1
15	545-5076-01	COIL SLEEVE	1
16	520-5252-03	3 BANK DROP TARGET PCB-OPTO	1
17	090-5034-ND	COIL 25-1240 - NO DIODE	1
18	515-7784-03	DROP TARGET FRAME ASSY 3-BANK	1
19	535-9996-03	LIFT BRACKET - 3 BANK	1
20	535-9995-01	COIL BRACKET	1
21	237-5985-00	SCREW, 10-32 X 3/8" HWH SWAGE	1
22	545-6798-00	SHIM - FICHE PAPER - D.T. SINGLE	2

Figure 5.16.1. 3-Bank Drop Target Assembly 500-7216-03-G1 bill of materials.

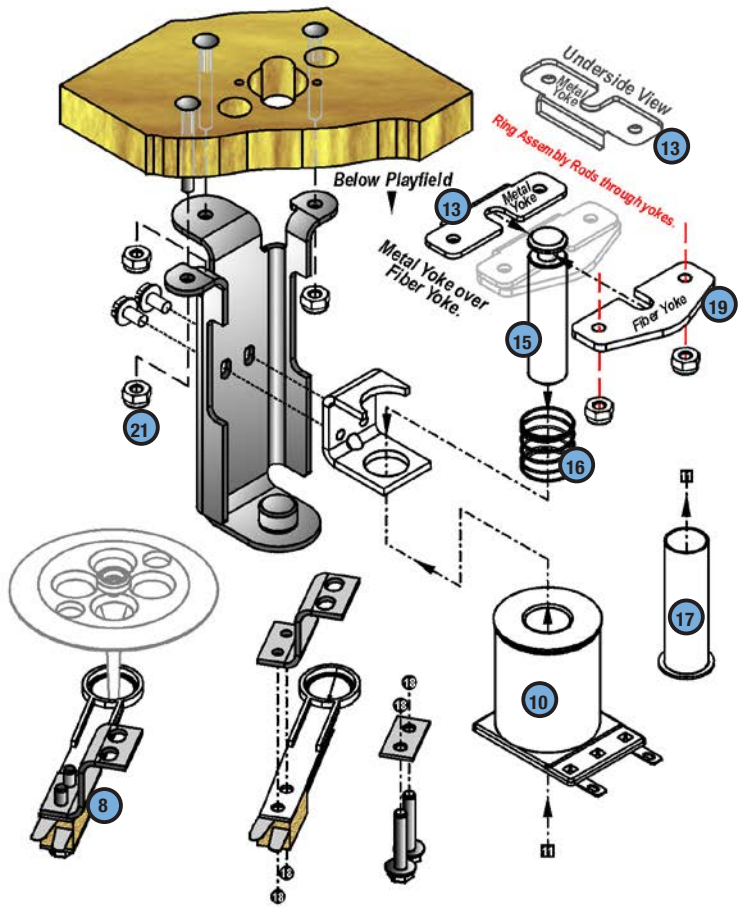
# 5.17 POP BUMPER ASSEMBLY

516-6784-XX



ID	Part Number	Description	Qty
1	112-5033-02	LED MODULE WEDGE BASE RED	1
2	077-5206-00	WEDGE BASE SOCKET	1
3	545-5197-00	BUMPER BODY	1
4	515-5085-00	RING AND ROD ASSY	1
5	266-5048-00	BUMPER SKIRT COMP SPRING	1
6	545-5195-00	BUMPER BASE	1
7	545-5607-00	BUMPER SKIRT	1

Figure 5.17.1. 515-6459-01L Pop bumper assy top bill of materials



Part Number	Description	Qty
515-6459-01L	BUMPER/RING TOP ASSY, W/ LED 1	1
515-6459-04-ND	BUMPER BOTTOM ASSY, NO DIODE	1

Figure 5.17.2. 516-6784-XX Pop bumper assy major subassemblies.

ID	Part Number	Description	Qty
8	500-9934-01	POP BUMPER SWITCH ASSY-2 - LUG-LEFT	1
9	240-5005-00	6-32 NYLON STOP NUT	1
10	090-5044-ND	COIL - 26-1200	1
11	237-5976-01	#6-32 X 1/4" SHWH SWAGE ZN	2
12	240-5005-00	#6-32 NYLON STOP NUT	9
13	535-7347-00	METAL YOKE STOP	1
14	234-5101-00	* 8 X 1/2 SLT	6
15	530-5348-00	PLUNGER, POP BUMPER	1
16	266-5047-00	COMPRESSION SPRING, POP BUMPER	1
17	545-5031-00	COIL SLEEVE	1
18	515-5939-00	COIL BRACKET POP BUMPER ASSY	1
19	545-5609-00	FIBER YOKE	1
20	535-7346-00	METAL YOKE	1
21	237-5957-00	#6-32 x 1-3/16" SPIRAL FIN SHANK SCREW	3

Figure 5.17.3. 515-6549-04-ND Pop bumper bottom bill of materials

**5.18 FLIPPER ASSEMBLY, LEFT**

500-6543-02-ND

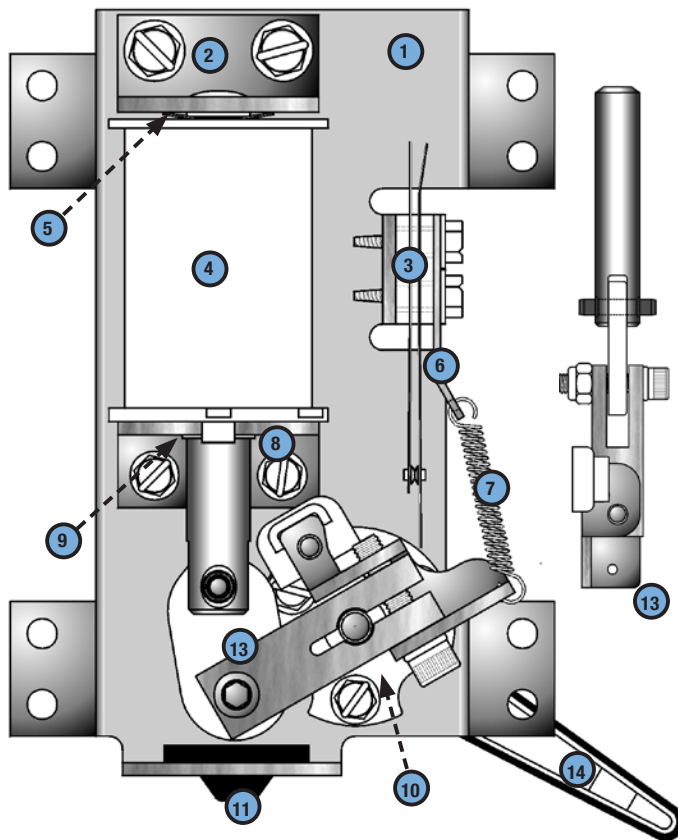


Figure 5.18.1. Left flipper assembly 500-6543-02-ND bottom view.

**5.19 FLIPPER ASSEMBLY, RIGHT**

500-6543-12-ND

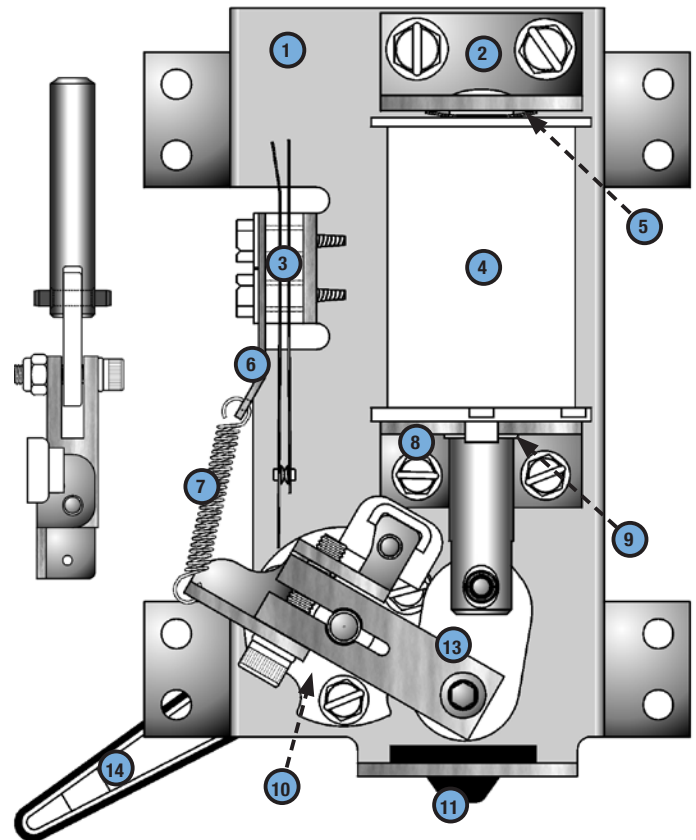


Figure 5.19.2. Right flipper assembly 500-6543-12-ND bottom view.

ID	Part Number	Description	Qty
1	515-6617-01	FLIPPER BASE PLATE LEFT KIT W/ BRACKET MOUNTING HARDWARE	1
2	515-6308-01	COIL STOP BRACKET	1
3	180-5149-00	SWITCH - END OF STROKE N/C	1
4	090-5083-03-ND	COIL-DUAL WINDING	1
5	269-5002-00	SPRING WASHER	1
6	535-7354-00	SWITCH RETURN SPRING BRACKET	1
7	265-5035-00	SPRING FLIPPER RETURN	1
8	535-7356-00	COIL SUPPORT BRACKET	1
9	545-5388-00	COIL SLEEVE, FLIPPER	1
10	545-5070-00	FLIPPER BAT BUSHING	1
11	545-5428-00	FLIPPER BUMPER PAD	1
12	237-6144-00	SET SCREW #10-32 x 3/4" SOCKET	1
13	515-7203-01	PLUNGER/CRANK ASSEMBLY, LEFT	1
14	515-5133-06	FLIPPER BAT AND SHAFT*	1
	500-6307-10	FLIPPER REBUILD KIT, LEFT	
		* Refer to game rubber chart for flipper rubber color and part number.	

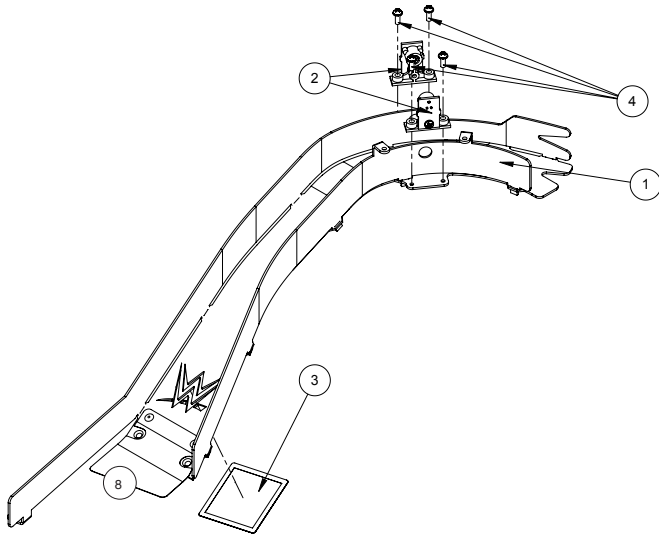
Figure 5.18.2. Left flipper assembly 500-6543-02-ND bill of materials.

ID	Part Number	Description	Qty
1	515-6617-00	FLIPPER BASE PLATE RIGHT KIT W/ BRACKET MOUNTING HARDWARE	1
2	515-6308-01	COIL STOP BRACKET	1
3	180-5149-00	SWITCH - END OF STROKE N/C	1
4	090-5083-03-ND	COIL-DUAL WINDING	1
5	269-5002-00	SPRING WASHER	1
6	535-7354-00	SWITCH RETURN SPRING BRACKET	1
7	265-5035-00	SPRING FLIPPER RETURN	1
8	535-7356-00	COIL SUPPORT BRACKET	1
9	545-5388-00	COIL SLEEVE, FLIPPER	1
10	545-5070-00	FLIPPER BAT BUSHING	1
11	545-5428-00	FLIPPER BUMPER PAD	1
12	237-6144-00	SET SCREW #10-32 x 3/4" SOCKET	1
13	515-7203-00	PLUNGER/CRANK ASSEMBLY	1
14	515-5133-06	FLIPPER BAT AND SHAFT*	1
	500-6307-00	FLIPPER REBUILD KIT, RIGHT	
		* Refer to game rubber chart for flipper rubber color and part number.	

Figure 5.19.1. Right flipper assembly 500-6543-12-ND bill of materials.

## 5.20 LEFT WWE RAMP ASSEMBLY

500-9886-00

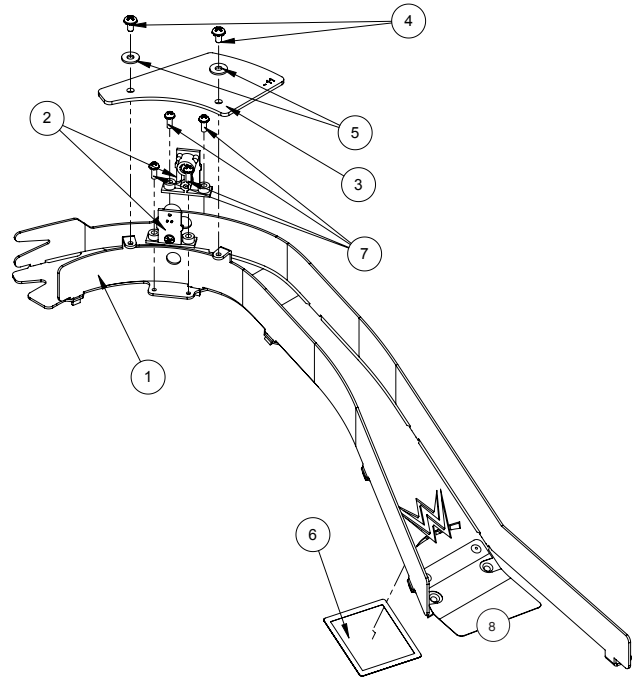


ID	Part Number	Description	Qty
1	510-7494-00	LEFT RAMP WITH RAMP FLAP	1
2	500-6775-01	OPTO TRANSCEIVER ASSY, 15" LEADS	2
3	830-7024-00	WWE ADHESIVE FILM	1
4	237-5882-00	SCREW, #4-40 X 5/16 PRH SEMS	4
8	535-1022-00	RAMP FLAP	1

Figure 5.20.1. Left Ramp Assembly - 500-9886-00 Bill of Materials

## 5.22 RIGHT WWE RAMP ASSEMBLY

500-9887-00



ID	Part Number	Description	Qty
1	510-7495-00	RIGHT RAMP WITH FLAP	1
2	500-6775-01	OPTO TRANSCEIVER ASSY, 15" LEADS	2
3	830-6947-11	BUTYRATE SET - 11	1
4	232-5200-00	SCREW, 6-32 X 1/4" PPH SEMS	2
5	242-5001-00	#6 WASHER	2
6	830-7024-00	WWE ADHESIVE FILM	1
7	237-5882-00	SCREW, #4-40 X 5/16 PRH SEMS	4
8	535-1022-00	RAMP FLAP	1

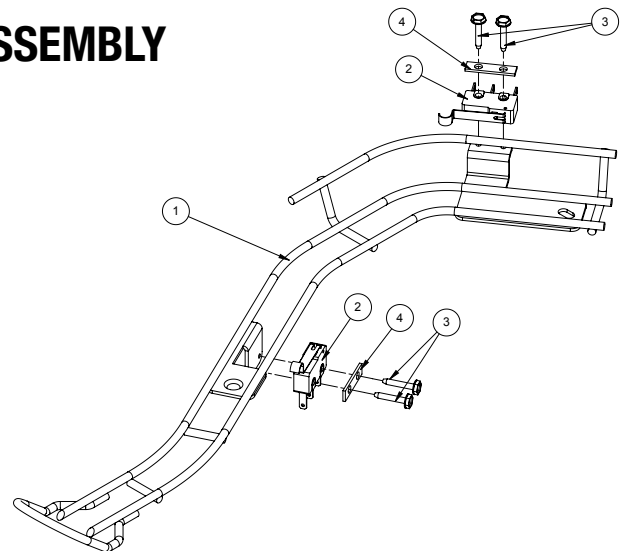
Figure 5.20.2. 500-9887-00 Right Ramp Assembly Bill of Materials

## 5.21 LEFT RING EXIT WIRE RAMP PRO ASSEMBLY

511-7608-08

ID	Part Number	Description	Qty
1	535-1058-08	LEFT RING EXIT WIRE RAMP PRO	1
2	180-5209-00	SUB MINIATURE SWITCH - SIM. ROLLER	2
3	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	4
4	535-6539-00	SWITCH BODY PROTECT PLATE	2

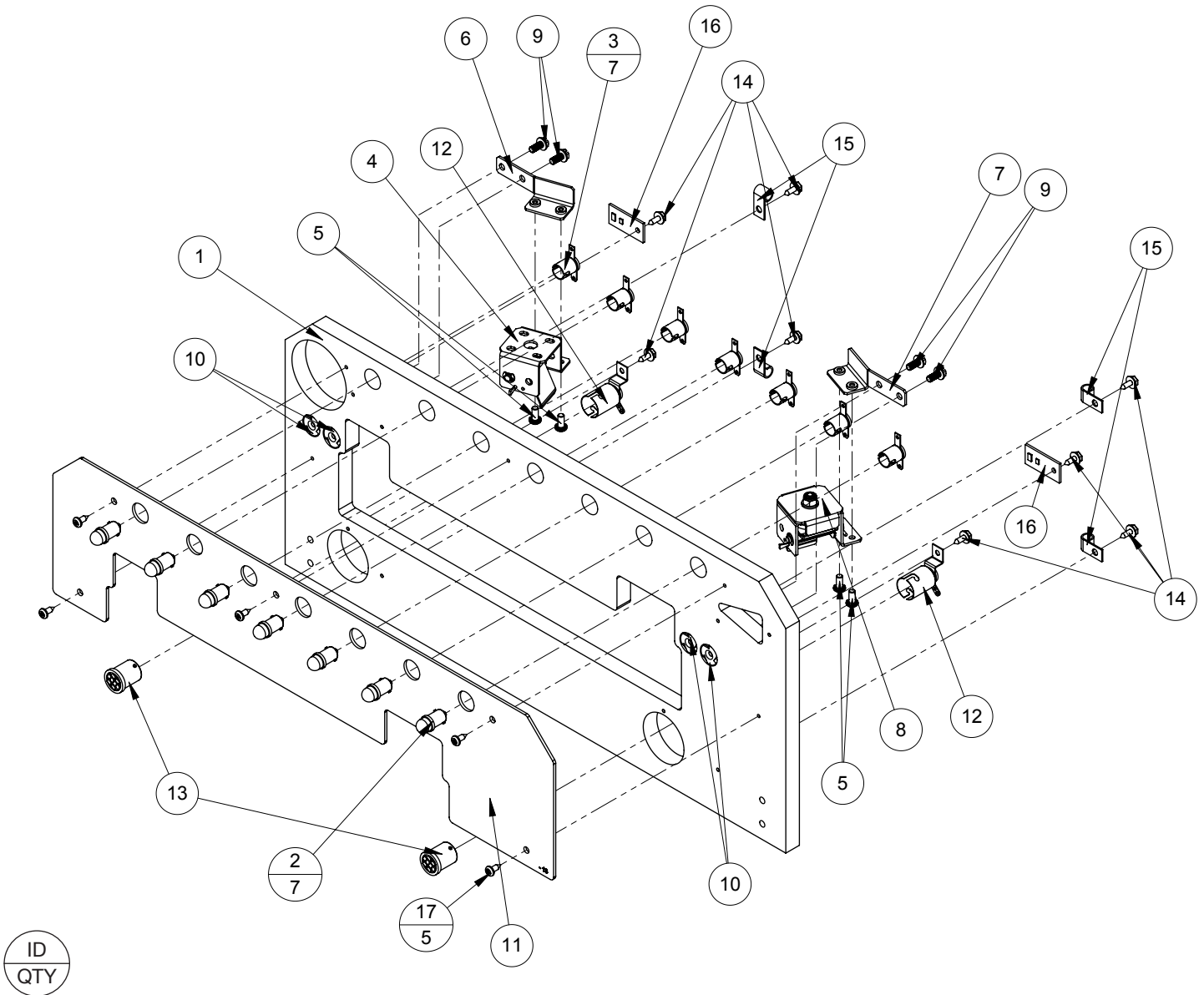
Figure 5.21.1. 511-7608-08 - Left Ring Exit Wire Ramp Pro Assembly bill of materials.





# 5.23 BACK PANEL ASSEMBLY, WWE PRO

500-9885-00



Item	Part Number	Description	Qty
1	525-9700-00	BACK PANEL, WWE PRO	1
2	112-5034-08	DOUBLE LED, BAYONET BASE - WHITE	7
3	077-5000-00	SOCKET - STAPLED - 2 LUGS	7
4	511-7463-00	ASSY, ONE-WAY GATE LEFT, RAIL MT	1
5	232-5301-00	SCREW, 8-32 X 3/8" PPH SEMS	4
6	535-1093-00	GATE MOUNTING BRACKET LEFT	1
7	535-1093-01	GATE MOUNTING BRACKET RIGHT	1
8	511-7637-03	ELECTRIC GATE, RAIL MOUNT, SMALL TOP - RIGHT REVERSED COIL	1
9	237-5975-00	SCREW, 8-32 X 3/8" HWH SWAGE ZN	4

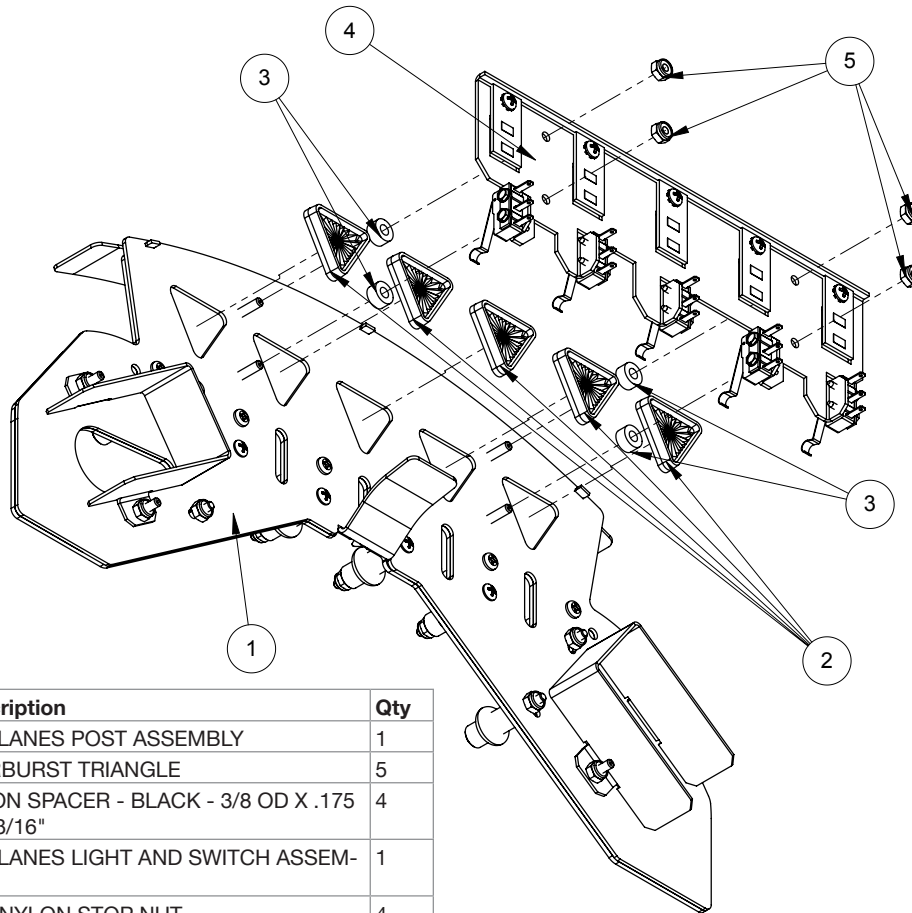
Item	Part Number	Description	Qty
10	240-5101-00	8-32 T-NUT	4
11	830-6947-13	BUTYRATE SET - 13	1
12	077-5106-00	2-LUG STAND-UP REV. MOUNT SHORT SOCKET	2
13	113-5045-08	MULTI-LED FLASHER, 5 VDC - WHITE	2
14	234-5000-00	SCREW, #6 X 3/8" HWH	8
15	040-5000-03	1/4" CABLE CLAMP	4
16	520-6785-00	FLASH LAMP PCB	2
17	232-5000-00	SCREW, #6 X 3/8 PPH AB ZINC	5

Figure 5.23.1. Back Panel Assembly - 500-9885-00 Bill of Materials



## 5.24 WWE TOP LANES ASSEMBLY

500-9921-00

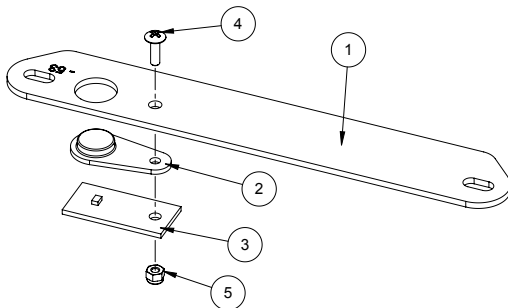


ID	Part Number	Description	Qty
1	511-7620-00	TOP LANES POST ASSEMBLY	1
2	550-5017-01	STARBURST TRIANGLE	5
3	254-5000-18	NYLON SPACER - BLACK - 3/8 OD X .175 ID X 3/16"	4
4	511-7606-00	TOP LANES LIGHT AND SWITCH ASSEMBLY	1
5	240-5005-00	6-32 NYLON STOP NUT	4

Figure 5.24.1. 500-9921-00 Top Lanes Assembly Bill of Materials

## 5.25 WWE LEFT "SLAMMER" FLIPPER PLASTIC ASSEMBLY

511-7622-00

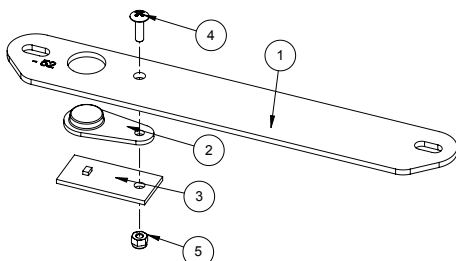


ID	Part Number	Description	Qty
1	830-7025-53	BUTYRATE SET - 53	1
2	550-7361-07	MIN DOME LED-ORANGE	1
3	520-5307-00	PCB, SINGLE LED	1
4	237-6154-01	SCREW, 4-40 X 3/8" PTH MS - BLACK	1
5	240-5303-00	4-40 NYLON LOCK NUT	1

Figure 5.25.1. Left Flipper Plastic Assembly - 511-7622-00 bill of materials.

## 5.26 WWE RIGHT "SLAMMER" FLIPPER PLASTIC ASSEMBLY

511-7622-01

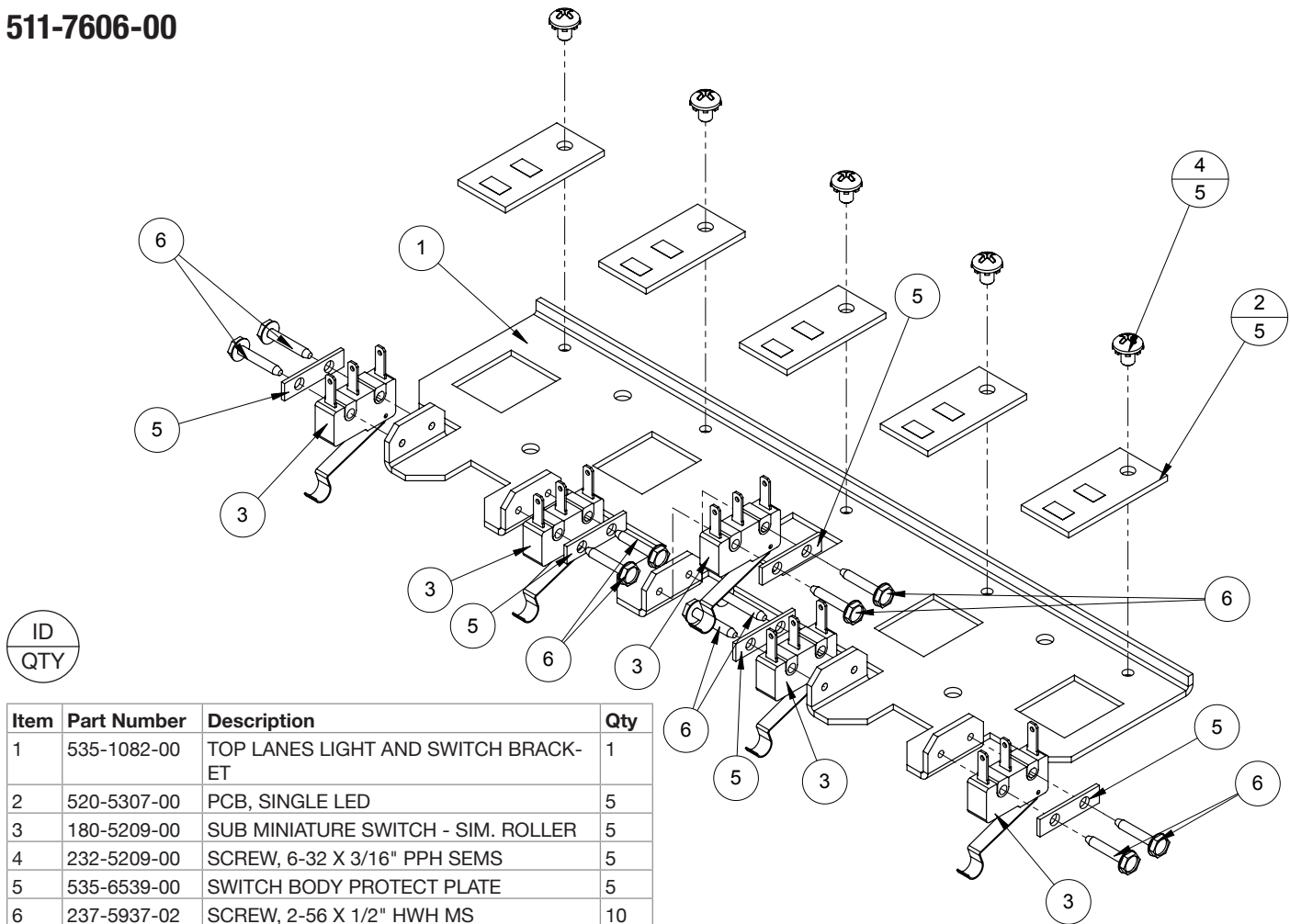


ID	Part Number	Description	Qty
1	830-7025-52	BUTYRATE SET - 52	1
2	550-7361-07	MIN DOME LED-ORANGE	1
3	520-5307-00	PCB, SINGLE LED	1
4	237-6154-01	SCREW, 4-40 X 3/8" PTH MS - BLACK	1
5	240-5303-00	4-40 NYLON LOCK NUT	1

Figure 5.26.1. Right Flipper Plastic Assembly - 511-7622-01 bill of materials.

## 5.27 WWE TOP LANES LIGHTS AND SWITCHES

511-7606-00



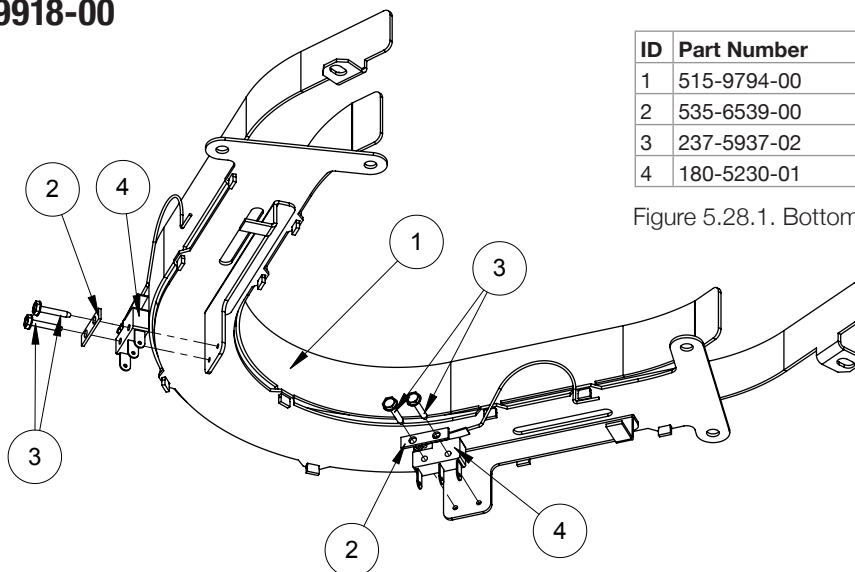
ID	QTY
----	-----

Item	Part Number	Description	Qty
1	535-1082-00	TOP LANES LIGHT AND SWITCH BRACKET	1
2	520-5307-00	PCB, SINGLE LED	5
3	180-5209-00	SUB MINIATURE SWITCH - SIM. ROLLER	5
4	232-5209-00	SCREW, 6-32 X 3/16" PPH SEMS	5
5	535-6539-00	SWITCH BODY PROTECT PLATE	5
6	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	10

Figure 5.27.1. 511-7606-00 Top Lanes Lights and Switches

## 5.28 WWE BOTTOM ORBIT ASSY

500-9918-00

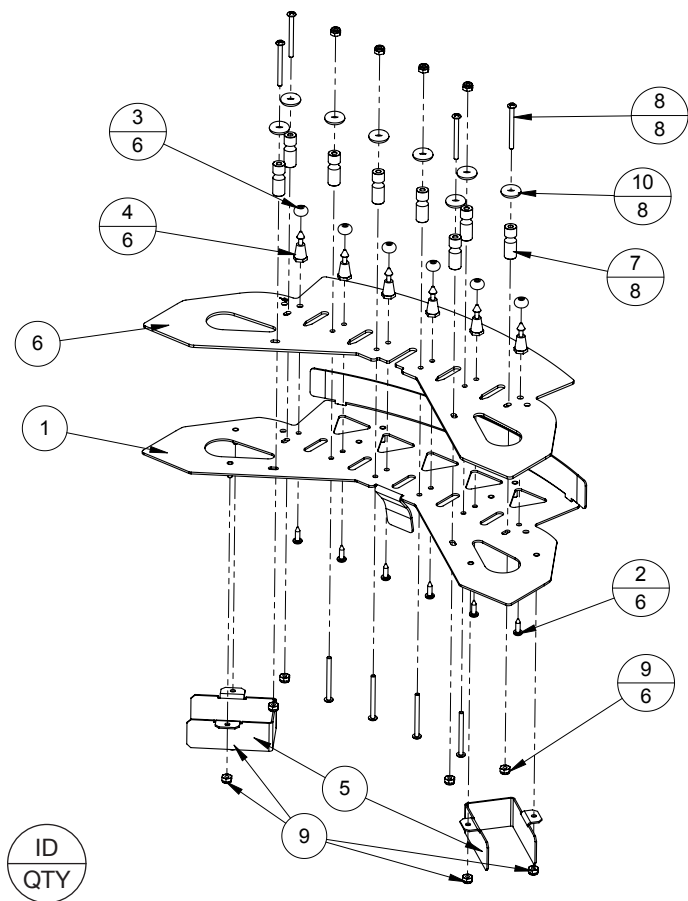


ID	Part Number	Description	Qty
1	515-9794-00	BOTTOM RING ORBIT	1
2	535-6539-00	SWITCH BODY PROTECT PLATE	2
3	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	4
4	180-5230-01	P/F ROLLOVER SWITCH - LITE	2

Figure 5.28.1. Bottom Orbit Assy 500-9918-00 bill of materials

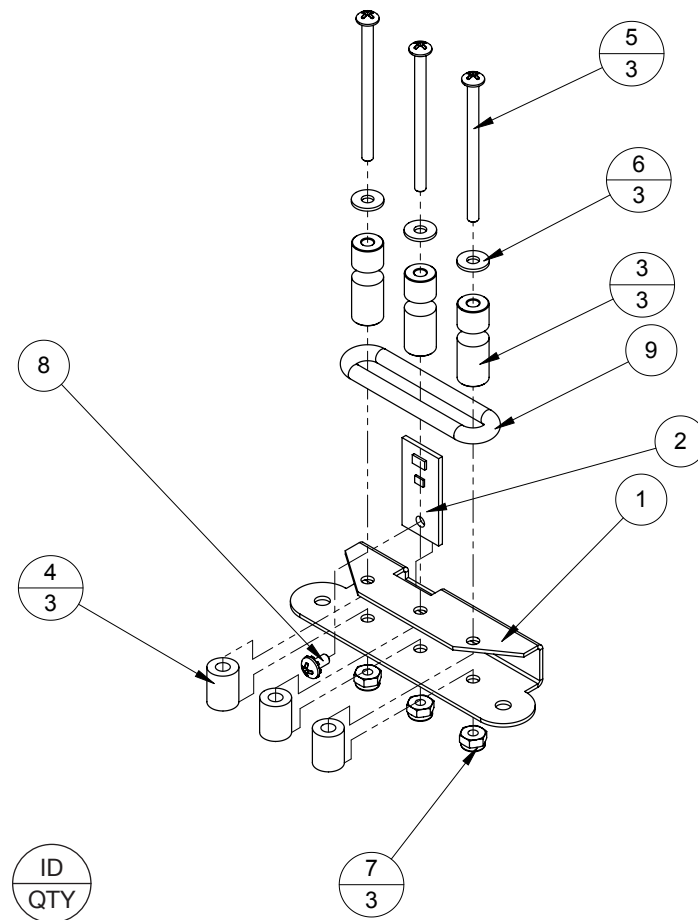
### 5.29 WWE TOP LANES POSTS ASSY

511-7620-00



### 5.30 WWE POP BUMPER FLASHER ASSEMBLY

511-7627-00



ID	Part Number	Description	Qty
1	515-9796-00	TOP LANES PLATE	1
2	237-5805-00	SCREW, #6 X 1/2" PPH AB B/O	6
3	545-5348-17	7/16 O.D. RUBBER RING - BLACK	6
4	550-5052-01	MINI POST - CLEAR	6
5	535-1087-00	TOP LANES HOLE HOOD	2
6	830-6947-09	BUTYRATE SET - 09	1
7	550-5059-01	PLASTIC POST - CLEAR	8
8	237-5510-00	SCREW, 6-32 X 1-1/2" PPH MS	8
9	240-5005-00	6-32 NYLON STOP NUT	12
10	545-5348-01	3/16 ID RUBBER RING	8

Figure 5.29.1. 511-7620-00 Top Lanes Posts

ID	Part Number	Description	Qty
1	535-1098-00	POP BUMPER FLASHER BRACKET	1
2	520-6785-00	FLASH LAMP PCB	1
3	550-5059-01	PLASTIC POST - CLEAR	3
4	254-5000-01	NYLON SPACER - BLACK - 3/8 OD X .175 ID X 1/2"	3
5	237-5513-00	SCREW, 6-32 X 2" PPH MS	3
6	242-5001-00	#6 WASHER	3
7	240-5005-00	6-32 NYLON STOP NUT	3
8	232-5200-00	SCREW, 6-32 X 1/4" PPH SEMS	1
9	545-5348-05	1 ID BLACK RUBBER	1

Figure 5.30.1. 511-7627-00 Pop Bumper Flasher Assembly bill of materials.



# 5.31 WWE MINI PLAYFIELD ASSEMBLY

500-9919-00

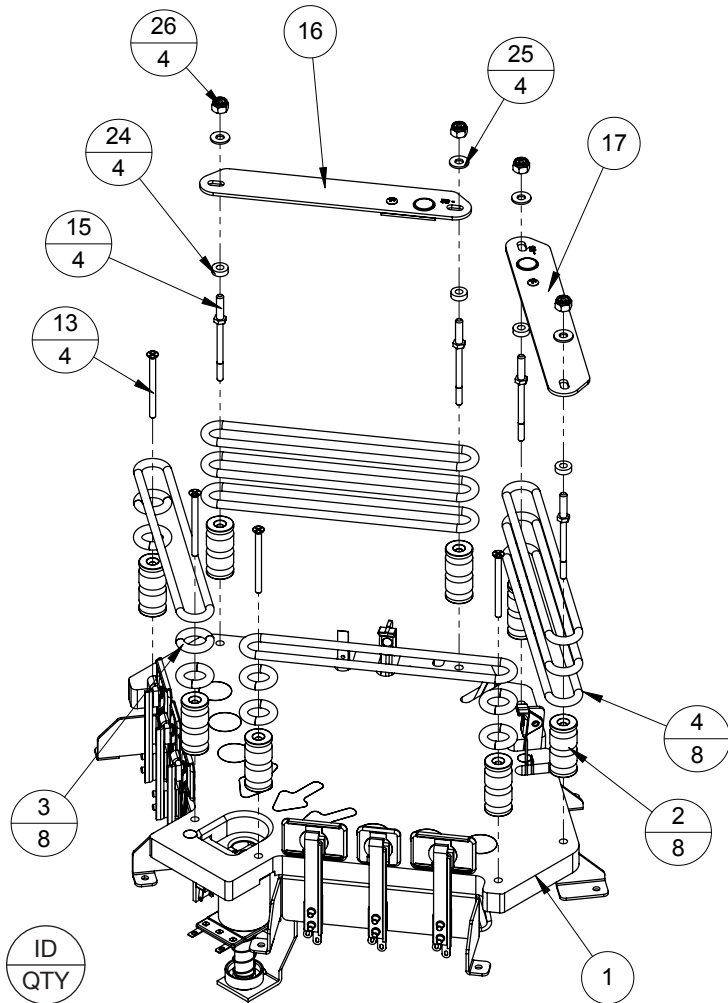


Figure 5.31.1. 500-9919-00 mini playfield assembly top view

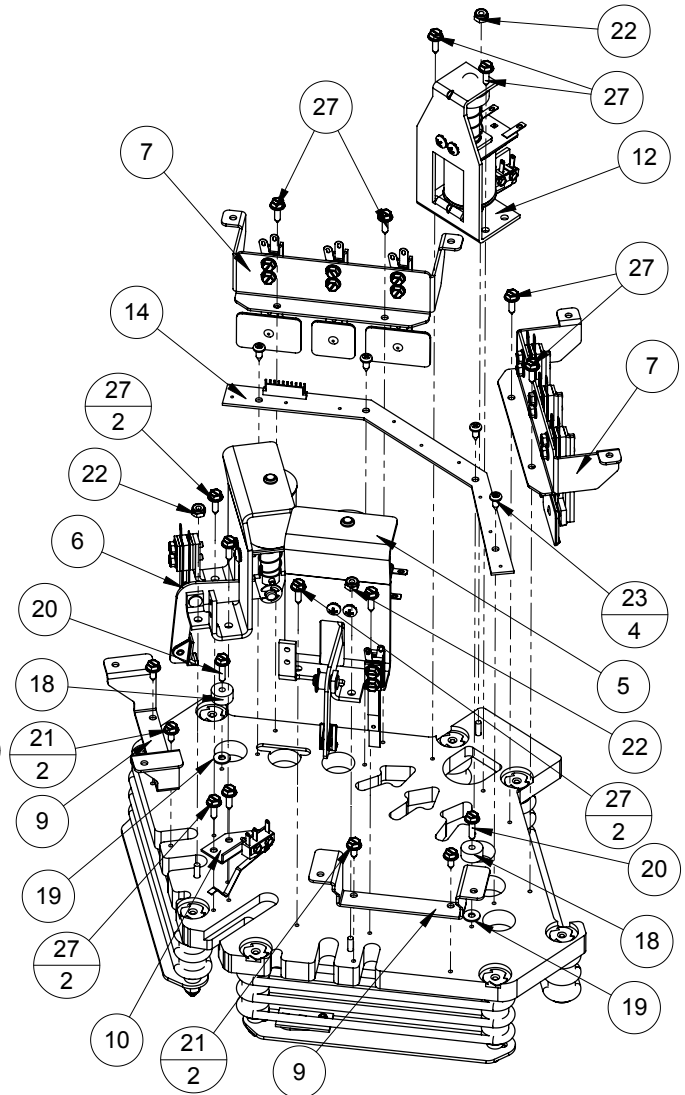


Figure 5.31.2. 500-9919-00 mini playfield assembly bottom view

Item	Part Number	Description	Qty
1	830-51G1-01	MINI PLAYFIELD, WWE PRO	1
2	550-7366-00	WWE RING POST	8
3	545-5348-68	7/16 ID WHITE RUBBER	8
4	545-5348-60	3 ID WHITE RUBBER	8
5	500-9924-01	SLING SHOT SINGLE SWITCH - LEFT	1
6	500-9924-00	SLING SHOT SINGLE SWITCH - RIGHT	1
7	500-9923-00	STAND UP TARGET BANK OF 3 ASSEMBLY	2
8	240-5002-00	6-32 T-NUT	8
9	535-1070-00	MINI PLAYFIELD SUPPORT	2
10	511-7617-00	RING EXIT SWITCH ASSEMBLY	1
11	237-5921-04	FIN SHANK SCREW - 7/8" LG.	3
12	500-6868-00	V.U.K. ASSEMBLY - W/ ANGLED PLUNGER TIP - L.H.	1
13	237-6146-01	# 6-32 X 1-3/4" PFH SCREW	4

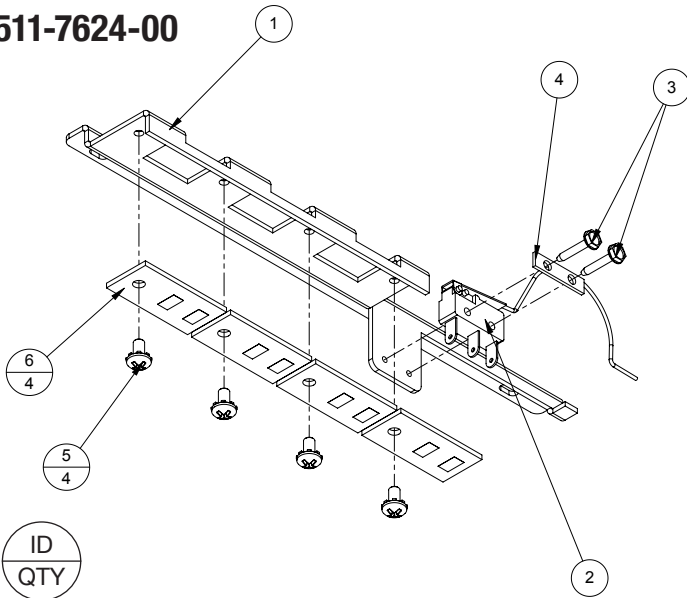
Item	Part Number	Description	Qty
14	520-6951-00	WWE RING SWITCH / LED SERIAL BOARD	1
15	530-5008-00	8-32 HEX MACHINE POST	4
16	511-7622-01	RIGHT FLIPPER PLASTIC ASSEMBLY	1
17	511-7622-00	LEFT FLIPPER PLASTIC ASSEMBLY	1
18	254-5086-02	UNTHREADED SPACER 1/2" OD	2
19	242-5001-00	#6 WASHER	2
20	234-5002-00	SCREW, #6 X 5/8" HWH	2
21	234-5000-00	SCREW, #6 X 3/8" HWH	4
22	240-5005-00	6-32 NYLON STOP NUT	3
23	232-5000-00	SCREW, #6 X 3/8 PPH AB ZINC	4
24	254-5000-19	NYLON SPACER - BLACK - 3/8 OD X .175 ID X 1/8"	4
25	242-5005-00	#8 WASHER	4
26	240-5102-00	8-32 NYLON LOCK NUT	4
27	234-5001-02	SCREW, #6 X 1/2" HWH	12

Figure 5.31.3. 500-9919-00 Mini Playfield Assembly, Bottom Bill of Materials. **Note: Some items illustrated on Top Drawing**



### 5.32 WWE LADDER LIGHT AND SWITCH ASSEMBLY

511-7624-00

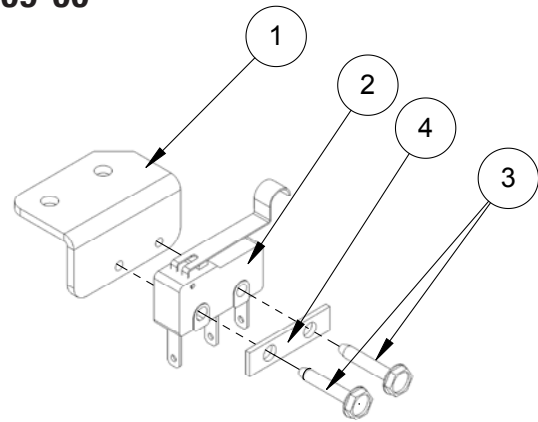


ID	Part Number	Description	Qty
1	535-1088-00	LADDER LIGHT AND SWITCH BRACKET PRO	1
2	180-5230-01	P/F ROLLOVER SWITCH - LITE	1
3	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	2
4	535-6539-00	SWITCH BODY PROTECT PLATE	1
5	232-5200-00	SCREW, 6-32 X 1/4" PPH SEMS	4
6	520-5307-00	PCB, SINGLE LED	4

Figure 5.32.1. Ladder Light and Switch Assembly - 511-7624-0 bill of materials.

### 5.34 WWE LADDER EXIT SWITCH ASSEMBLY

511-7609-00

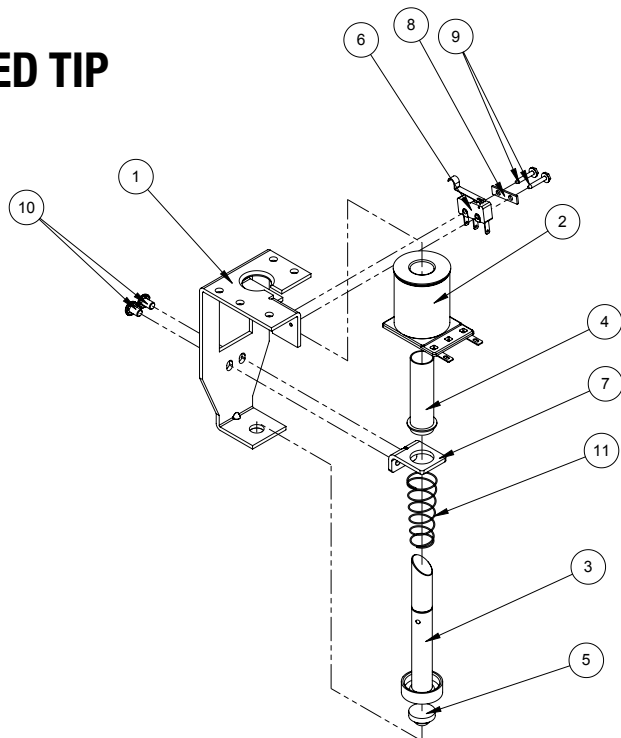


ID	Part Number	Description	Qty
1	535-1089-00	LADDER EXIT SWITCH BRACKET	1
2	180-5209-00	SUB MINIATURE SWITCH - SIM. ROLLER	1
3	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	2
4	535-6539-00	SWITCH BODY PROTECT PLATE	1

Figure 5.34.1. Ladder Exit Switch Assembly - 511-7609-00 bill of materials.

### 5.33 VERTICAL UPKICKER ASSY ANGLED TIP

500-6868-00



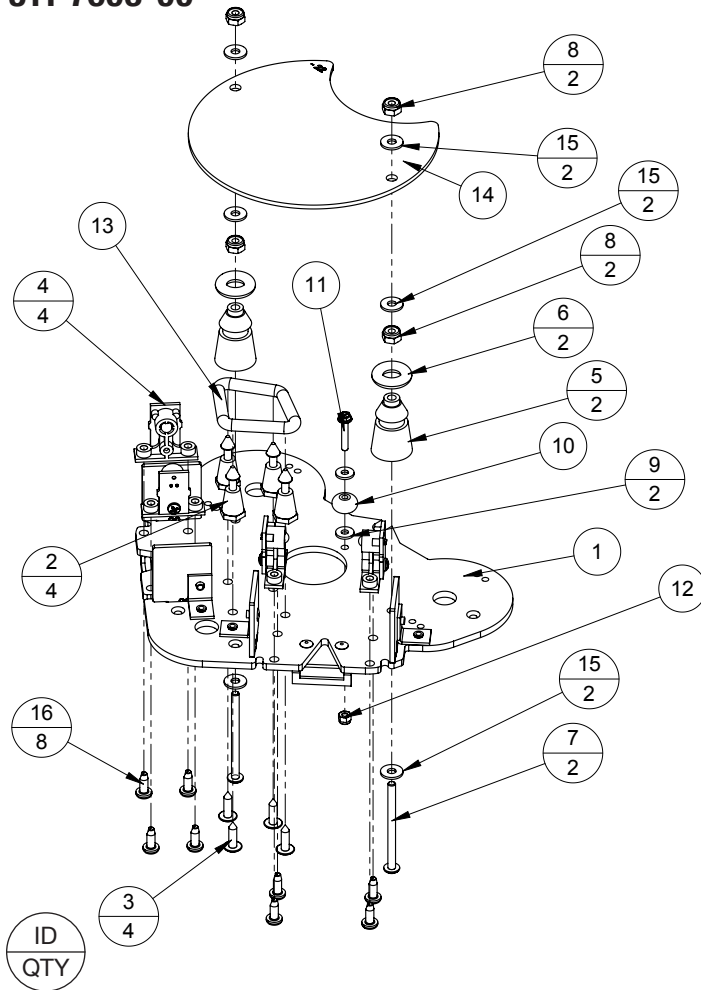
ID	Part Number	Description	Qty
1	535-9590-02	VUK BRACKET - L.H. - NO ACTUATOR	1
2	090-5004-ND	COIL 27-1500 - NO DIODE	1
3	515-9809-00	PLUNGER ASSEMBLY ANGLED TIP	1
4	545-5076-01	COIL SLEEVE	1
5	545-5105-00	RUBBER BUMPER	1
6	180-5209-00	SUB MINIATURE SWITCH - SIM. ROLLER	1
7	535-5203-03	COIL RETAINING BRACKET	1
8	535-6539-00	SWITCH BODY PROTECT PLATE	1
9	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	2
10	232-5300-00	SCREW, 8-32 X 1/4" PPH SEMS	2
11	266-5020-00	COMPRESSION SPRING-CONICAL	1

Figure 5.33.1. Vertical Upkicker Assy Angled Tip 500-6868-00 bill of materials.



### 5.35 WWE POP BUMPER PLAYFIELD ASSEMBLY

511-7603-00

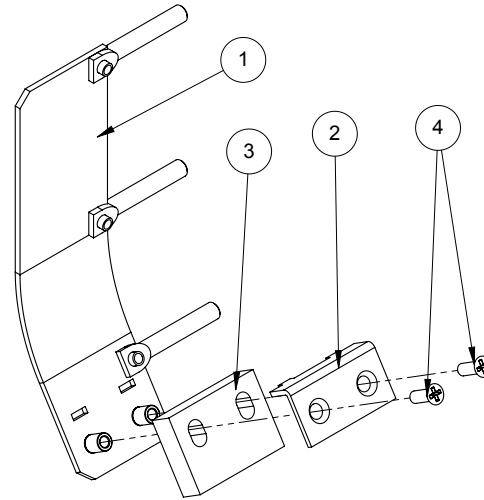


ID	Part Number	Description	Qty
1	510-7511-00	POP BUMPER ASSEMBLY	1
2	550-5052-01	MINI POST - CLEAR	4
3	237-5809-00	SCREW, #6 X 1/2" PTH A	4
4	500-6775-01	OPTO TRANSCEIVER ASSY, 15" LEADS	4
5	550-5034-01	GROOVED JEWEL PLASTIC POST, CLEAR	2
6	545-5348-02	5/16 ID RUBBER RING	2
7	237-5511-00	SCREW, 6-32 X 1-3/4" PPH	2
8	240-5005-00	6-32 NYLON STOP NUT	4
9	242-5002-00	#4 FLAT WASHER - 5/16" O.D.	2
10	545-5348-17	7/16 O.D. RUBBER RING - BLACK	1
11	237-5945-00	SCREW, 4-40 X 5/8" HWH	1
12	240-5303-00	4-40 NYLON LOCK NUT	1
13	545-5348-04	3/4 ID RUBBER RING	1
14	830-6947-22	BUTYRATE SET - 22	1
15	242-5001-00	#6 WASHER	6
16	237-5880-00	SCREW, #6 X 3/8 PPH T-25	8

Figure 5.35.1. 511-7603-00 Pop Bumper Playfield Assembly bill of materials

### 5.36 WWE BALL GUIDE 04 ASSEMBLY

511-7572-04

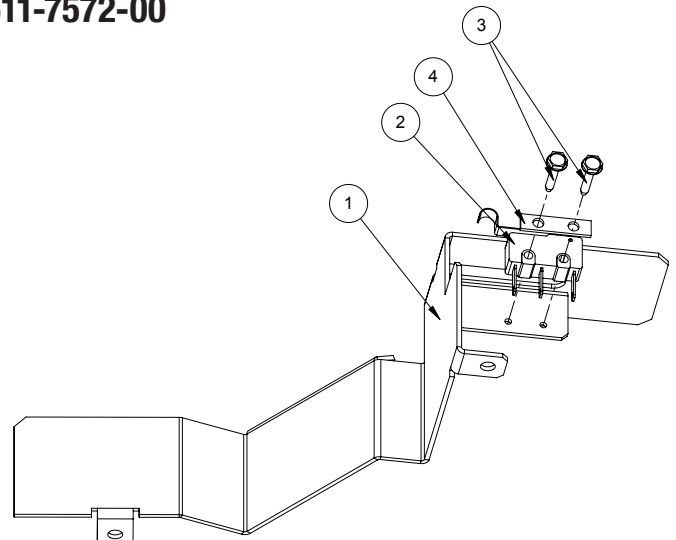


ID	Part Number	Description	Qty
1	535-1021-04	WWE BALL GUIDE - 04	1
2	535-9366-01	BUMPER HOLDER	1
3	626-5057-01	RUBBER BUMPER - BLUE	1
4	237-6151-00	SCREW, 4-40 X 5/16" PFH U/C MS	2

Figure 5.36.1. 511-7572-04 - Ball Guide 04 Assembly bill of materials.

### 5.37 WWE BALL GUIDE 02 ASSEMBLY

511-7572-00

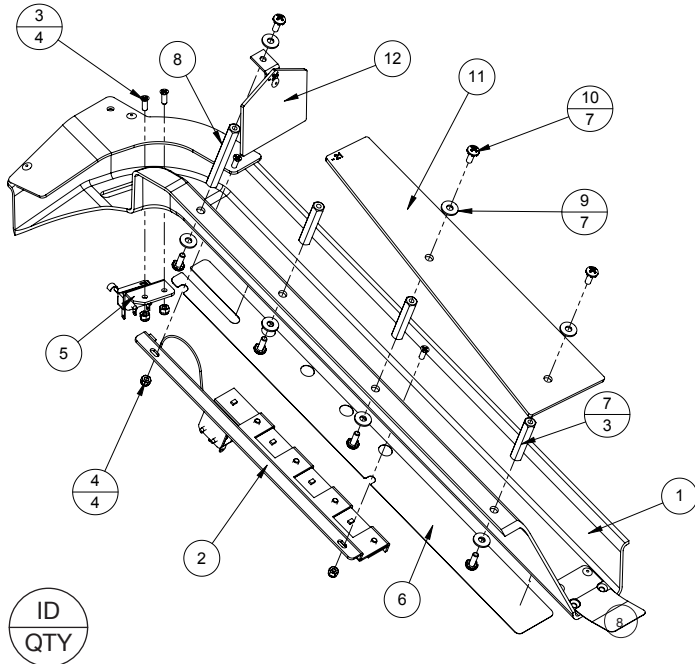


ID	Part Number	Description	Qty
1	515-9804-00	WWE BALL GUIDE 02	1
2	180-5209-00	SUB MINIATURE SWITCH - SIM. ROLLER	1
3	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	2
4	535-6539-00	SWITCH BODY PROTECT PLATE	1

Figure 5.37.1. 511-7572-00 Ball Guide 02 Assembly bill of materials

### 5.38 WWE LADDER ASSEMBLY

500-9929-00

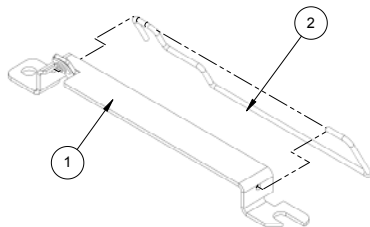


ID	Part Number	Description	Qty
1	510-7506-00	LADDER RIVET ASSEMBLY	1
2	511-7624-00	LADDER LIGHT AND SWITCH ASSEMBLY	1
3	237-6151-00	SCREW, 4-40 X 5/16" PFH U/C MS	4
4	240-5303-00	4-40 NYLON LOCK NUT	4
5	511-7609-00	LADDER EXIT SWITCH ASSEMBLY	1
6	820-8370-00	DECAL, PLASTIC RAMP FLOOR, WWE PRO	1
7	254-5008-11	HEX SPACER - 1 1/4 "	3
8	254-5008-07	HEX SPACER - 2"	1
9	242-5001-00	#6 WASHER	7
10	232-5201-00	SCREW, 6-32 X 3/8" PPH MS SEMS	7
11	830-6947-21	BUTYRATE SET - 21	1
12	510-7506-01	BRIEFCASE ASSEMBLY	1
13	535-1057-00	LADDER RAMP FLAP	1

Figure 5.38.1. Ladder Assembly - 500-9929-00 Bill of Materials

### 5.39 SHOOTER LANE GATE ASSEMBLY

511-7636-00

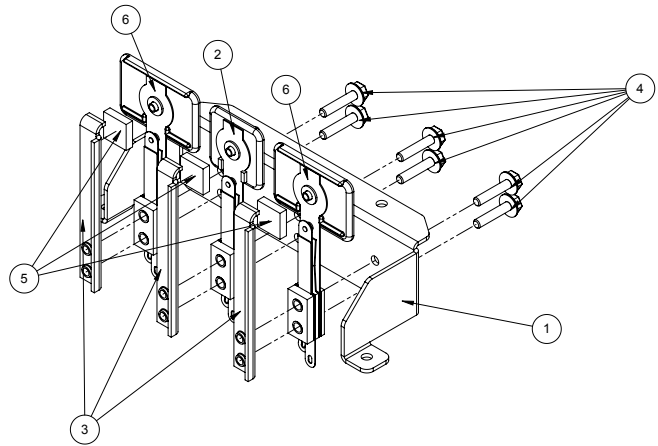


ID	Part Number	Description	Qty
1	510-7513-00	SHOOTER LANE RIVETED ASSEMBLY	1
2	535-1073-00	SHOOTER LANE GATE WIRE	1

Figure 5.39.1. Shooter Lane Gate Assembly 511-7636-00 bill of materials.

### 5.40 WWE STAND UP TARGET 3-BANK ASSEMBLY

500-9923-00

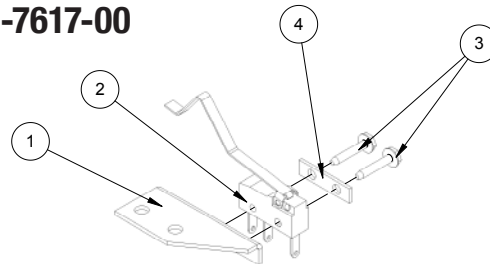


ID	Part Number	Description	Qty
1	535-1071-00	STAND UP TARGET BANK OF 3	1
2	515-9783-00-00	1" SQ. TARGET SWITCH - ANTILOFT-2 LUG - BLACK	1
3	535-9823-01	SWITCH BACK PLATE	3
4	237-5976-04	SCREW, 6-32 X 5/8" HWH SWAGE	6
5	626-5029-00	FOAM PAD	3
6	515-9784-00-00	1" X 1-1/2" RECT. TARGET SWITCH - 2 LUG - ANTILOFT - BLACK	2

Figure 5.40.1. Stand Up Target 3-Bank Assembly - 500-9923-00 bill of materials.

### 5.41 RING EXIT SWITCH ASSEMBLY

511-7617-00



ID	Part Number	Description	Qty
1	535-1095-00	RING DRAIN SWITCH BRACKET	1
2	180-5057-00	MICRO-SWITCH	1
3	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	2
4	535-6539-00	SWITCH BODY PROTECT PLATE	1

Figure 5.41.1. Ring Exit Switch Assembly - 511-7617-00 bill of materials.



## 5.42 SLING SHOT ASSEMBLIES

500-9924-XX, 500-9920-01

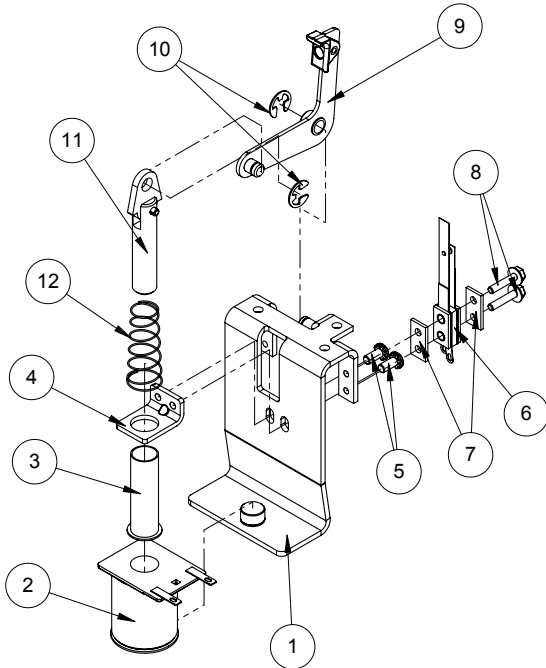
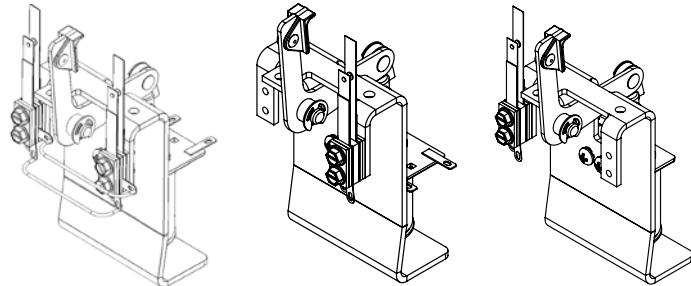


Figure 5.42.5. Sling shot core assembly explosion.



**500-9920-01**

Figure 5.42.4. Lower left and right sling shot assemblies

**500-9924-00**

Figure 5.42.2. Right mini ring flipper sling shot

**500-9924-01**

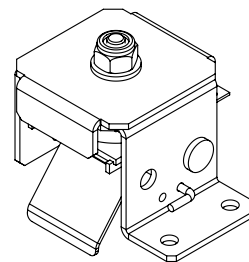
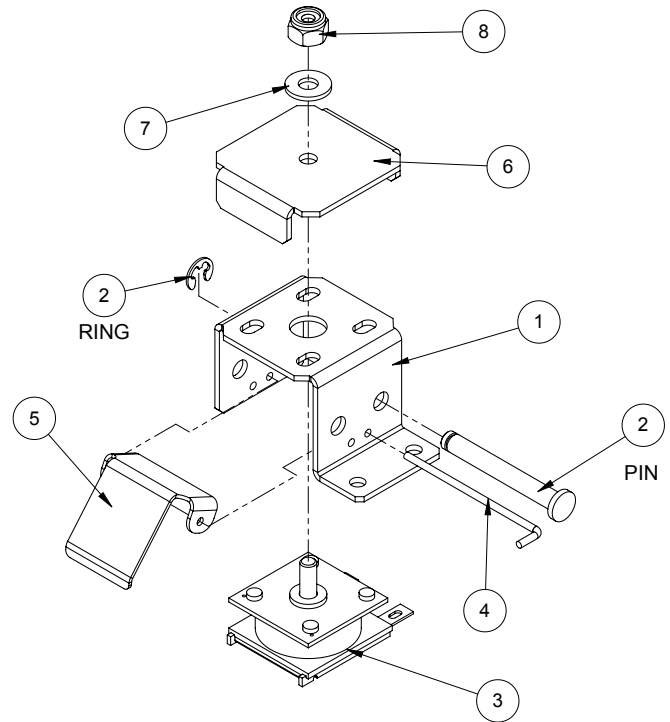
Figure 5.42.3. Left mini ring flipper sling shot

ID	Part Number	Description	Qty
1	515-5339-01	SLING SHOT BRKT ASSY	1
2	090-5044-ND	COIL - 26-1200, NO DIODE	1
3	545-5031-00	COIL SLEEVE	1
4	535-5203-03	COIL RETAINING BRACKET	1
5	232-5301-00	SCREW, 8-32 X 3/8" PPH SEMS	2
6	180-5231-00	SLING SHOT SWITCH - 2 LUG - STANDARD LUGS	1
7	535-5045-00	SWITCH PLATE	2
8	237-5976-04	SCREW, 6-32 X 5/8" HWH SWAGE	2
9	515-5340-01	ARM & TIP ASSY	1
10	270-5002-00	RETAINING RING - 1/4"	2
11	515-5338-00	PLUNGER & LINK ASSEMBLY	1
12	266-5020-00	COMPRESSION SPRING-CONICAL	1

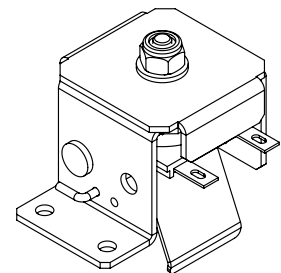
Figure 5.42.1. Sling shot Single Switch Assembly - 500-9924-00, -01 bill of materials.

## 5.43 ELECTRIC GATE, RAIL MOUNT

511-7637-XX



**511-7637-00**  
"LEFT"



**511-7637-03**  
"RIGHT - REVERSED COIL"

Note: Coil (3) orientation varies depending on final assembly

ID	Part Number	Description	Qty
1	535-9847-00	BRACKET, ELEC GATE, RAIL MOUNT	1
2	530-5702-01	CLEVIS PIN W/ RING, 3/16"D X 1-1/2"	1
3	090-5060-01-ND	MINI-COIL W/CORE, ND - 32-1250, YELLOW	1
4	535-5372-00	REBOUND HINGE PIN	1
5	535-9682-00	GATE - ELECTRIC (MAGNET)	1
6	535-0795-00	COVER, ELECTRIC GATE	1
7	242-5005-00	#8 WASHER	1
8	240-5102-00	8-32 NYLON LOCK NUT	1

Figure 5.43.1. 511-7572-00 Ball Guide 02 Assembly bill of materials. .

## 6. WARRANTY

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

### STERN PINBALL INC LIMITED WARRANTY

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

- Printed circuit boards (game logic): 2 months
- Dot Matrix Display boards: 9 months

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

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

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

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

### WARRANTY DISCLAIMER

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

## 6.1 WARNINGS, COMPLIANCE, AND LEGAL NOTICES

500-55G1-00 WWE Pro

### PHOTOSENSITIVE SEIZURES HEALTH WARNING

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

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

### PARTS SUBSTITUTIONS

For safety and reliability, substitute parts and equipment modifications

are not recommended and may void any and all warranties. Use of Non-Stern Pinball Inc Parts or Modifications of game circuitry may adversely affect game play or game safety. Transport pinball machines with hinged backbox in the down position only! Always take great care when servicing any game. Always read the service manual before replacing or servicing components. Substitutions of parts or equipment modifications may void FCC type acceptance.

Always disconnect the line voltage before servicing. Some parts may remain energized when unplugged. Take great caution when serving any electrical components.

### FCC CLASS A SUBPART J COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### RF INTERFERENCE NOTICE

The cable harness placements, ground strap routing, and other shielding have been designed to keep RF radiation and conduction within levels accepted by FCC rules. To maintain these levels, factory harness position, shielding, and ground straps must be installed in their factory locations should they become disconnected during maintenance.

### COPYRIGHT AND INTELLECTUAL PROPERTY NOTICE

This document and the data disclosed herein or herewith is not to be reproduced, used, or otherwise disclosed in whole or in part to anyone without written consent of Stern Pinball Inc, except where noted.

Products in this manual, the company name and devices and the design of the manual itself are protected by federal patents (and patents pending), design registrations, trademarks, and copyrights. Action will be taken in the event of infringement or imitation. The right is reserved to change specifications without prior notice.

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# 7. SPECIFICATIONS

## SPECIFICATIONS, MECHANICAL, GAME SETUP

Specification	Imperial	Metric
Weight	210 lbs	96 kg
Max dimensions, leg levelers extended (h, w, d)	78 x 27.75 x 57 in	198 x 70.5 x 145 cm
Minimum game dimensions (h, w, d)	76 x 27.75 x 57 in	193 x 70.5 x 145 cm
Minimum room dimensions per game (h, w, d)	80 x 36 x 84 in	203 x 91 cm x 214 cm

• (h, w, d) = height, width, depth.

## SPECIFICATIONS, MECHANICAL, BOXED

Specification	Imperial	Metric
Weight, boxed (without pallet)	230 lbs	105 kg
Box dimensions (h, w, d)	56.5 x 31 x 31 in	144 x 79 x 79 cm
Minimum dimensions (h, w, d)	76 x 26 x 57 in	193 x 66 x 145 cm

• (h, w, d) = height, width, depth.

## SPECIFICATIONS, ELECTRICAL

Specification	North America - 120VAC	International - 240VAC
Line Voltage, Nominal	120 VAC	240 VAC
Line Voltage Range	90 VAC - 250 VAC	90 VAC - 250 VAC
Line Frequency *	60 Hz	50 Hz, 60 Hz
Line Power, Current - attract mode	70 W, 0.6 A @ 120 VAC	70 W, 0.3 A @ 240 VAC
Line Power, Current - nominal	360 W, 3 A @ 120 VAC	360 W, 1.5 A @ 240 VAC
Line Power, Current - peak, <100 ms	540 W, 4.5 A @ 120 VAC	540 W, 2.25 A @ 240 VAC

\* NOTE: Games designed for 60hz operation (e.g. North America games) will not function correctly on 50hz power and vice versa.

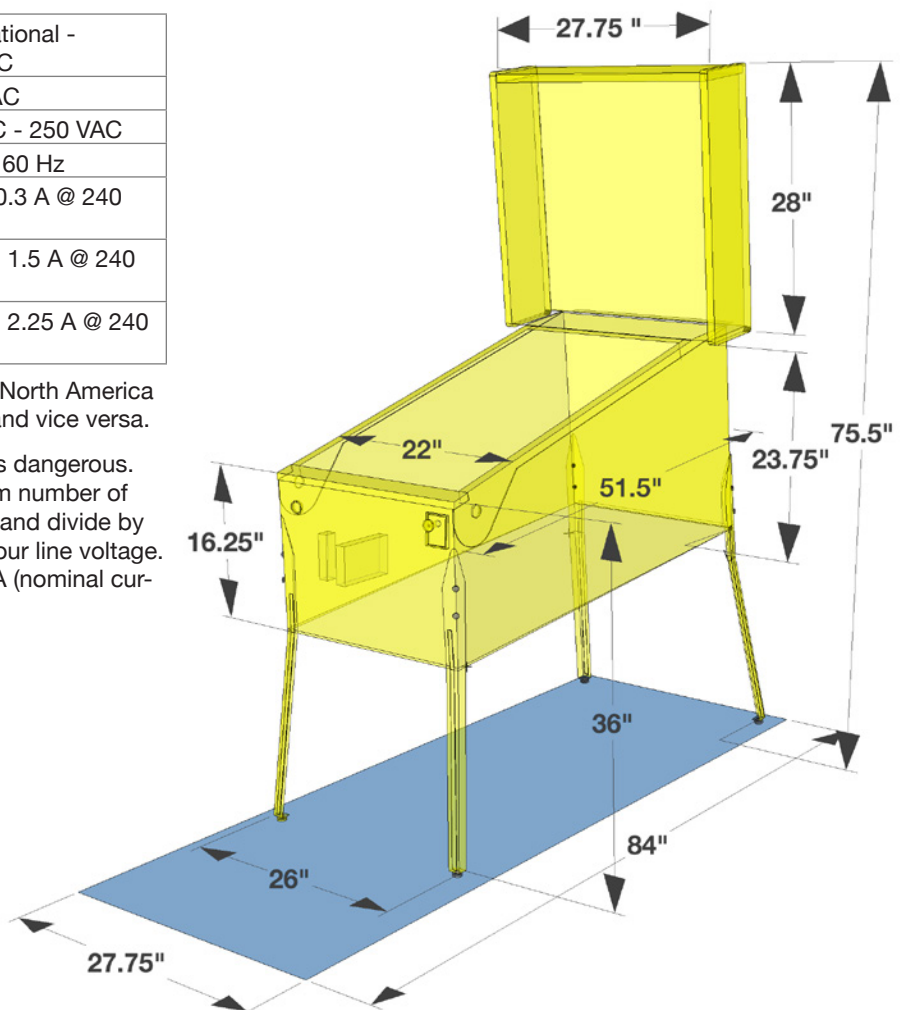
WARNING: Overloading electrical supply circuits is dangerous. Do not overload circuits. To calculate the maximum number of games for a circuit, check circuit amperage rating and divide by the game Nominal Line Power Current rating for your line voltage. For example, a 15A 120V household circuit, 15/3 A (nominal current) = 5 games maximum.

## SPECIFICATIONS, ENVIRONMENT

	Minimum	Maximum
Temperature, Operating	32 °F / 0 °C	104°F / 40 °C
Temperature, Storage	32 °F / 0 °C	104°F / 40 °C
Relative Humidity, Operating	5%	95% non-condensing
Relative Humidity, Storage	5%	95% non-condensing

- (a) "The appliance has to be placed in a horizontal position."
- (b) "This appliance is not to be cleaned by a Water Jet."
- (i) "Do not locate this appliance in an area where a Water Jet is used."
- (ii) "Do not clean this appliance with a Water Jet."
- (b) If the supply cord is damaged, it must be replaced in order to avoid a hazard.

## 7.1 GAME DIMENSIONS





# Stern pinball®



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WWE PRO MODEL #500-55G1-00  
MANUAL PART #780-50G1-00  
02/12/15 EDITION

