

FOO FIGHTERS

SERVICE AND OPERATION MANUAL



WARNING

IMPORTANT HEALTH WARNING: PHOTOSENSITIVE SEIZURES - A very small percentage of people may experience a seizure when exposed to certain visual images, including flashing lights or patterns. Even people with no history of seizures or epilepsy may have an undiagnosed condition that can cause "photosensitive epileptic seizures" due to certain visual images, flashing lights or patterns. Symptoms can include lightheadedness, 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.

ATTENTION! IMPORTANT WARRANTY INFORMATION

The electronics system, node network architecture, mechanical devices and associated software control systems in this pinball machine are designed to work with genuine Stern Pinball accessories and devices.

Installation of non-authorized accessories, lamps, LED's, motors or other devices or modification of electro-mechanical devices may damage the system and will void your warranty.

Stern Pinball machines are assembled in Elk Grove Village, Illinois, USA. Stern Pinball has inspected each game element to ensure it meets our quality standards.

Each pinball machine has unique characteristics that make it a one-of-a-kind American made product. Each will have variations in appearance resulting from differences in the machine's particular wood parts, individual printed art and mechanical assemblies. No playfield is perfectly flat and varies depending on the season. Game play will result in playfield dimpling as the harder steel ball contacts the wood and coating; over time multiple dimples will blend to make them less noticeable. Normal plastic insert crazing (tiny stress cracks) and ghosting (small cloudy areas around insert edges) are often seen in pinball machines, due to a combination of plastic mold stress, pushing of inserts into purposely undersized holes, and heating and breaking of inserts' plastic "skin" when the playfield is sanded.



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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).



MANUAL #780-50U6-00
FOO FIGHTERS LE #500-55U6-01
FOO FIGHTERS PREMIUM #500-55U7-01

1-800-KICKERS - parts.service@sternpinball.com
www.sternpinball.com - facebook.com/sternpinball

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1. SETUP AND MOVING

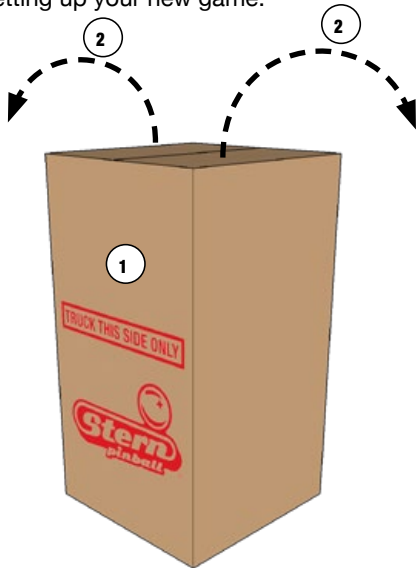
1.1 FIRST-TIME SETUP INSTRUCTIONS

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
- An Assistant

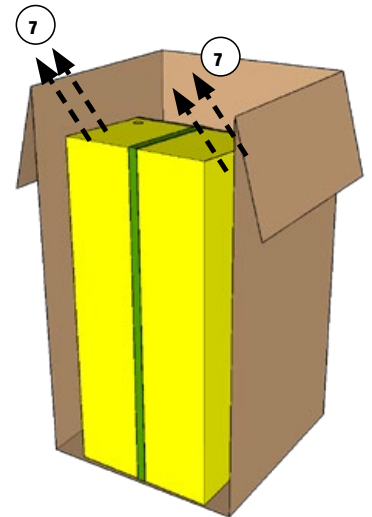
CAUTION: AT LEAST TWO (2) PEOPLE ARE REQUIRED TO MOVE AND MANEUVER THE GAME. USE PROPER MOVING EQUIPMENT AND EXTREME CARE WHILE HANDLING. STERN PINBALL MACHINES WEIGH OVER 250LBS BOXED.



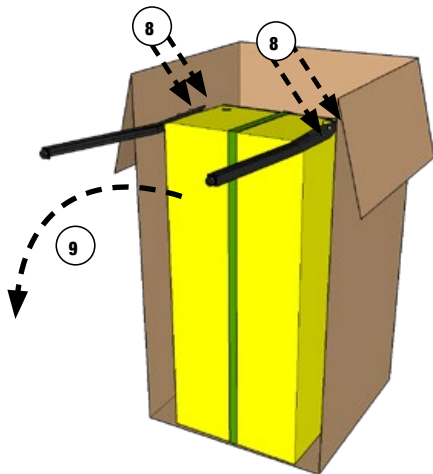
1. Locate the side labeled "TRUCK THIS SIDE ONLY". The bottom of the game faces this side.
2. Open the top box flaps by pulling hard in an upward motion on each flap. If the flaps are taped, cut the tape first, taking care to avoid the box staples.



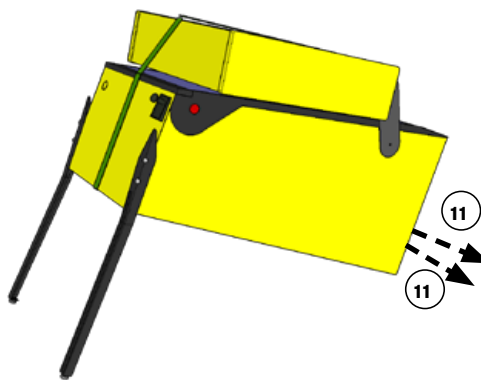
3. Remove the four (4) foam pieces and two (2) narrow box tubes which contain the four (4) identical legs with levelers.
4. DO NOT CUT STRAPPING YET. Keep backbox secured in the down position.
5. With the utility knife, carefully cut down the left and right corners of the box.



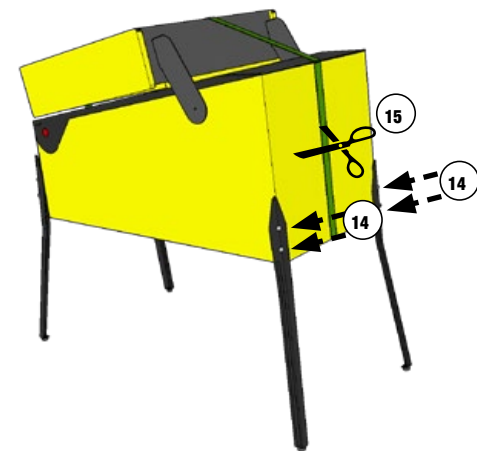
6. Let the face fall forward and remove the entire side by carefully cutting the bottom.
7. With the game still in its folded position, use a 5/8" wrench to loosen and remove the 2 leg bolts on each side of the front cabinet. Ensure the leg levelers are screwed all the way into the legs.



8. Install front legs using the bolts removed from the cabinet. Secure tightly.
9. Have someone help you carefully set the game down on the front legs.



10. Set aside the open box.
11. With a 5/8" socket wrench, loosen and remove the 2 leg bolts on each side of the rear cabinet, 4 total.



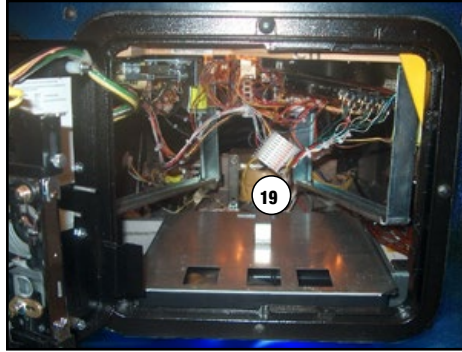
12. Using supports or two people, prop the rear of the cabinet up.
13. Ensure the rear leg levelers are screwed all the way into the legs.
14. Install rear legs using the 4 bolts removed from step 11.



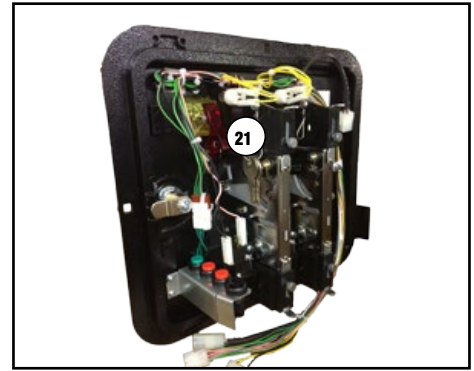
FIRST-TIME SETUP CONTINUED



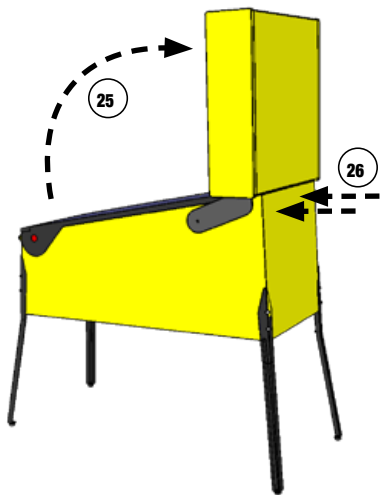
15. Cut nylon strapping and remove protective strap corner guards.
16. Locate the factory keys, either on the shooter rod or taped to the playfield glass.
17. Using snips, cut the tie-wrap securing the keys if required. One set of keys is for the front coin door, the other set of keys is for accessing components in the backbox.



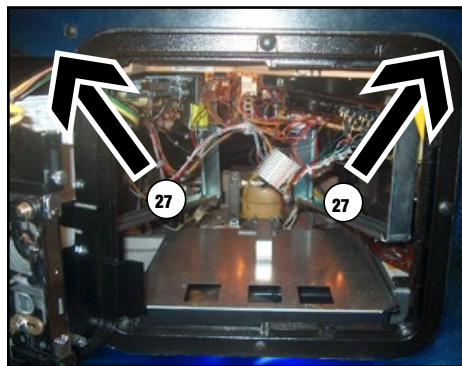
18. Open the front coin door.
19. Reach into the game and remove the retaining clip at the rear of the cash box.
20. Remove the cash box lid by sliding it toward you.



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 $\frac{5}{8}$ " 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 located on either side of the coin door.
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 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. Grasp the lower arch between the flippers, and firmly but gently pull directly up to raise the playfield 8 to 12 inches.
32. While holding the playfield up, pull the playfield toward you until the two playfield supports are over the front edge of the cabinet.
33. Rest the playfield on the front edge of the cabinet.
34. Raise the playfield and rest it against the backbox.
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

1. Select a location that is indoors, out of direct sunlight, and climate controlled. Excessive moisture/humidity can cause long-term damage to your game.
2. 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.
3. 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.
4. Plug into a grounded outlet and check for proper operation through DIAGNOSTICS.
5. Check the coin door: With the door closed, insert coins to verify proper operation.
6. Play game: Check for satisfactory operation and adjust game volume (push the Red Buttons inside the Coin Door).
7. If desired, perform any game diagnostics, game adjustments, and pricing settings at this time.

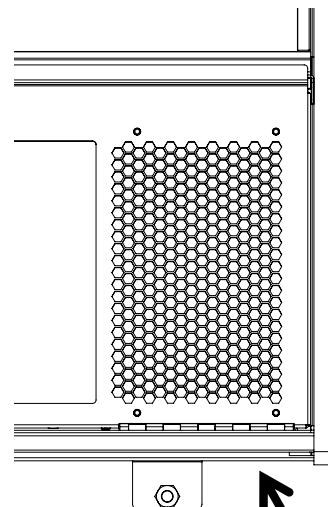


SPIKE PINBALL SOFTWARE UPDATE INSTRUCTIONS

1. Obtain game software update file (filename ends in “.spk”) from www.sternpinball.com or from authorized Stern distributor.
2. Place game software update file (“.spk”) in root directory of a blank FAT32-formatted USB flash drive
3. Use backbox power switch to turn off game
4. Plug in USB flash drive to CPU board USB connector (CN20 or CN21). Refer to www.sternpinball.com
5. Turn on game
6. The game will automatically begin software update
7. Select the correct .spk update file from list.
8. Press Enter on the service switches to start update
9. When the display indicates “Update Complete”, turn off game
10. Remove USB flash drive from CPU board
11. Turn game on to complete the update and play pinball!
12. Detailed instructions and troubleshooting tips are available in the game manual, www.sternpinball.com and authorized Stern distributors.

POWER SWITCH

The game's power switch is located on the right-hand side underneath the backbox.



ON/OFF Switch

1.2 ADJUSTMENTS MENU

STANDARD ADJUSTMENTS

Perform the below steps to review the adjustments.

Enter the Service Menu, then enter the Standard Adjustments Menu.

Press SELECT to access the Service Menu. Press BACK to exit or escape at any time.

Press [>]. Go to the ADJ icon. Press SELECT.

Go to the S.P.I. icon. Press SELECT.

STANDARD ADJUSTMENT #1 appears with the adjustment name flashing. While the adjustment name is flashing press [<] [>] to move between adjustments.

To change the adjustment setting press SELECT. While the adjustment setting is flashing, press [<] [>] repeatedly until the desired setting appears. Press the SELECT button to “install” the change. The adjustment comment (bottom line) will indicate if the factory default setting is selected or will display INSTALLED if the change is not a factory default setting.

ID	Adjustment Name	Default Setting
1	REPLAY TYPE	AUTO
2	REPLAY PERCENTAGE	10%
3	REPLAY AWARD	CREDIT
4	REPLAY LEVELS	1
5	AUTO REPLAY START	150,000,000
6	DYNAMIC REPLAY START	150,000,000
7	REPLAY LEVEL #1	150,000,000
8	REPLAY LEVEL #2	175,000,000
9	REPLAY LEVEL #3	225,000,000
10	REPLAY LEVEL #4	350,000,000
11	REPLAY BOOST	YES
12	SPECIAL LIMIT	1
13	SPECIAL PERCENTAGE	10%
14	SPECIAL AWARD	CREDIT
15	FREE GAME LIMIT	5
16	EXTRA BALL LIMIT	5
17	EXTRA BALL PERCENTAGE	25%
18	GAME PRICING	USA 13
19	MATCH PERCENTAGE	9%
20	MATCH AWARD	CREDIT
21	BALLS PER GAME	3
22	MAX PLAYERS PER GAME	4
23	TILT WARNINGS	2
24	TILT DEBOUNCE	750
25	CREDIT LIMIT	30
26	REMOVE FRACTIONAL CREDITS	AFTER 30 MINUTES IDLE
27	ALLOW HIGH SCORES	YES
28	HIGH SCORE AWARD	CREDIT
29	GRAND CHAMPION AWARDS	1
30	HIGH SCORE #1 AWARDS	0
31	HIGH SCORE #2 AWARDS	0
32	HIGH SCORE #3 AWARDS	0
33	HIGH SCORE #4 AWARDS	0
34	GRAND CHAMPION SCORE	60,000,000
35	HIGH SCORE #1	50,000,000
36	HIGH SCORE #2	40,000,000

37	HIGH SCORE #3	30,000,000
38	HIGH SCORE #4	25,000,000
39	HSTD INITIALS	3 INITIALS
40	HSTD RESET COUNT	2000
41	FREE PLAY	YES
42	LANGUAGE	ENGLISH
43	PLAYER LANGUAGE SELECT	YES
44	CUSTOM MESSAGE	ON
45	KNOCKER VOLUME	LOW
46	START GAME ON CREDIT	OFF
47	START BUTTON BEHAVIOR	ALL LOGGED IN
48	GAME RESTART	YES
49	GAME MODE ON START	STANDARD
50	INSIDER LOGIN TIMER	30
51	INSIDER PLAY AGAIN TIMER	20
52	USE INSIDER HOME TEAM	FREE PLAY ONLY
53	ENABLE HOME TEAM IN COINPLAY	YES
54	HOME TEAM GUEST RETENTION	NEVER
55	START BUTTON ATTRACT MODE ILLUM.	BLINKING
56	ALLOW LEFT+RIGHT TO END	ALWAYS
57	BALL SAVE TIME	0:01
58	TARGET GAME TIME	1:45
59	TIMED PLUNGER	OFF
60	FLIPPER BALL LAUNCH	OFF
61	COINDOOR BALL SAVER	NO
62	COMPETITION MODE	NO
63	FAST BOOT	YES
64	Q24 OPTION	COIN METER
65	TICKET DISPENSER	NONE
66	PLAYER GAME MODE	YES
67	PLAYER COMPETITION MODE	YES
68	PLAYER CHALLENGE MODE	YES
69	PLAYER COOPERATION MODE	YES
70	DJ MIXER MODE	YES

71	DJ MIXER PLAYLIST MODE	ORDERED PLAYBACK
72	DJ MIXER PLAYLIST REPEAT	YES
73	LOCATION ID	0
74	GAME ID	0
75	TIME FORMAT	12-HOUR
76	PRICING FORMAT	MIN W/ MONETARY SYMBOL
77	CREDIT FORMAT	ACTUAL FRACTION
78	COIN INPUT DELAY	30
79	COIN ACCEPTOR	MECHANICAL
80	LOST BALL RECOVERY	YES
81	COIN DOOR DISABLE TILT	NO
82	COIN DOOR OPEN NODE BUS POWER	YES
83	PLAY ATTRACT TUTORIAL VIDEOS	YES
84	FRONT VOLUME KNOB	HEADPHONES VOL. ONLY
85	MUTE IF HEADPHONES DETECTED	YES
86	MUTE KNOCKER IF HP DETECTED	NO
87	DISABLE Q24 KNOCK IF HP DETECTED	NO
88	GI LED BRIGHTNESS	100%
89	GI LED MAX BRIGHTNESS	255
90	INSERT LED BRIGHTNESS	100%
91	INSERT LED MAX BRIGHTNESS	255
92	FLASHER LED BRIGHTNESS	100%
93	FLASHER LED MAX BRIGHTNESS	255
94	CABINET LED BRIGHTNESS	100%
95	LCD DISPLAY BRIGHTNESS	7
96	ATTRACT MODE B.BOX BRIGHTNESS	0%
97	GAMEPLAY B.BOX BRIGHTNESS	0%
98	SERVICE MENU B.BOX BRIGHTNESS	2%

FEATURE ADJUSTMENTS

Each table has feature adjustments specific to the characteristics of that game. To access feature adjustments enter the Service Menu and then enter the Adjustments Menu.

Press SELECT to access the Service Menu. Press BACK to exit or escape at any time.

Press [>]. Go to the ADJ icon. Press SELECT.

Go to the game icon. Press SELECT.

FEATURE ADJUSTMENT #1 appears with the adjustment name flashing. With the adjustment name flashing press [<] [>] to move between adjustments. Feature adjustments are changed similarly to standard adjustments using the SELECT button to choose options and the [<] [>] buttons to cycle through available settings.

1.3 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

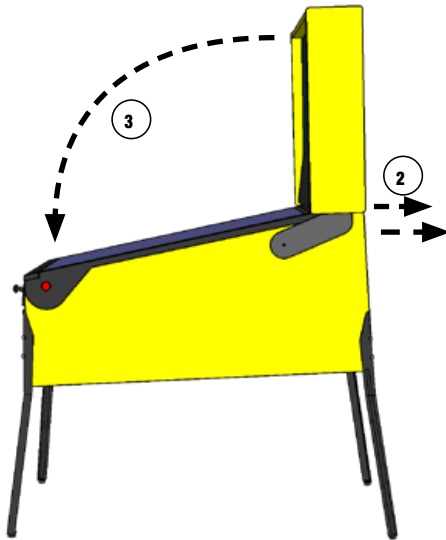
1. Ensure that the pinballs are removed from the playfield, and secure any free-moving mechanisms that may get damaged in transport

TOOLS REQUIRED ⓘ

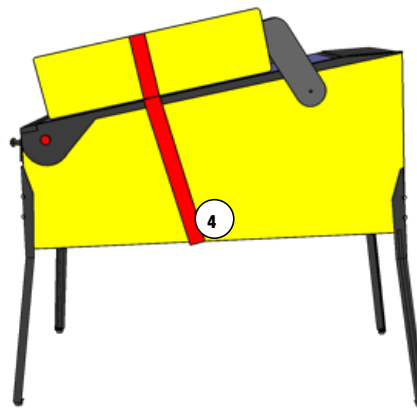
- STRAP (500LB OR GREATER)
- AN ASSISTANT
- HAND TRUCK

CAUTION ⚠

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

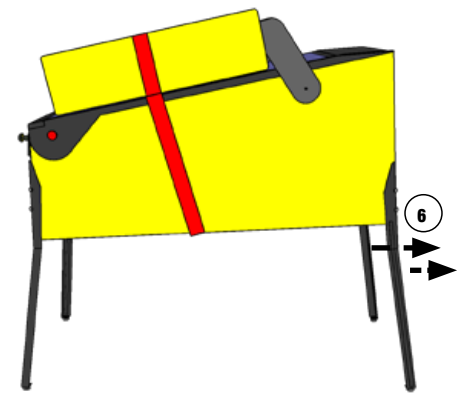


2. Remove the backbox securing bolts
3. Carefully lower the backbox onto the side rails. Use a piece of cardboard or suitable padding between the backbox and the game.

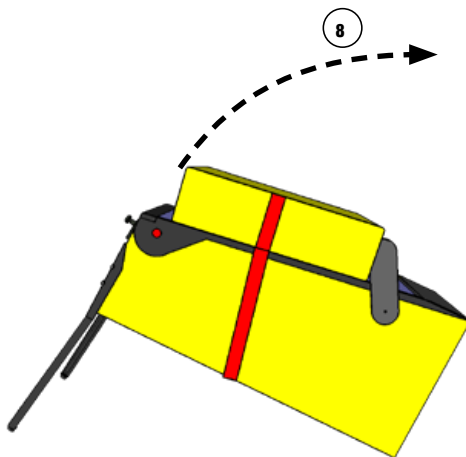


4. Securely strap the back box to the game
5. The game may be transported with the legs on. If the legs must be removed, follow the remaining steps.

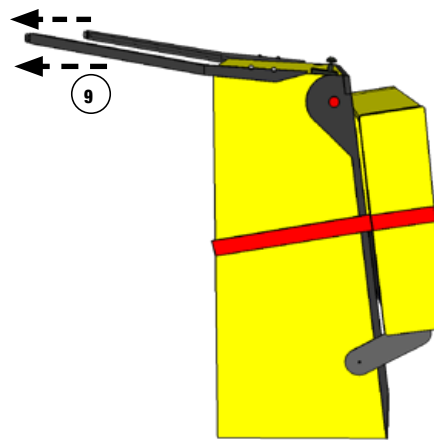
2. REMOVE THE LEGS AND STAND UP



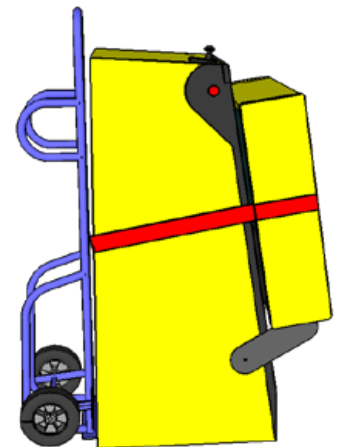
6. Remove the legs, rear legs first. Use a stool or a friend to support the rear of the game.
7. Rest the rear of the game on the ground.



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.

1.4 MAINTENANCE

REGULAR MAINTENANCE - (MONTHLY/500 GAMES)

- Remove the playfield glass
- Enter the software diagnostics menu, start lamp test, then clean and wax the playfield.
 - While cleaning the playfield, identify and repair malfunctioning lights, loose parts, cracked plastics and worn rubber parts.
- While in diagnostics, enter the switch test (Select the "SW" Icon, then "TEST" Icon).
 - Use a pinball to actuate all switches and verify the correct switch registers with the switch test.
 - The game will play a sound to confirm the switch.
- Lift the playfield and inspect all assemblies for loose parts, broken wires or excessive wear. Look at the bottom of the cabinet for any parts that may have worked loose, then find the source.
- Check all coin door mechanisms and bill acceptor (if installed) for proper operation
- Play the game to ensure all coils and features are working
- Check the playfield to ensure it is level and set to the proper pitch using the bubble level on the right side wood rail.
- Check game audits: Replay % and Ball Time and note abnormal values which can indicate problems.
- Ensure game volume is set appropriately for the location.
- Clean both sides of the playfield glass and reinstall.
- Check and clean pinballs and replace if excessively worn or scuffed. Dirty pinballs accelerate game wear.

OVERHAUL MAINTENANCE - (5000 GAMES)

- Verify latest game software is installed
- Check flippers for excessive wear. Excessive flipper sloppiness (vertical or horizontal) or weakness indicates a flipper rebuild is required.
- Clean machine inside and out and check leg levelers for free operation.
- Visual check for loose or broken playfield and cabinet parts and repair as necessary.
- Electrical check: Plug into grounded outlet and check for proper operation through DIAGNOSTICS.
- Replace worn or dirty rubbers.
- Replace pinballs.
- Check all playfield switches with a pinball.
- Check all settings (refer to manual for factory settings).
- Check coin door: With door closed, insert coins to verify proper operation.
- Check for proper adjustment of the plumb bob tilt.
- Play game: Check for satisfactory operation.

COMMON PINBALL TOOLS

- Common nut drivers (1/4", 5/16", 11/32", 3/8")
- Phillips screwdriver
- Standard Allen wrench/Hex key set
- 3/8" Socket with ratchet
- Adjustable wrench (5/8" & 9/16")
- 6" Torpedo Level (or use a pinball)
- Flashlight or headlamp
- Soldering Iron (60w with flat tip), lead-free solder
- Wire cutter
- Wire stripper
- Long nose ("needle nose") pliers

1.5 MAINTENANCE KITS

Description	Part Number
Foo Fighters LE Playfield Plastics Kit	803-5000-U6
Foo Fighters Premium Playfield Plastics Kit	803-5000-U7
Foo Fighters LE Playfield Decals Kit	802-5000-U6
Foo Fighters Premium Playfield Decals Kit	802-5000-U7
Foo Fighters LE Backbox Decal Left	820-90U6-01
Foo Fighters Premium Backbox Decal Left	820-76U7-01
Foo Fighters LE Backbox Decal Right	820-90U6-02
Foo Fighters Premium Backbox Decal Right	820-76U7-02
Foo Fighters LE Cabinet Decal Left	820-90U6-03
Foo Fighters Premium Cabinet Decal Left	820-76U7-03
Foo Fighters LE Cabinet Decal Right	820-90U6-04
Foo Fighters Premium Cabinet Decal Right	820-76U7-04
Foo Fighters LE Cabinet Decal Front	820-90U6-05
Foo Fighters Premium Cabinet Decal Front	820-76U7-05
Foo Fighters LE Playfield, Bare	830-5100-U6
Foo Fighters Premium Playfield, Bare	830-5100-U7
Foo Fighters LE Mirror Backglass	830-8426-U6
Foo Fighters Premium Translite Backglass	830-8427-U7

1.6 COMMON PARTS

Description	Part Number
8 oz Pinball Playfield wax (Novus # 2)	675-0003-01
Standard Pinball, 1-1/16 in	260-5000-00
Flipper Rebuild Kit Left (Standard)	500-6307-10
Flipper Base Plate Kit Left	515-6617-01
Flipper Rebuild Kit Right	500-6307-00
Flipper Base Plate Kit Right	515-6617-00
Memory Card - SD 16GB	970-0140-16
Memory Card - MicroSD	970-0141-32
Wi-Fi Adapter	509-2013-00

2. SPIKE SYSTEM AND NODE GUIDE

2.1 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.

2.2 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.*

2.3 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.

2.4 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

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
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

SPIKE node addresses for nodes with 4-position DIP switches. Addresses 0-7 are reserved for fixed-function nodes and do not require configuration.

SPIKE SYSTEM AND NODE GUIDE CONTINUED

2.5 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.

2.6 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. Other optical switches connect directly to the Spike node board.

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

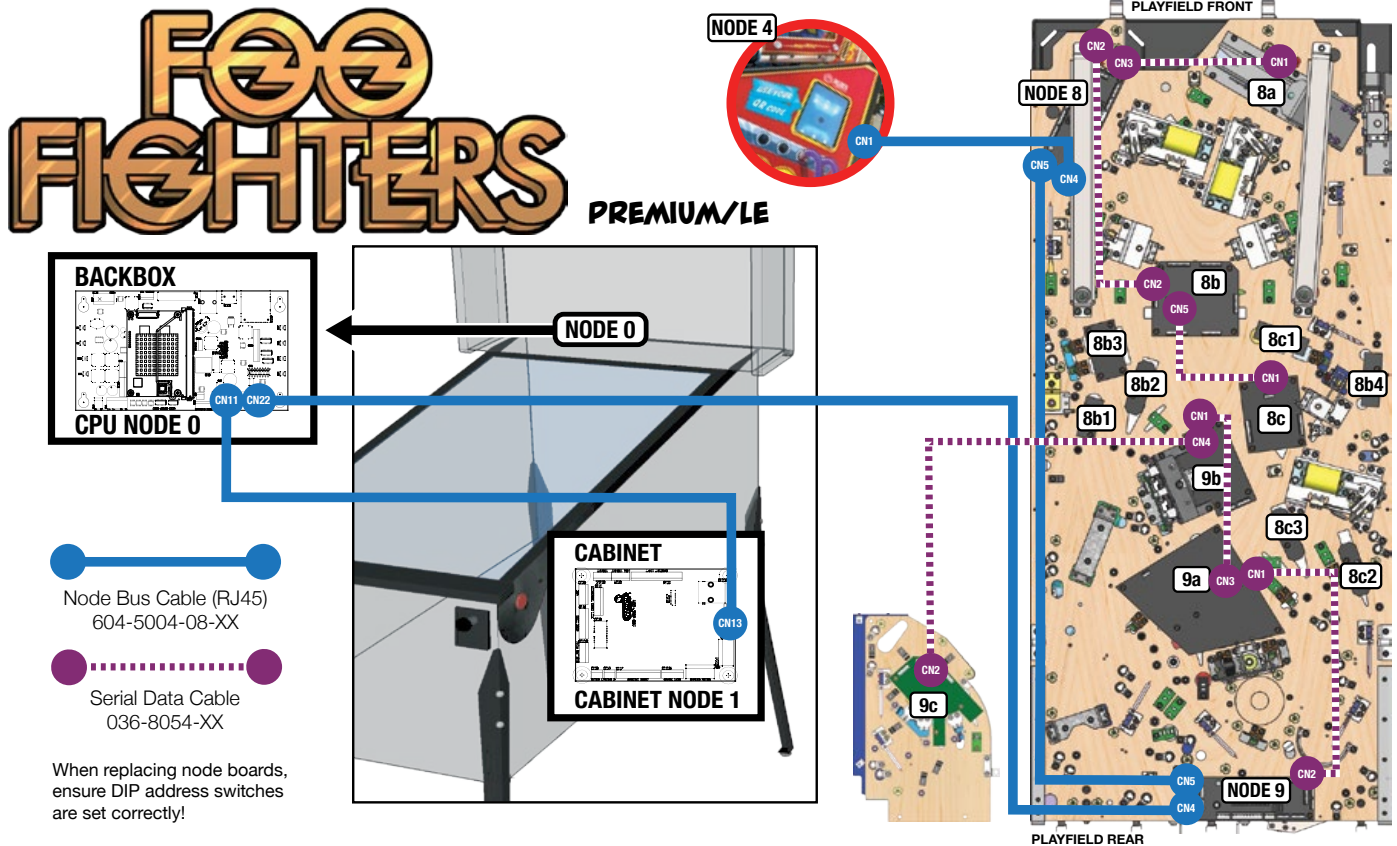
INPUT/OUTPUT PROTECTIONS

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.

2.7 COMMON SPIKE NODE BOARDS

Description	Type	Part Number
SPIKE CPU Node	Node	509-1003-01
Cabinet Node	Node	520-6967-72
Playfield 48V Core-Driver Node	Node	520-7017-72 520-1057-00
Trough Serial Opto Receiver Extension	Extension	520-8516-00

3. LIGHT, SWITCH, AND DRIVER REFERENCE



3.1 SPIKE NODE BOARDS

ID	DIP Address	Description	Location	Part Number
Node 0	n/a	SPIKE 2 CPU Node	Backbox	509-1003-01
Node 1	n/a	Cabinet Node	Cabinet	520-6967-72
Node 2	ON-OFF-ON-ON	SPI Node-PWM (Optional, Expression Lighting)	Cabinet	520-5370-72
Node 4	n/a	QR Reader Node	Bottom Arch	509-2020-00
Node 8	OFF-OFF-OFF-OFF	Core Driver Node (Playfield)	Lower Playfield	520-1057-00 / 520-7017-72
8a	n/a	Trough Serial Opto Receiver Extension	Playfield	520-8516-00
8b	n/a	PCB Lower Center 9 LED	Playfield	520-8590-00
8b1	n/a	PCB Mid Far Left 2 LED	Playfield	520-8598-00
8b2	n/a	PCB 3 LED	Playfield	520-8596-00
8b3	n/a	PCB Lower Left 3 LED	Playfield	520-8591-00
8b4	n/a	PCB 3 LED	Playfield	520-7011-00
8c	n/a	PCB Mid Right 6 LED	Playfield	520-8594-00
8c1	n/a	PCB 3 LED	Playfield	520-7011-00
8c2	n/a	PCB 3 LED	Playfield	520-8596-00
8c3	n/a	PCB 3 LED	Playfield	520-8596-00
Node 9	OFF-OFF-ON-OFF	Core Driver Node (Playfield)	Upper Playfield	520-1057-00 / 520-7017-72
9a	n/a	PCB Upper Center 16 LED	Playfield	520-8597-00
9b	n/a	PCB Mid Center 8 LED	Playfield	520-8595-00
9c	n/a	PCB Mini Plyfld LED and SW	Playfield	520-8574-00
Node 12	ON-OFF-OFF-OFF	SPI Node-PWM (Optional, Topper)	Topper	520-5370-72

3.2 DRIVER REFERENCE

ID	Name	Node	Connector	Ret. Pin	Ret. Wire	Voltage	V+ Pin	V+ Color	Location	Type	Address	Part Number
1	Trough	8	CN8	7	ORG GRY	48V	1-4	GRY ORG	Playfield	Coil - 27-1500	8-DR-1	090-5004-ND
2	Auto Plunger	8	CN8	9	ORG WHT	48V	1-4	GRY ORG	Playfield	Coil - 23-800	8-DR-4	090-5001-ND
3	Left Flipper	8	CN8	6	ORG YEL	48V	1-4	GRY ORG	Playfield	Coil - 23-1080	8-DR-5	090-5032-ND
4	Right Flipper	8	CN8	5	ORG GRN	48V	1-4	GRY ORG	Playfield	Coil - 23-1080	8-DR-0	090-5032-ND
5	Left Slingshot	8	CN8	11	ORG BLU	48V	1-4	GRY ORG	Playfield	Coil - 26-1200	8-DR-3	090-5044-ND
6	Right Slingshot	8	CN8	10	ORG VIO	48V	1-4	GRY ORG	Playfield	Coil - 26-1200	8-DR-2	090-5044-ND
7	Shaker Motor	1	CN16	1	BLU	48V	5	RED	Cabinet	Motor	1-DR-0	041-5029-04
8	Up PF L Flip	8	CN7	3	YEL BLK	48V	1	GRY ORG	Playfield	Coil - 23-1080	8-DR-6	090-5032-ND
9	Up R Flip	8	CN7	4	YEL BRN	48V	1	GRY ORG	Playfield	Coil - 23-1080	8-DR-7	090-5032-ND
10	Outlane Up Post	8	CN7	2	YEL RED	48V	1	GRY ORG	Playfield	Coil - 26-1200	8-DR-8	090-5044-ND
11	Kick Target	9	CN8	10	ORG BLK	48V	1-4	GRY BRN	Playfield	Coil - 24-940	9-DR-2	090-5036-ND
12												
13	Fork Down	9	CN8	11	ORG BRN	48V	1-4	GRY BRN	Playfield	Coil - 32-1800	9-DR-3	515-1936-00 090-5031-00-00
14	Fork Release	9	CN8	9	ORG RED	48V	1-4	GRY BRN	Playfield	Coil - 26-1200	9-DR-4	090-5044-ND
15	Up PF Diverter	9	CN7	3	YEL GRN	48V	1	GRY BRN	Playfield	Coil - 26-1200	9-DR-6	090-5044-ND
16	Van Up Post	9	CN7	4	YEL BLU	48V	1	GRY BRN	Playfield	Coil - 26-1200	9-DR-7	090-5044-ND
17	Overlord Magnet	9	CN8	5	BRN RED	48V	1-4	GRY BRN	Playfield	Coil - 22-650	9-DR-0	511-5065-ND
18	3 Bank Drop	9	CN7	2	YEL ORG	48V	1	GRY BRN	Playfield	Coil - 25-1240	9-DR-8	090-5034-ND
19	Overlord Hit	9	CN8	7	YEL WHT	48V	1-4	GRY BRN	Playfield	Coil - 26-1200	9-DR-1	500-7051-03
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32												
33	Coin Meter	1	CN3	2	BLK	12V	1	RED	Cabinet	Digital Out	1-DR-2	500-9946-00
34	Ticket Meter	1	CN4	2	BLK	12V	1	RED	Cabinet	Digital Out	1-DR-3	500-9946-00
35	Ticket Dispenser	1	CN11	3		12V	1		Cabinet	Digital Out	1-DR-4	

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DRIVER REFERENCE CONTINUED

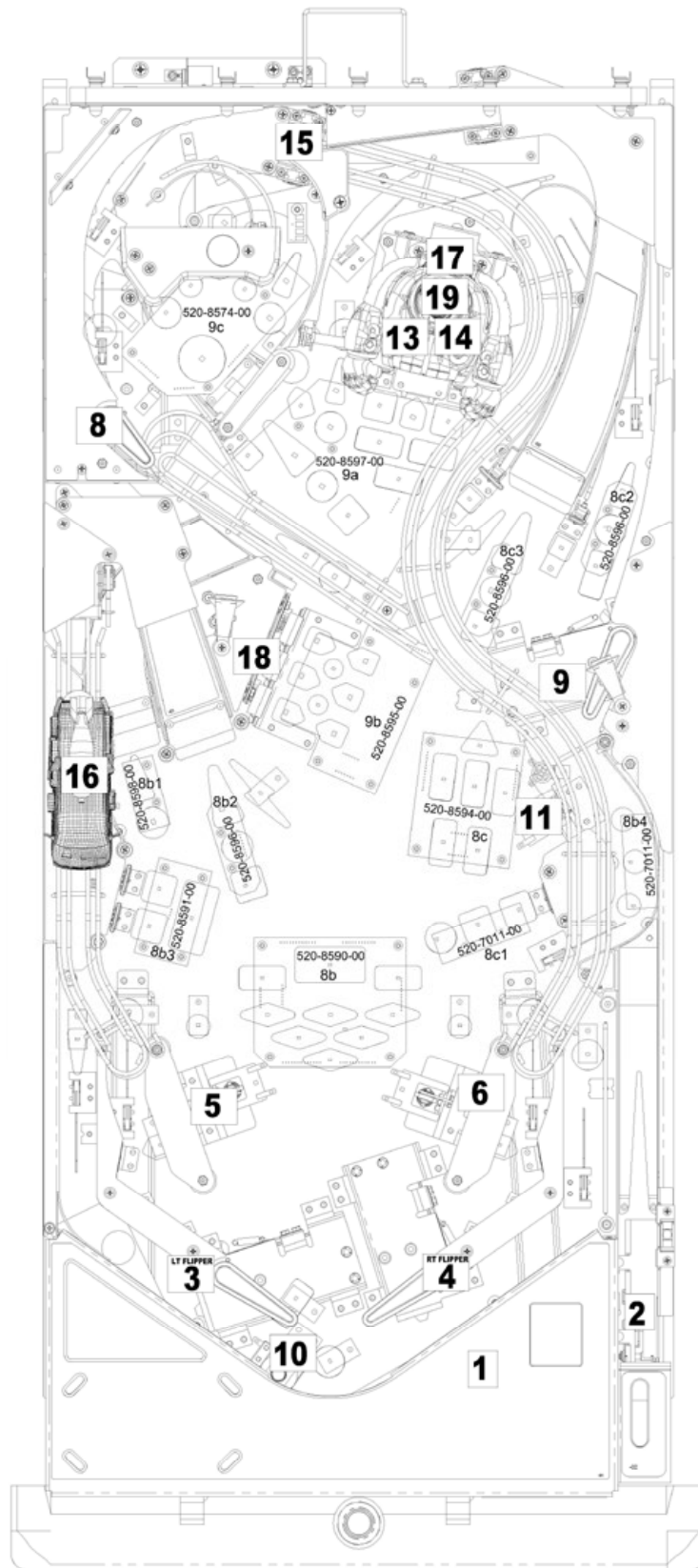


Figure 3.2.1. Playfield driver locations (top view).

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 Outlane	8	-	CN11	4	LGN RED	11/12	BLK ORG	Playfield	Rollover	8-SW-17	500-9935-04
2	Left Inlane	8	-	CN11	5	LGN ORG	11/12	BLK ORG	Playfield	Rollover	8-SW-18	500-9935-04
3	Left Inlane Target	8	-	CN11	8	LGN VIO	11/12	BLK ORG	Playfield	Leaf, Target	8-SW-21	515-9783-00-00
4	Right Inlane Target	8	-	CN11	9	LGN GRY	11/12	BLK ORG	Playfield	Leaf, Target	8-SW-22	515-9783-00-00
5	Right Inlane	8	-	CN11	6	LGN YEL	11/12	BLK ORG	Playfield	Rollover	8-SW-19	500-9935-03
6	Right Outlane	8	-	CN11	7	LGN BLU	11/12	BLK ORG	Playfield	Rollover	8-SW-20	500-9935-04
7	Left Slingshot	8	-	CN10	4	GRY BLU	8	BLK GRN	Playfield	Leaf	8-SW-30	180-5231-00
8	Right Slingshot	8	-	CN10	3	GRY VIO	8	BLK GRN	Playfield	Leaf	8-SW-29	180-5231-00
9	Left Flipper Button	8	-	CN9	4	GRY BRN	7	BLK GRN	Cabinet	Leaf	8-SW-25	180-5164-01
10	Right Flipper Button	8	-	CN9	3	GRY RED	7	BLK GRN	Cabinet	Leaf	8-SW-24	180-5164-01
11	Left Flipper EOS	8	-	CN10	6	GRY YEL	9	BLK GRN	Playfield	Leaf	8-SW-16	180-5149-00
12	Right Flipper EOS	8	-	CN10	5	GRY GRN	9	BLK GRN	Playfield	Leaf	8-SW-31	180-5149-00
13	UP PF Left Flipper Button	8	-	CN9	6	VIO	7	BLK VIO	Playfield	Leaf	8-SW-27	180-5164-01
14	UP Right Flipper Button	8	-	CN9	5	VIO WHT	7	BLK VIO	Playfield	Leaf	8-SW-26	180-5164-01
15	Trough 6	8	8a	CN14	-		-		Playfield	Opto	8-SW-32	520-5344-00 tx 520-8516-00 rx
16	Trough 5	8	8a	CN14	-		-		Playfield	Opto	8-SW-33	520-5344-00 tx 520-8516-00 rx
17	Trough 4	8	8a	CN14	-		-		Playfield	Opto	8-SW-34	520-5344-00 tx 520-8516-00 rx
18	Trough 3	8	8a	CN14	-		-		Playfield	Opto	8-SW-35	520-5344-00 tx 520-8516-00 rx
19	Trough 2	8	8a	CN14	-		-		Playfield	Opto	8-SW-36	520-5344-00 tx 520-8516-00 rx
20	Trough 1	8	8a	CN14	-		-		Playfield	Opto	8-SW-37	520-5344-00 tx 520-8516-00 rx
21	Trough Jam	8	8a	CN14	-		-		Playfield	Opto	8-SW-38	520-5344-00 tx 520-8516-00 rx
22	Shooter Lane	8	-	CN10	2	GRY WHT	7	BLK GRN	Playfield	Rollover	8-SW-28	180-5157-01
23	UP PF Left Flipper EOS	8	-	CN12	8	PNK BLK	10	BLK RED	Playfield	Leaf	8-SW-14	180-5149-00
24	UP Right Flipper EOS	8	-	CN12	9	PNK BRN	10	BLK RED	Playfield	Leaf	8-SW-15	180-5149-00
25												
26												
27												
28												
29												
30	Sonic Radio-Top	8	-	CN12	2	WHT BRN	10	BLK RED	Playfield	Leaf, Target	8-SW-8	515-9783-00-00
31	Sonic Radio-Bottom	8	-	CN12	3	WHT RED	10	BLK RED	Playfield	Leaf, Target	8-SW-9	515-9783-00-00
32	Lower Right Target	8	-	CN12	4	WHT ORG	10	BLK RED	Playfield	Leaf, Target	8-SW-10	515-9783-00-00
33	Rock-O-Meter Exit	8	-	CN12	5	WHT YEL	10	BLK RED	Playfield	Rollover	8-SW-11	500-9935-04
34	R Ramp L Target	8	-	CN12	6	WHT GRN	10	BLK RED	Playfield	Leaf, Target	8-SW-12	515-9783-00-00
35	R Ramp R Target	8	-	CN12	7	WHT BLU	10	BLK RED	Playfield	Leaf, Target	8-SW-13	515-9785-00-00
36												
37												
38	3 Drop Left Opto	9	-	CN9	3	LGN ORG	7/8	BLK BLU	Playfield	Opto	9-SW-24	520-8497-00
39	3 Drop Center Opto	9	-	CN9	4	LGN YEL	7/8	BLK BLU	Playfield	Opto	9-SW-25	520-8497-00
40	3 Drop Right Opto	9	-	CN9	5	LGN BLU	7/8	BLK BLU	Playfield	Opto	9-SW-26	520-8497-00
41	Mod Target (x2)	9	-	CN9	6	LGN VIO	7/8	BLK BLU	Playfield	Leaf, Target	9-SW-27	180-5228-01(LT) 180-5228-02(RT)
42												
43	Up Left Ramp Target	9	-	CN10	5	GRY ORG	7/8/9	BLK BLU	Playfield	Leaf, Target	9-SW-31	515-9785-00-00
44	Left Loop Opto	9	-	CN10	6	GRY YEL	7/8/9	BLK BLU	Playfield	Opto	9-SW-16	515-0215-00 tx 515-0215-01 rx

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SWITCH REFERENCE CONTINUED

ID	Name	Node	Node Ext	Conn.	Input Pin	Input Wire	GND Pin	Ground Wire	Location	Type	Address	Part Number
45												
46												
47												
48	Overlord L Target	9	-	CN11	4	TAN ORG	11/12	BLK GRY	Playfield	Leaf, Target	9-SW-17	515-9785-00-00
49	Overlord R Target	9	-	CN11	5	TAN YEL	11/12	BLK GRY	Playfield	Leaf, Target	9-SW-18	515-9785-00-00
50	Overlord Opto	9	-	CN11	6	TAN GRN	11/12	BLK GRY	Playfield	Opto	9-SW-19	515-0215-00 tx 511-2739-01 rx
51	Overlord Hit Target	9	-	CN11	7	TAN BLU	11/12	BLK GRY	Playfield	Leaf, Target	9-SW-20	515-9784-00-00
52												
53	Center Loop	9	-	CN11	9	TAN WHT	11/12	BLK GRY	Playfield	Rollover	9-SW-22	500-9935-03
54	Center Spinner Opto	9	-	CN11	10	TAN	11/12	BLK GRY	Playfield	Opto	9-SW-23	520-8541-00
55												
56	Kick Target	9	-	CN10	2	GRY BLK	7/8/9	BLK BLU	Playfield	Target/Micro	9-SW-28	180-5010-04 515-1082-01
57	Left Ramp Exit	9	-	CN10	3	GRY BRN	7/8/9	BLK BLU	Playfield	Micro	9-SW-29	180-5087-00
58	L Crossover Opto	9	-	CN10	4	GRY RED	7/8/9	BLK BLU	Playfield	Opto	9-SW-30	515-0215-00 tx 515-0215-01 rx
59												
60	Up PF Back Target	9	-	CN12	2	WHT BRN	10	BLK WHT	Playfield	Leaf, Target	9-SW-8	515-9784-00-02
61	Up L Ramp Opto	9	-	CN12	3	WHT RED	10	BLK WHT	Playfield	Opto	9-SW-9	515-0215-00 tx 515-0215-01 rx
62	R Ramp Opto	9	-	CN12	4	WHT ORG	10	BLK WHT	Playfield	Opto	9-SW-10	515-0215-00 tx 515-0215-01 rx
63	Right Orbit	9	-	CN12	5	WHT YEL	10	BLK WHT	Playfield	Rollover	9-SW-11	500-9935-04
64	L Crossover Exit	9	-	CN12	6	WHT GRN	10	BLK WHT	Playfield	Rollover	9-SW-12	500-9935-03
65												
66												
67	UFO Rollover	9	-	CN12	9	WHT GRY	10	BLK WHT	Playfield	Rollover	9-SW-15	500-9935-04
68												
69												
70	Up PF Outer Loop	9	c	CN3	1	WHT BRN	10	BLK	Playfield	Rollover	9-SW-32	500-9935-03
71	Up PF Inner Loop	9	c	CN3	2	WHT RED	10	BLK	Playfield	Rollover	9-SW-33	500-9935-03
72	Up PF Spinner Opto	9	c	CN3	3	WHT ORG	10	BLK	Playfield	Opto	9-SW-34	520-8541-00
73	Up PF Left Target	9	c	CN3	4	WHT YEL	10	BLK	Playfield	Leaf, Target	9-SW-35	515-9784-00-02
74	Up PF Center Target	9	c	CN3	5	WHT GRN	10	BLK	Playfield	Leaf, Target	9-SW-36	515-9785-00-02
75	Up PF Right Target	9	c	CN3	6	WHT BLU	10	BLK	Playfield	Leaf, Target	9-SW-37	515-9785-00-02
76												
77												
78												
79												
80												
81												
82												
83												
84												
85												
86												
87												
88												
89												
90												
91												

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SWITCH REFERENCE CONTINUED

ID	Name	Node	Node Ext	Conn.	Input Pin	Input Wire	GND Pin	Ground Wire	Location	Type	Address	Part Number
92												
93												
94												
95												
96												
97												
98												
99												
100	Lockdown Button	1	-	CN7	8	TAN WHT	5	BLK WHT	Cabinet	Leaf	1-SW-2	180-5218-00
101												
102												
103	Start Button	1	-	CN6	10	GRY	5	BLK WHT	Cabinet	Micro	1-SW-11	500-1060-44-LED
104	Tournament Start Button (Optional)	1	-	CN6	9	GRY WHT	5	BLK WHT	Cabinet	Micro	1-SW-12	500-6587-06-TL
105												
106	Left Coin	1	-	CN5	9	PNK BRN	3	BLK	Cabinet	Micro	1-SW-16	
107	Right Coin	1	-	CN5	7	PNK ORG	3	BLK	Cabinet	Micro	1-SW-18	
108	Center Coin	1	-	CN5	8	PNK RED	3	BLK	Cabinet	Micro	1-SW-17	
109	Fourth Coin	1	-	CN5	6		-		Cabinet	-	1-SW-19	
110	Fifth Coin	1	-	CN5	5		-		Cabinet	-	1-SW-20	
111	Tilt Pendulum	1	-	CN6	7	WHT	5	BLK WHT	Cabinet	Plumb Bob	1-SW-14	516-0007-00
112	Sixth Coin	1	-	CN9	5		-		Cabinet	-	1-SW-21	
113	Ticket Notch	1	-	CN11	5		-		Cabinet	-	1-SW-8	
114	Slam Tilt	1	-	CN5	4	LGN RED	3	BLK	Cabinet	-	1-SW-22	
115												
116												
117												
118												
119												
120												
C1	DIP 1	0	-	-	-		-		CPU Node		0-SW-0	-
C2	DIP 2	0	-	-	-		-		CPU Node		0-SW-1	-
C3	DIP 3	0	-	-	-		-		CPU Node		0-SW-2	-
C4	DIP 4	0	-	-	-		-		CPU Node		0-SW-3	-
C5	DIP 5	0	-	-	-		-		CPU Node		0-SW-4	-
C6	DIP 6	0	-	-	-		-		CPU Node		0-SW-5	-
C7	DIP 7	0	-	-	-		-		CPU Node		0-SW-6	-
C8	DIP 8	0	-	-	-		-		CPU Node		0-SW-7	-
C9	Service Select	0	-	CN25	4	LGN GRY	6	BLK	Coin Door		0-SW-8	515-1963-00
C10	Service Plus	0	-	CN25	3	LGN VIO	6	BLK	Coin Door		0-SW-9	515-1963-00
C11	Service Minus	0	-	CN25	2	LGN BLU	6	BLK	Coin Door		0-SW-10	515-1963-00
C12	Service Back	0	-	CN25	1	LGN BLK	6	BLK	Coin Door		0-SW-11	515-1963-00
C17	Headphone Detect	0	-	-	-	-	-	-	Coin Door		0-SW-16	-
C18	Headphone Kit Cable Detect	0	-	CN3	5	BLK	4	BLK	CPU Node		0-SW-17	-
C19	Volume Encoder 1	0	-	CN3	6	WHT	1	DRAIN	CPU Node		0-SW-18	-
C20	Volume Encoder 2	0	-	CN3	7	GRN	1	DRAIN	CPU Node		0-SW-19	-
C24	Coin Door Interlock	0	-	CN4	1	GRY	4	GRY RED	Backbox		0-SW-23	-

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SWITCH REFERENCE CONTINUED

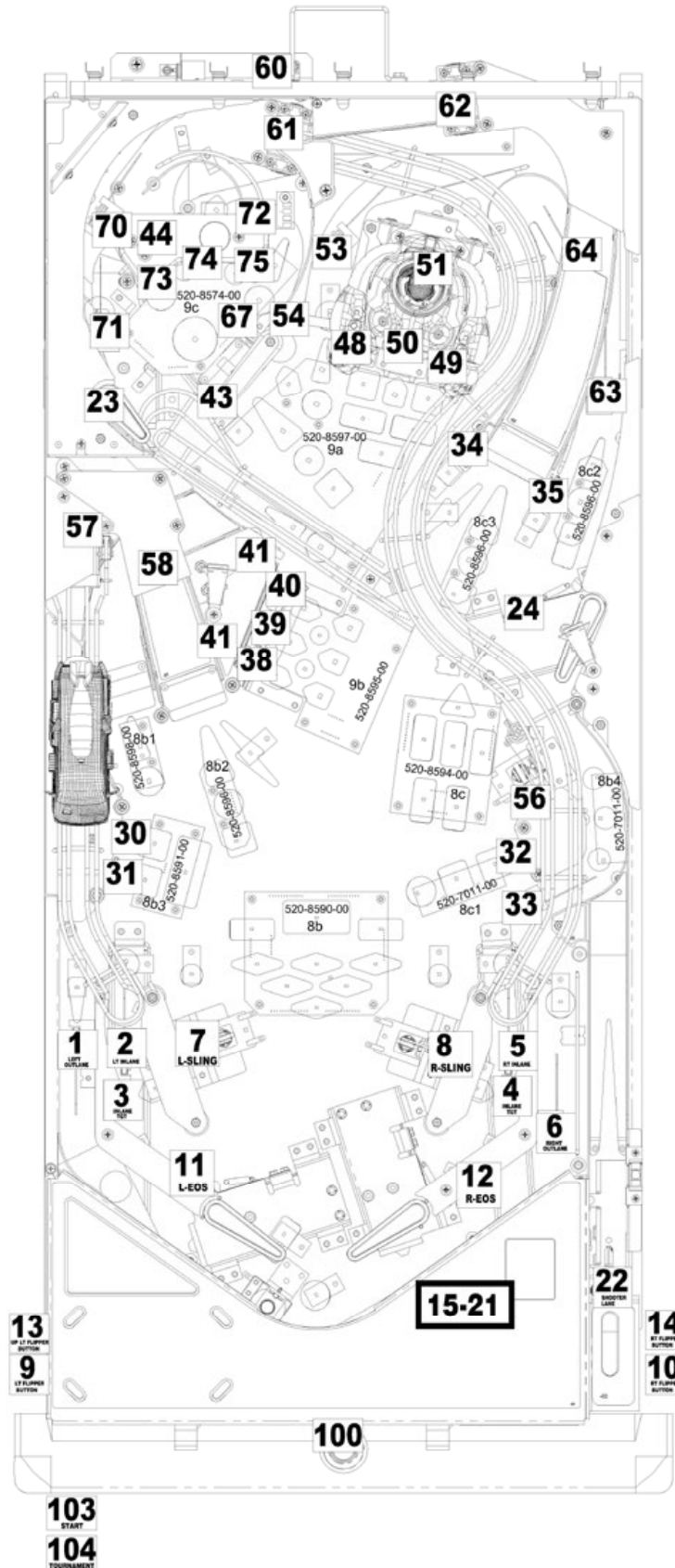


Figure 3.3.1. Playfield switch locations (top view).

3.4 LIGHT REFERENCE

ID	Name	Node	Node Ext.	Conn.	Ret. Pin	Ret. Wire	Src. Pin	Src. Wire	Location	Type	Light Color	Address	Part Number
1	Coin Enable	1	-	CN8	6	BLK GRY	2	GRY RED	Coin Door	Digital Out		1-LP-0	
2	Start Button	1	-	CN6	3	YEL BRN	1	RED	Cabinet	Feature	White	1-LP-2	113-5071-00
3	Tournament Start (Optional)	1	-	CN6	2	YEL RED	1	RED	Cabinet	Feature	White	1-LP-3	112-5031-01
4	Lockdown Button-R	1	-	CN7	2	RED WHT	1	RED	Cabinet	Feature	RGB	1-LP-5	520-5333-00
5	Lockdown Button-G	1	-	CN7	3	GRN WHT	1	RED	Cabinet	Feature	RGB	1-LP-4	520-5333-00
6	Lockdown Button-B	1	-	CN7	4	BLU WHT	1	RED	Cabinet	Feature	RGB	1-LP-7	520-5333-00
7													
8													
9													
10													
11	Overdrive	8	b	CN4	6	BRN-RED	1/2	RED	Playfield	Feature	White	8-LP-33	520-5307-00
12	Left Inlane	8	b	CN4	7	BRN-ORG	1/2	RED	Playfield	Feature	White	8-LP-34	520-5307-00
13	Left Inlane Target	8	b	CN4	8	BRN-VIO	1/2	RED	Playfield	Feature	White	8-LP-35	520-5307-00
14													
15													
16													
17													
18													
19	2x	8	b	CN4	10	ORG-WHT	1/2	RED	Playfield	Feature	White	8-LP-37	520-5307-00
20	3x	8	b	CN6	11	YEL-WHT	1/2/3	RED	Playfield	Feature	White	8-LP-46	520-5307-00
21	Austin	8	b	LED48	-	-	-	-	Playfield	Feature	White	8-LP-55	520-8590-00
22	Overlord	8	b	LED40	-	-	-	-	Playfield	Feature	White	8-LP-47	520-8590-00
23	D.C.	8	b	LED31	-	-	-	-	Playfield	Feature	White	8-LP-38	520-8590-00
24	Seattle	8	b	LED1	-	-	-	-	Playfield	Feature	White	8-LP-8	520-8590-00
25	Roswell	8	b	LED12	-	-	-	-	Playfield	Feature	White	8-LP-19	520-8590-00
26	Los Angeles	8	b	LED22	-	-	-	-	Playfield	Feature	White	8-LP-29	520-8590-00
27	New Orleans	8	b	LED2	-	-	-	-	Playfield	Feature	White	8-LP-9	520-8590-00
28	Chicago	8	b	LED21	-	-	-	-	Playfield	Feature	White	8-LP-28	520-8590-00
29	New York	8	b	LED11	-	-	-	-	Playfield	Feature	White	8-LP-18	520-8590-00
30													
31	Post Save	8	b	CN4	9	ORG-GRY	1/2	RED	Playfield	Feature	White	8-LP-36	520-5307-00
32	Shoot Again	8	b	CN6	10	YEL-GRY	1/2/3	RED	Playfield	Feature	White	8-LP-45	520-5307-00
33													
34	Right Inlane	8	b	CN7	5	BRN-YEL	1/2/3/4	RED	Playfield	Feature	White	8-LP-48	520-5307-00
35	Right Outlane	8	b	CN7	6	BRN-BLU	1/2/3/4	RED	Playfield	Feature	White	8-LP-49	520-5307-00
36	Right Inlane Target	8	b	CN7	7	BRN-GRY	1/2/3/4	RED	Playfield	Feature	White	8-LP-50	520-5307-00
37													
38													
39													
40													
41													
42	Sonic Radio-Top	8	b	CN4	3	ORG-GRN	1/2	RED	Playfield	Feature	White	8-LP-30	520-8591-00
43	Sonic Radio-Bottom	8	b	CN4	4	ORG-BLU	1/2	RED	Playfield	Feature	White	8-LP-31	520-8591-00
44	Sonic Radio-Right	8	b	CN4	5	ORG-VIO	1/2	RED	Playfield	Feature	White	8-LP-32	520-8591-00
45													
46													
47	Left Crossover-R	8	b	CN1	5	RED-BRN	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-10	520-8598-00
48	Left Crossover-G	8	b	CN1	6	GRN-BRN	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-11	520-8598-00
49	Left Crossover-B	8	b	CN1	7	BLU-BRN	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-12	520-8598-00
50	Left Crossover Combo-R	8	b	CN1	8	RED-ORG	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-13	520-8598-00
51	Left Crossover Combo-G	8	b	CN1	9	GRN-ORG	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-14	520-8598-00

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LIGHT REFERENCE CONTINUED

ID	Name	Node	Node Ext.	Conn.	Ret. Pin	Ret. Wire	Src. Pin	Src. Wire	Location	Type	Light Color	Address	Part Number
52	Left Crossover Combo-B	8	b	CN1	10	BLU-ORG	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-15	520-8598-00
53													
54	Left Ramp-R	8	b	CN3	5	RED-YEL	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-20	520-8596-00
55	Left Ramp-G	8	b	CN3	6	GRN-YEL	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-21	520-8596-00
56	Left Ramp-B	8	b	CN3	7	BLU-YEL	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-22	520-8596-00
57	Left Ramp Combo-R	8	b	CN3	8	RED-VIO	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-23	520-8596-00
58	Left Ramp Combo-G	8	b	CN3	9	GRN-VIO	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-24	520-8596-00
59	Left Ramp Combo-B	8	b	CN3	10	BLU-VIO	1/2/3/4	RED	Playfield	Feature	RGB	8-LP-25	520-8596-00
60	Start Van	8	b	CN3	11	ORG-RED	1/2/3/4	RED	Playfield	Feature	White	8-LP-26	520-8596-00
61	Left Ramp Bolt	8	b	CN3	12	ORG-YEL	1/2/3/4	RED	Playfield	Feature	White	8-LP-27	520-5307-00
62													
63													
64	Mod 1-R	9	b	LED2	-	-	-	-	Playfield	Feature	RGB	9-LP-43	520-8595-00
65	Mod 1-G	9	b	LED2	-	-	-	-	Playfield	Feature	RGB	9-LP-44	520-8595-00
66	Mod 1-B	9	b	LED2	-	-	-	-	Playfield	Feature	RGB	9-LP-45	520-8595-00
67	Mod 2-R	9	b	LED5	-	-	-	-	Playfield	Feature	RGB	9-LP-50	520-8595-00
68	Mod 2-G	9	b	LED5	-	-	-	-	Playfield	Feature	RGB	9-LP-51	520-8595-00
69	Mod 2-B	9	b	LED5	-	-	-	-	Playfield	Feature	RGB	9-LP-52	520-8595-00
70	Mod 3-R	9	b	LED7	-	-	-	-	Playfield	Feature	RGB	9-LP-54	520-8595-00
71	Mod 3-G	9	b	LED7	-	-	-	-	Playfield	Feature	RGB	9-LP-55	520-8595-00
72	Mod 3-B	9	b	LED7	-	-	-	-	Playfield	Feature	RGB	9-LP-56	520-8595-00
73	Mod 4-R	9	b	LED1	-	-	-	-	Playfield	Feature	RGB	9-LP-40	520-8595-00
74	Mod 4-G	9	b	LED1	-	-	-	-	Playfield	Feature	RGB	9-LP-41	520-8595-00
75	Mod 4-B	9	b	LED1	-	-	-	-	Playfield	Feature	RGB	9-LP-42	520-8595-00
76	Mod 5-R	9	b	LED4	-	-	-	-	Playfield	Feature	RGB	9-LP-47	520-8595-00
77	Mod 5-G	9	b	LED4	-	-	-	-	Playfield	Feature	RGB	9-LP-48	520-8595-00
78	Mod 5-B	9	b	LED4	-	-	-	-	Playfield	Feature	RGB	9-LP-49	520-8595-00
79	Mod 6-R	9	b	LED8	-	-	-	-	Playfield	Feature	RGB	9-LP-57	520-8595-00
80	Mod 6-G	9	b	LED8	-	-	-	-	Playfield	Feature	RGB	9-LP-58	520-8595-00
81	Mod 6-B	9	b	LED8	-	-	-	-	Playfield	Feature	RGB	9-LP-59	520-8595-00
82	Mod A	9	b	LED3	-	-	-	-	Playfield	Feature	White	9-LP-46	520-8595-00
83	Mod B	9	b	LED6	-	-	-	-	Playfield	Feature	White	9-LP-53	520-8595-00
84													
85													
86	FooBot Head	8	c	LED15	-	-	-	-	Playfield	Feature	White	8-LP-70	520-8594-00
87	FooBot Right Arm	8	c	LED2	-	-	-	-	Playfield	Feature	White	8-LP-57	520-8594-00
88	FooBot Left Arm	8	c	LED5	-	-	-	-	Playfield	Feature	White	8-LP-60	520-8594-00
89	FooBot Torso	8	c	LED1	-	-	-	-	Playfield	Feature	White	8-LP-56	520-8594-00
90	FooBot Right Leg	8	c	LED3	-	-	-	-	Playfield	Feature	White	8-LP-58	520-8594-00
91	FooBot Left Leg	8	c	LED4	-	-	-	-	Playfield	Feature	White	8-LP-59	520-8594-00
92													
93													
94	Bot Target	8	c	CN2	4	BLU-RED	1/2/3	RED	Playfield	Feature	White	8-LP-61	520-7011-00
95	Bot Award	8	c	CN2	5	BLU-YEL	1/2/3	RED	Playfield	Feature	White	8-LP-62	520-7011-00
96	Extra Ball	8	c	CN2	6	BLU-GRN	1/2/3	RED	Playfield	Feature	White	8-LP-63	520-7011-00
97													
98													
99	Rock-O-Meter Top	8	b	CN7	8	BRN-GRN	1/2/3/4	RED	Playfield	Feature	White	8-LP-51	520-7011-00
100	Rock-O-Meter Mid	8	b	CN7	9	BRN	1/2/3/4	RED	Playfield	Feature	White	8-LP-52	520-7011-00
101	Rock-O-Meter Bottom	8	b	CN7	10	BRN-WHT	1/2/3/4	RED	Playfield	Feature	White	8-LP-53	520-7011-00
102													

Continued on next page...



LIGHT, SWITCH, AND DRIVER REFERENCE

LIGHT REFERENCE CONTINUED

ID	Name	Node	Node Ext.	Conn.	Ret. Pin	Ret. Wire	Src. Pin	Src. Wire	Location	Type	Light Color	Address	Part Number
103													
104	Upper Left Loop-R	9	a	LED16	-	-	-	-	Playfield	Feature	RGB	9-LP-33	520-8597-00
105	Upper Left Loop-G	9	a	LED16	-	-	-	-	Playfield	Feature	RGB	9-LP-34	520-8597-00
106	Upper Left Loop-B	9	a	LED16	-	-	-	-	Playfield	Feature	RGB	9-LP-35	520-8597-00
107	Upper Left Loop Combo-R	9	a	LED18	-	-	-	-	Playfield	Feature	RGB	9-LP-37	520-8597-00
108	Upper Left Loop Combo-G	9	a	LED18	-	-	-	-	Playfield	Feature	RGB	9-LP-38	520-8597-00
109	Upper Left Loop Combo-B	9	a	LED18	-	-	-	-	Playfield	Feature	RGB	9-LP-39	520-8597-00
110													
111													
112	Upper Left Ramp Target	9	a	LED10	-	-	-	-	Playfield	Feature	White	9-LP-23	520-8597-00
113													
114	Upper Left Ramp-R	9	a	LED14	-	-	-	-	Playfield	Feature	RGB	9-LP-27	520-8597-00
115	Upper Left Ramp-G	9	a	LED14	-	-	-	-	Playfield	Feature	RGB	9-LP-28	520-8597-00
116	Upper Left Ramp-B	9	a	LED14	-	-	-	-	Playfield	Feature	RGB	9-LP-29	520-8597-00
117	Upper Left Ramp Combo-R	9	a	LED15	-	-	-	-	Playfield	Feature	RGB	9-LP-30	520-8597-00
118	Upper Left Ramp Combo-G	9	a	LED15	-	-	-	-	Playfield	Feature	RGB	9-LP-31	520-8597-00
119	Upper Left Ramp Combo-B	9	a	LED15	-	-	-	-	Playfield	Feature	RGB	9-LP-32	520-8597-00
120	Combotron	9	a	LED17	-	-	-	-	Playfield	Feature	White	9-LP-36	520-8597-00
121													
122													
123	UFO	9	a	LED9	-	-	-	-	Playfield	Feature	White	9-LP-22	520-8597-00
124	UFO Loop Bot	9	b	CN2	4	ORG-GRY	1/2	RED	Playfield	Feature	White	9-LP-61	520-5307-00
125	UFO Loop Mid	9	b	CN2	5	ORG-WHT	1/2	RED	Playfield	Feature	White	9-LP-62	520-5307-00
126	UFO Loop Top-R	9	b	CN2	6	RED-YEL	1/2	RED	Playfield	Feature	RGB	9-LP-63	520-5333-00
127	UFO Loop Top-G	9	b	CN2	7	GRN-YEL	1/2	RED	Playfield	Feature	RGB	9-LP-64	520-5333-00
128	UFO Loop Top-B	9	b	CN2	8	BLU-YEL	1/2	RED	Playfield	Feature	RGB	9-LP-65	520-5333-00
129													
130													
131	Center Spinner-R	9	a	LED8	-	-	-	-	Playfield	Feature	RGB	9-LP-19	520-8597-00
132	Center Spinner-G	9	a	LED8	-	-	-	-	Playfield	Feature	RGB	9-LP-20	520-8597-00
133	Center Spinner-B	9	a	LED8	-	-	-	-	Playfield	Feature	RGB	9-LP-21	520-8597-00
134	Center Spinner Combo-R	9	a	LED7	-	-	-	-	Playfield	Feature	RGB	9-LP-16	520-8597-00
135	Center Spinner Combo-G	9	a	LED7	-	-	-	-	Playfield	Feature	RGB	9-LP-17	520-8597-00
136	Center Spinner Combo-B	9	a	LED7	-	-	-	-	Playfield	Feature	RGB	9-LP-18	520-8597-00
137													
138													
139	Overlord Left Target	9	a	LED6	-	-	-	-	Playfield	Feature	White	9-LP-15	520-8597-00
140	Overlord Right Target	9	a	LED3	-	-	-	-	Playfield	Feature	White	9-LP-10	520-8597-00
141	Overlord-R	9	a	LED4	-	-	-	-	Playfield	Feature	RGB	9-LP-11	520-8597-00
142	Overlord-G	9	a	LED4	-	-	-	-	Playfield	Feature	RGB	9-LP-12	520-8597-00
143	Overlord-B	9	a	LED4	-	-	-	-	Playfield	Feature	RGB	9-LP-13	520-8597-00
144	All My Life	9	a	LED5	-	-	-	-	Playfield	Feature	White	9-LP-14	520-8597-00
145	Monkey Wrench	9	a	LED2	-	-	-	-	Playfield	Feature	White	9-LP-9	520-8597-00
146	The Pretender	9	a	LED1	-	-	-	-	Playfield	Feature	White	9-LP-8	520-8597-00
147													
148	Overlord Mech Left-R	9	b	CN3	4	RED-VIO	1/2/3	RED	Playfield	Feature	RGB	9-LP-66	520-5333-00
149	Overlord Mech Left-G	9	b	CN3	5	GRN-VIO	1/2/3	RED	Playfield	Feature	RGB	9-LP-67	520-5333-00
150	Overlord Mech Left-B	9	b	CN3	6	BLU-VIO	1/2/3	RED	Playfield	Feature	RGB	9-LP-68	520-5333-00
151	Overlord Mech Right-R	9	b	CN3	7	RED-GRY	1/2/3	RED	Playfield	Feature	RGB	9-LP-69	520-5333-00
152	Overlord Mech Right-G	9	b	CN3	8	GRN-GRY	1/2/3	RED	Playfield	Feature	RGB	9-LP-70	520-5333-00
153	Overlord Mech Right-B	9	b	CN3	9	BLU-GRY	1/2/3	RED	Playfield	Feature	RGB	9-LP-71	520-5333-00

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LIGHT REFERENCE CONTINUED

ID	Name	Node	Node Ext.	Conn.	Ret. Pin	Ret. Wire	Src. Pin	Src. Wire	Location	Type	Light Color	Address	Part Number
154													
155													
156													
157	Right Ramp Bolt	9	a	CN2	3	ORG-YEL	1/2	RED	Playfield	Feature	White	9-LP-24	520-5307-00
158	Right Ramp Left Target	9	a	CN2	4	ORG-GRN	1/2	RED	Playfield	Feature	White	9-LP-25	520-5307-00
159	Right Ramp Right Target	9	a	CN2	5	ORG-BLU	1/2	RED	Playfield	Feature	White	9-LP-26	520-5307-00
160	Right Ramp-R	8	c	CN3	4	RED-BRN	1/2/3	RED	Playfield	Feature	RGB	8-LP-71	520-8596-00
161	Right Ramp-G	8	c	CN3	5	GRN-BRN	1/2/3	RED	Playfield	Feature	RGB	8-LP-72	520-8596-00
162	Right Ramp-B	8	c	CN3	6	BLU-BRN	1/2/3	RED	Playfield	Feature	RGB	8-LP-73	520-8596-00
163	Right Ramp Combo-R	8	c	CN3	7	RED-ORG	1/2/3	RED	Playfield	Feature	RGB	8-LP-74	520-8596-00
164	Right Ramp Combo-G	8	c	CN3	8	GRN-ORG	1/2/3	RED	Playfield	Feature	RGB	8-LP-75	520-8596-00
165	Right Ramp Combo-B	8	c	CN3	9	BLU-ORG	1/2/3	RED	Playfield	Feature	RGB	8-LP-76	520-8596-00
166	Area 51	8	c	CN3	10	ORG-BLK	1/2/3	RED	Playfield	Feature	White	8-LP-77	520-8596-00
167													
168													
169	Right Orbit-R	8	c	CN2	7	RED-GRY	1/2/3	RED	Playfield	Feature	RGB	8-LP-64	520-8596-00
170	Right Orbit-G	8	c	CN2	8	GRN-GRY	1/2/3	RED	Playfield	Feature	RGB	8-LP-65	520-8596-00
171	Right Orbit-B	8	c	CN2	9	BLU-GRY	1/2/3	RED	Playfield	Feature	RGB	8-LP-66	520-8596-00
172	Right Orbit Combo-R	8	c	CN2	10	RED-WHT	1/2/3	RED	Playfield	Feature	RGB	8-LP-67	520-8596-00
173	Right Orbit Combo-G	8	c	CN2	11	GRN-WHT	1/2/3	RED	Playfield	Feature	RGB	8-LP-68	520-8596-00
174	Right Orbit Combo-B	8	c	CN2	12	BLU-WHT	1/2/3	RED	Playfield	Feature	RGB	8-LP-69	520-8596-00
175	Right Orbit Battery	8	c	CN3	11	ORG-BRN	1/2/3	RED	Playfield	Feature	White	8-LP-78	520-8596-00
176													
177													
178													
179													
180	Upper PF Spinner-R	9	c	LED13	-	-	-	-	Playfield	Feature	RGB	9-LP-88	520-8574-00
181	Upper PF Spinner-G	9	c	LED13	-	-	-	-	Playfield	Feature	RGB	9-LP-89	520-8574-00
182	Upper PF Spinner-B	9	c	LED13	-	-	-	-	Playfield	Feature	RGB	9-LP-90	520-8574-00
183	Upper PF Spinner Combo-R	9	c	LED14	-	-	-	-	Playfield	Feature	RGB	9-LP-91	520-8574-00
184	Upper PF Spinner Combo-G	9	c	LED14	-	-	-	-	Playfield	Feature	RGB	9-LP-92	520-8574-00
185	Upper PF Spinner Combo-B	9	c	LED14	-	-	-	-	Playfield	Feature	RGB	9-LP-93	520-8574-00
186													
187	Upper PF Outer Loop-R	9	c	LED11	-	-	-	-	Playfield	Feature	RGB	9-LP-84	520-8574-00
188	Upper PF Outer Loop-G	9	c	LED11	-	-	-	-	Playfield	Feature	RGB	9-LP-85	520-8574-00
189	Upper PF Outer Loop-B	9	c	LED11	-	-	-	-	Playfield	Feature	RGB	9-LP-86	520-8574-00
190	Upper PF Outer Loop Combo-R	9	c	LED10	-	-	-	-	Playfield	Feature	RGB	9-LP-81	520-8574-00
191	Upper PF Outer Loop Combo-G	9	c	LED10	-	-	-	-	Playfield	Feature	RGB	9-LP-82	520-8574-00
192	Upper PF Outer Loop Combo-B	9	c	LED10	-	-	-	-	Playfield	Feature	RGB	9-LP-83	520-8574-00
193													
194	Upper PF Target-Left	9	c	LED16	-	-	-	-	Playfield	Feature	White	9-LP-95	520-8574-00
195	Upper PF Target-Center	9	c	LED15	-	-	-	-	Playfield	Feature	White	9-LP-94	520-8574-00
196	Upper PF Target-Right	9	c	LED12	-	-	-	-	Playfield	Feature	White	9-LP-87	520-8574-00
197													
198	Upper PF GI WHT 1	9	c	CN1	3	BRN BLK	1/2	RED	Playfield	G.I.	White	9-LP-73	112-5034-08F
199	Upper PF GI WHT 2	9	c	CN1	4	BRN	1/2	RED	Playfield	G.I.	White	9-LP-74	112-5034-08F
200	Upper PF GI RED 1	9	c	CN1	5	BRN RED	1/2	RED	Playfield	G.I.	Red	9-LP-75	112-5034-02F
201	Upper PF GI RED 2	9	c	CN1	6	BRN ORG	1/2	RED	Playfield	G.I.	Red	9-LP-76	112-5034-02F
202	Upper PF Down-R	9	c	CN1	7	ORG RED	1/2	RED	Playfield	Feature	RGB	9-LP-77	520-5333-00

Continued on next page...



LIGHT, SWITCH, AND DRIVER REFERENCE

LIGHT REFERENCE CONTINUED

ID	Name	Node	Node Ext.	Conn.	Ret. Pin	Ret. Wire	Src. Pin	Src. Wire	Location	Type	Light Color	Address	Part Number
203	Upper PF Down-G	9	c	CN1	8	ORG GRN	1/2	RED	Playfield	Feature	RGB	9-LP-78	520-5333-00
204	Upper PF Down-B	9	c	CN1	9	ORG BLU	1/2	RED	Playfield	Feature	RGB	9-LP-79	520-5333-00
205													
206													
207													
208													
209													
210	Coin Door GI	1	-	CN5	2	YEL	1	YEL-WHT	Coin Door	G.I.	White	1-LP-1	112-5033-08
211	Bottom GI-WHT(x15)	8	-	CN15	5	WHT BLK	1	YEL BLK	Playfield	G.I.	White	8-LP-0	112-5034-08F 520-7000-00 (Bot.Arch) 520-5307-00 (Bot.Arch)
212	Bottom GI-RED(x6)	8	-	CN15	6	RED BLK	2	YEL RED	Playfield	G.I.	Red	8-LP-1	112-5034-02F
213													
214	Top GI-WHT(x10)	9	-	CN15	5	WHT BLK	1	YEL BLK	Playfield/ Back Pnl	G.I.	White	9-LP-0	112-5034-08F
215	Top GI-RED(x9)	9	-	CN15	6	RED BLK	2	YEL RED	Playfield/ Back Pnl	G.I.	Red	9-LP-1	112-5034-02F
216													
217													
218													
219													
220	Van Flash	8	b	CN1	11	ORG-BRN	1/2/3/4	RED	Playfield	Flash	White	8-LP-16	515-2821-00
221	Kick Target Flash	8	c	CN3	12	ORG-RED	1/2/3	RED	Playfield	Flash	White	8-LP-79	113-5045-08
222													
223	Left Spotlight	8	b	CN1	12	ORG-BLK	1/2/3/4	RED	Playfield	Flash	White	8-LP-17	113-5032-08
224	Right Spotlight	8	b	CN7	11	ORG-BLK	1/2/3/4	RED	Playfield	Flash	White	8-LP-54	113-5032-08
225													
226	Center Spinner Flash	9	-	CN14	6	BRN-WHT	7/8	YEL	Playfield	Flash	White	9-LP-3	520-7000-00
227													
228	Overlord Mech Flash	9	b	CN2	3	ORG-VIO	1/2	RED	Playfield	Flash	White	9-LP-60	520-7000-00
229													
230													
231	Upper PF Center Flash	9	c	LED1	-	-	-	-	Playfield	Flash	White	9-LP-72	520-8574-00
232	Upper PF Area 51 Flash	9	c	CN1	10	ORG BLK	1/2	RED	Playfield	Flash	White	9-LP-80	520-7000-00
233	Upper PF Back Tgt Flash	9	-	CN14	5	BRN-VIO	7/8	YEL	Playfield	Flash	White	9-LP-4	113-5045-08
234													
239													
240	Expressive Lighting L 1-R	2	a	CN1	-	-	-	-	Cabinet	Feature	RGB	2-LP-1	515-2413-00
241	Expressive Lighting L 1-G	2	a	CN1	-	-	-	-	Cabinet	Feature	RGB	2-LP-0	515-2413-00
242	Expressive Lighting L 1-B	2	a	CN1	-	-	-	-	Cabinet	Feature	RGB	2-LP-2	515-2413-00
243	Expressive Lighting L 3 - 48	2	a	CN1	-	-	-	-	Cabinet	Feature	RGB	2-LP-X	515-2413-00
383													
384	Expressive Lighting R 49-R	2	a	CN1	-	-	-	-	Cabinet	Feature	RGB	2-LP-145	515-2413-00
385	Expressive Lighting R 49-G	2	a	CN1	-	-	-	-	Cabinet	Feature	RGB	2-LP-144	515-2413-00
386	Expressive Lighting R 49-B	2	a	CN1	-	-	-	-	Cabinet	Feature	RGB	2-LP-146	515-2413-00
384	Expressive Lighting R 50 - 96	2	a	CN1	-	-	-	-	Cabinet	Feature	RGB	2-LP-X	515-2413-00
527													

Continued on next page...



LIGHT REFERENCE CONTINUED

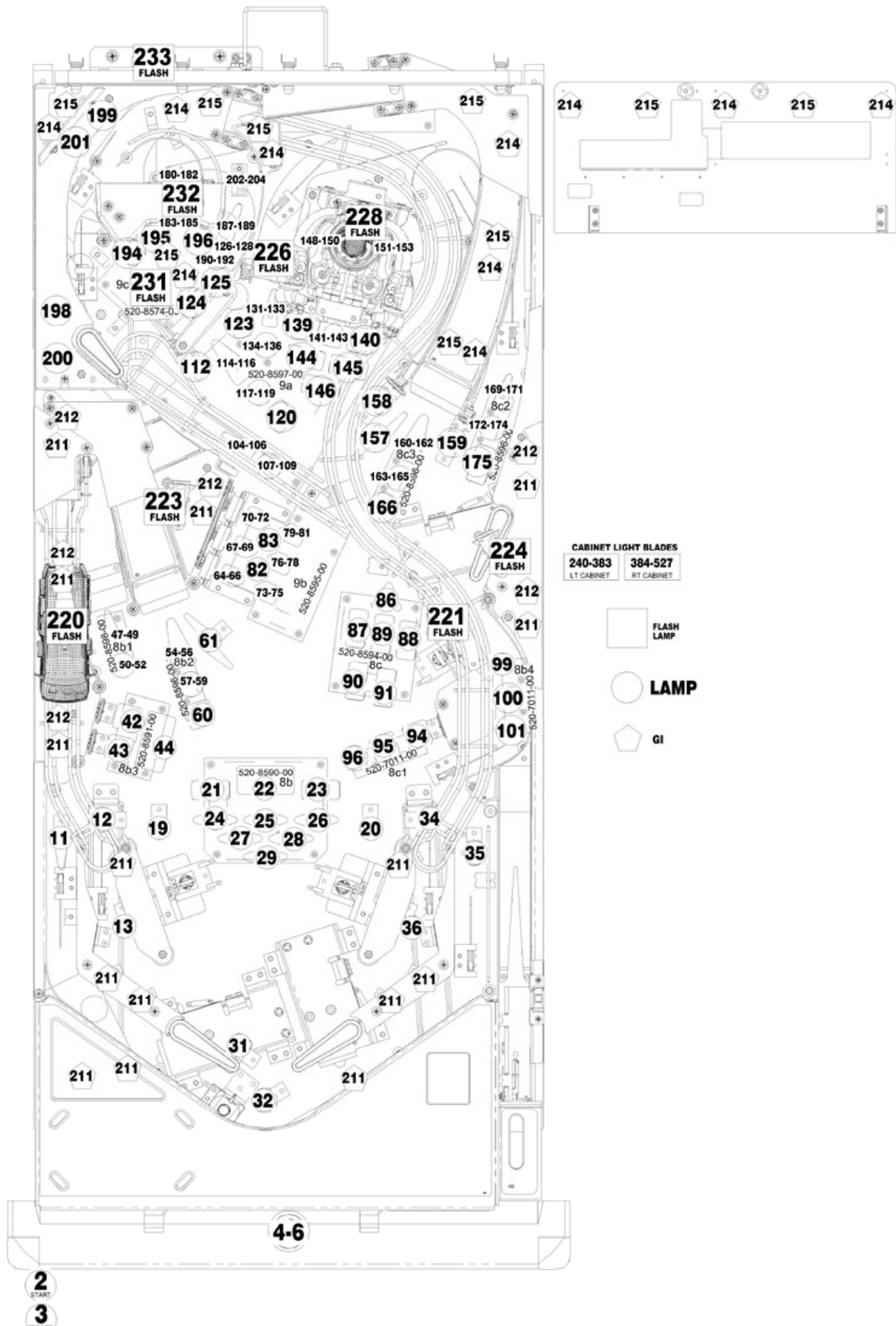


Figure 3.4.1. Playfield light locations (top view).



4. ELECTRONIC PINOUTS AND SCHEMATICS

4.1 SPIKE-2 CPU NODE 0

509-1003-01

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-1	-
C3	DIP 3	-	-	-	-	-	CPU Node		0-SW-2	-
C4	DIP 4	-	-	-	-	-	CPU Node		0-SW-3	-
C5	DIP 5	-	-	-	-	-	CPU Node		0-SW-4	-
C6	DIP 6	-	-	-	-	-	CPU Node		0-SW-5	-
C7	DIP 7	-	-	-	-	-	CPU Node		0-SW-6	-
C8	DIP 8	-	-	-	-	-	CPU Node		0-SW-7	-
C9	Service Select	CN25	1	LGN-GRY	11	BLK-WHT	Coin Door		0-SW-9	180-5192-04
C10	Service Plus	CN25	2	LGN-VIO	11	BLK-WHT	Coin Door		0-SW-10	180-5192-02
C11	Service Minus	CN25	3	LGN-BLU	11	BLK-WHT	Coin Door		0-SW-11	180-5192-02
C12	Service Back	CN25	4	LGN-BLK	11	BLK-WHT	Coin Door		0-SW-12	180-5192-00

CONNECTORS

ID	Connector Type	Description
CN1	5-Pin .156" Header	Backbox 2-channel amplified speaker out
CN2	3-Pin .100" Header	Console Port
CN3	7-Pin .100" Header	Headphone connector
CN4	2-Pin .156"	Cabinet 1-channel amplified speaker out
CN5	7-Pin .100" Header	Line In/Out
CN6	34 Pin 2.00mm Header	LCD display connector
CN7	5-Pin .156" Header	48V supply from main power supply
CN8	6-Pin .100" Header	SPI Serial
CN9	USB	USB connector - for software updates, audit dumps, and expansion modules
CN9	USB	USB connector - for software updates, audit dumps, and expansion modules
CN10	HDMI	HDMI Out
CN11	RJ45	SPIKE node bus - to cabinet node N1
CN12	RJ45	SPIKE node bus - To Topper accessory Kit
CN13	SD CARD	SD Card connector
CN14	5-Pin .100" Header	LCD Backlight
CN15	3-Pin .100" Header	Backbox Light
CN16	4-Pin .100" Header	3.3v / 5v / 12v
CN17	ETHERNET	ETHERNET connector
CN21	SATA Header	SATA connector
CN22	RJ45	SPIKE node bus - to playfield node
CN25	12-Pin .100" Header	Dedicated switch inputs - service, volume switches

COMPONENTS

ID	Name
S1	DIP Switches
S2	Reset Switch
SD CARD (CN13)	For system SD card. Note: only to be removed if instructed to by Stern Service.
BT1	BR1225 3V Lithium battery for game clock between power cycles

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.
3.3V	+3.3V Logic	Red	ON: Logic power supply is good. OFF: Logic power supply bad, call tech support.
5V	+5V Logic	Red	ON: Logic power supply is good. OFF: Logic power supply bad, call tech support.
12V	+12V Backbox Illumination	Red	ON: Back box LED power good. OFF: Backbox LED power bad, call tech support.
VA	+30V Audio	Red	ON: Audio power supply is good. OFF: Audio power supply off, call tech support.
VNB	+9V Node Bus	Red	Power for the Node bus. ON: Power for node bus good. OFF: Power to node bus not detected, call tech support.
5V (CPU)	+5V Logic	Red	ON: Logic power supply is good. OFF: Logic power supply bad, call tech support.
SDIO ACT	Not Used	Red	Should remain unlit as it is not currently used.
STATUS	CPU Heartbeat, System Status	Red	Double blink ~1/2 second: Good, Processor running. OFF: Processor not running, call tech support.
µSD ACT	Activity indicator for micro SD Card	Red	Should blink rapidly when reading or writing to micro SD card.
D23	Netbridge Status	Red	Should blink once every ~1/2 second.

SPIKE-2 CPU NODE 0 CONTINUED

AUDIO PINOUTS

ID	Type	Pin	Description	Minimum Impedance	Max Power (RMS)	Wire Color
CN1	.156" 5-pin Header	1	Speaker Right Ground (-)	4 Ohms	-	BLK-WHT
		2	Speaker Right (+)	4 Ohms	20W	RED-WHT
		3	n/c	-	-	
		4	Speaker Left Ground (-)	4 Ohms	-	BLK-RED
		5	Speaker Left (+)	4 Ohms	20W	RED-BLK
CN3	.100" 7-pin Header	1	n/c	-	-	
		2	L-HP	16 Ohms	15 mW	
		3	R-HP	16 Ohms	15 mW	
		4	n/c	-	-	
		5	Headphone Detect	-	-	
		6	Headphone vol +	-	-	
		7	Headphone vol -	-	-	
CN4	.156" 2-pin Header	1	Woofer Ground (-)	8 Ohms	-	YEL-BLK
		2	Woofer Out (+)	8 Ohms	40W	YEL-WHT
CN5	.100" 7-pin Header	1	n/c	-	-	
		2	L-IN	30K Ohms	0.6VRMS	
		3	R-IN	30K Ohms	0.6VRMS	
		4	n/c	-	-	
		5	L-OUT	10K Ohms	1.5V	
		6	R-OUT	10K Ohms	1.5V	
		7	Woofer Line Out	10K Ohms	1.5V	

COUNTRY CODES (DIP S2)

Country	DIP S2							
	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
China	OFF	OFF	ON	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	OFF	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

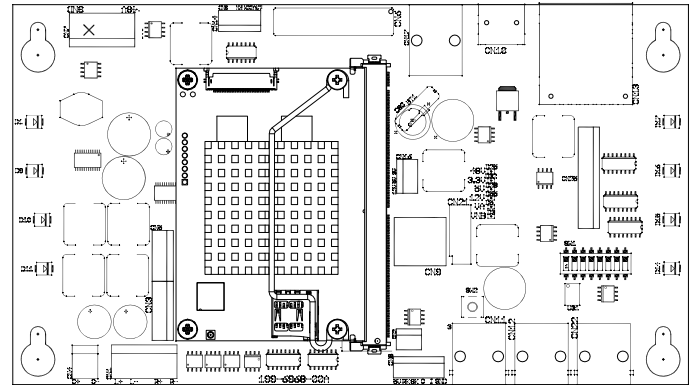


Figure 4.1.1. SPIKE 2 CPU Node connector detail.

COIN DOOR SERVICE SWITCH WIRING

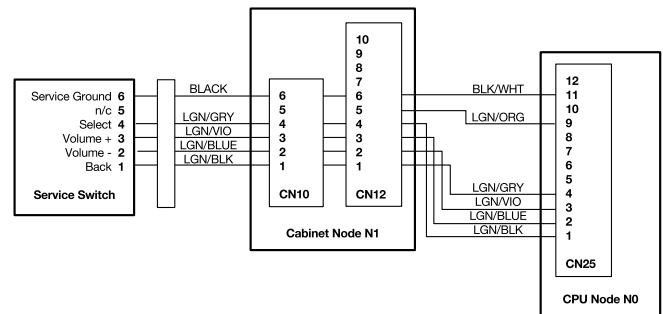


Figure 4.1.2. Service switch wiring. Note that the Cabinet Node must be present and CN10 and CN12 connected for the Coin Door Service Switches to function correctly.

USA & INTERNATIONAL (NON-EURO) STANDARD PRICING SELECT TABLE

CPU/SOUND PCB DIP SWITCH SW1 SETTING		COUNTRY SETTING OPTION(S)	COIN MECHANISMS (SWITCHES)					PRICING SCHEME	Requires SPI Coin Card(s) Part Number
			COINS THRU ... SLOT:					Number of Plays (Credits) for Price Amount Shown See "Appendix J" for Coin Cards Examples & Info!	
			LEFT	CENTER	RIGHT	4TH			
Pos. 1-8	Default Highlighted	USA 1	0.25	1.00	0.25				
ON		USA 2							
OFF		USA 3							
		USA 4							
		USA 5							
		USA 6							
		USA 7							
		USA 8							
		USA 9							
		USA 10							
		USA 11							
		USA 12							
		USA 13							
Pos. 1-8	Default Highlighted	AUSTRALIA 1	0.20	1.00	2.00				
ON		AUSTRALIA 2							
OFF		AUSTRALIA 3							
		AUSTRALIA 4							
		AUSTRALIA 5							
		AUSTRALIA 6							
Pos. 1-8	Default Highlighted	CANADA 1 [25c door]	0.25	0.25	1.00	2.00			
ON		CANADA 2 [dollar door]							
OFF									
Pos. 1-8	Default Highlighted	CROATIA	1	2	5				
Pos. 1-8	Default Highlighted	DENMARK 1	1	5	10	20			
ON		DENMARK 2							
Pos. 1-8	Default Highlighted	JAPAN 1	100		100				
ON		JAPAN 2							
Pos. 1-8	Default Highlighted	MIDDLE EAST	token		token				
Pos. 1-8	Default Highlighted	NEW ZEALAND 1	1		2				
ON		NEW ZEALAND 2							
Pos. 1-8	Default Highlighted	NORWAY 1	10	5	20				
ON		NORWAY 2							
OFF		NORWAY 3							
		NORWAY 4							
		NORWAY 5							
		NORWAY 6							
		NORWAY 7							
		NORWAY 8							
Pos. 1-8	Default Highlighted	RUSSIA	10	5	1				
Pos. 1-8	Default Highlighted	SO. AFRICA 1	0.50	1.00	1.00	1.00			
ON		SO. AFRICA 2							
Pos. 1-8	Default Highlighted	SWEDEN 1	1	5	10				
ON		SWEDEN 2							
Pos. 1-8	Default Highlighted	SWITZERLAND 1	1	2	5				
ON		SWITZERLAND 2							
Pos. 1-8	Default Highlighted	TAIWAN	10		10				
Pos. 1-8	Default Highlighted	UK 1	0.10	0.50	1.00	0.20	2£		
ON		UK 2							
OFF		UK 3							
		UK 4							
		UK 5							
		UK 6							

HIGHLIGHTED = Factory Default

HIGHLIGHTED = Not Shown on Coin Card



EURO SUMMARY & INTERNATIONAL (EURO) STANDARD PRICING SELECT TABLE

CPU/SOUND PCB DIP SWITCH SW1 SETTING		COUNTRY SETTING OPTION(S)	COIN MECHANISMS (SWITCHES) COINS THRU ... SLOT:				PRICING SCHEME Number of Plays (Credits) for Price Amount Shown See "Appendix J" for Coin Cards Examples & Info!			Requires SPI Coin Card(s) Part Number											
Pos.	1	2	3	4	5	6	7	8	LEFT	CENTER	RIGHT	4TH									
ON	S	E	E	B	E	L	O	W	0.50	1.00	2.00	0.20	EUR // EUROPEAN UNION EUROS // [€]								
OFF	S	E	T	T	I	N	G	S									1/0.50			755-5401-01-Y	
Euro 1-12 are alternate settings for countries using the Euro.		Euro 1															1/0.50	2/1.00	3/1.50	5/2.00	755-5401-02-Y
HIGHLIGHTED = Factory Default		Euro 2															1/0.50		3/1.00		755-5401-03-Y
HIGHLIGHTED = Not Shown on Coin Card		Euro 3															1/0.50	2/1.00	3/1.50	6/2.00	755-5401-04-Y
		Euro 4															1/0.50	3/1.00	4/1.50	7/2.00	755-5401-05-Y
		Euro 5															2/0.50				755-5401-06-Y
		Euro 6															1/1.00	2/2.00	3/3.00	5/4.00	755-5401-07-Y
		Euro 7															1/1.00		3/2.00		755-5401-08-Y
		Euro 8															1/1.00	2/1.50	3/2.00		755-5401-09-Y
		Euro 9															1/1.00		3/2.00	7/3.00	755-5401-10-Y
		Euro 10															1/1.00		4/2.00		755-5401-11-Y
		Euro 11											2/1.00	4/2.00	6/3.00	9/4.00	755-5401-12-Y				
		Euro 12																			

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

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

HIGHLIGHTED = Factory Default

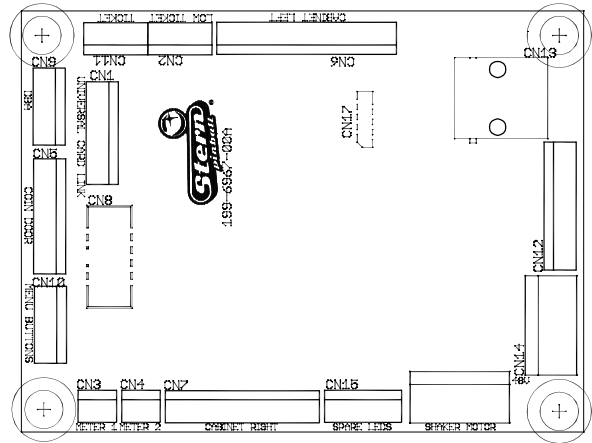
HIGHLIGHTED = Not Shown on Coin Card



4.2 CABINET NODE 1

520-6967-72

ID	Type	Pin	Description	Wire Color
CN1	.100" 8-Pin Header Universal Card Link	1	12V	-
		2	Coin 1	-
		3	Meter 1	-
		4	N/C	-
		5	Notch	-
		6	Coin Enable	-
		7	Ticket Enable	-
		8	Ground	-
CN2	.100" 5-Pin Header Low Ticket	1	Ground	-
		2	Ticket Low sw.	-
		3	Key	-
		4	Ticket Low	-
		5	5V Out	-
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	RED
		2	Start 2 LED	YEL-RED
		3	Start 1 LED	YEL-BRN
		4	Spare LED	-
		5	Ground	BLK-WHT
		6	Spare Left	-
		7	Tilt Input	WHT
		8	Door Open	-
		9	Start 2 Switch	GRY-WHT
		10	Start 1 Switch	GRY
		11	N/C	-
		12	N/C	-
		13	N/C	-
		14	N/C	-
CN7	.100" 12-Pin Header Cabinet Right	1	5V LED Power	RED
		2	Plunge 2 LED	RED-WHT
		3	Plunge 1 LED	GRN-WHT
		4	Spare LED 2	BLU-WHT
		5	Ground	BLK-WHT
		6	Spare Right In	-
		7	Plunge 2 Switch	-
		8	Plunge 1 Switch	-
		9	N/C	-
		10	N/C	-
		11	N/C	-
		12	N/C	-
CN8	.100" 10-Pin Header Dual Row Electronic Coin Mech	1	Ground	-
		2	12V	-
		3	Coin 5	-
		4	Coin 6	-
		5	N/C	-
		6	Coin Enable/Inhibit (+)	-
		7	Coin 1	-
		8	Coin 2	-
		9	Coin 3	-
		10	Coin 4	-

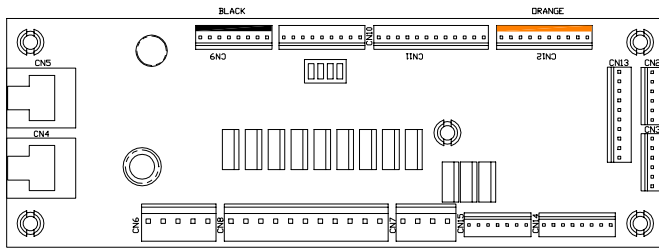


CN9	.100" 6-Pin Header Dollar Bill Acceptor	1	Coin Enable/DBA Inhibit (-)	BLK
		2	Coin Enable/DBA Inhibit (+)	-
		3	Key	Key
		4	DBA 12V	ORG
		5	Coin 6 / DBA Credit	-
		6	Ground	BLK-ORG
CN10	.100" 6-Pin Header Service Switch In	1	Service Back (To Coindoor)	LGN-BLK
		2	Service Down (To Coindoor)	LGN-BLU
		3	Service Up (To Coindoor)	LGN-VIO
		4	Service Select (To Coindoor)	LGN-GRY
		5	Key	Key
		6	Service Ground (To Coindoor)	BLK
CN11	.100" 5-Pin Header Ticket Dispenser	1	12V	RED
		2	N/C	-
		3	Ticket Dispenser Enable	WHT
		4	Ground	BLK
		5	Ticket Dispenser Notch	BLU
CN12	.100" 10-Pin Header CPU Direct Switches	1	Service Back (To CPU)	LGN-BLK
		2	Service Down (To CPU)	LGN-BLU
		3	Service Up (To CPU)	LGN-VIO
		4	Service Select (To CPU)	LGN-GRY
		5	Power Present	LGN-ORG
		6	Service Ground (To CPU)	BLK-WHT
		7	N/C	-
		8	N/C	-
		9	N/C	-
		10	N/C	-
CN14	.156" 5-Pin Header Power Input	1	Ground	BLK
		2	Key	Key
		3	N/C	-
		4	N/C	-
		5	48VDC In	GRY-YEL
CN15	.100" 6-Pin Header Spare LED's	1	5V LED Power	-
		2	Key	Key
		3	Spare LED 3	-
		4	Spare LED 4	-
		5	Spare LED 5	-
		6	Spare LED 6	-
CN16	.156" 5-Pin Header Shaker Motor	1	Shaker Motor (-)	BLU
		2	Shaker Motor (-)	-
		3	Shaker Motor (+)	-
		4	Key	Key
		5	Shaker Motor (+)	RED
			*Varies by country model	



4.3 LOWER PLAYFIELD 48V DRIVER PINOUT NODE 8

520-7017-72 / 520-1057-00



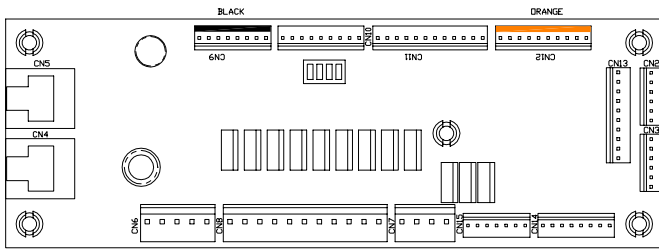
ID	Type	Pin	Description	Wire Color
SW1	Address DIP	-	Node 8 - OFF-OFF-OFF-OFF	-
CN4	RJ45	-	SPIKE Node Bus	Multi
CN5	RJ45	-	SPIKE Node Bus	Multi
CN6	.156" 5-Pin Header Node Power	1	Ground	BLK
		2	Key	Key
		3	N/C	-
		4	N/C	-
		5	48VDC In	GRY
CN7	.156" 4-Pin Header (White)	1	48V Driver Power	GRY-ORG
		2	8-DR-8 Driver Return	YEL-RED
		3	8-DR-6 Driver Return	YEL-BLK
		4	8-DR-7 Driver Return	YEL-BRN
CN8	.156" 11-Pin Header (White)	1	48V Driver Power	GRY-ORG
		2	48V Driver Power	GRY-ORG
		3	48V Driver Power	GRY-ORG
		4	48V Driver Power	GRY-ORG
		5	8-DR-0 Driver Return	ORG-GRN
		6	8-DR-5 Driver Return	ORG-YEL
		7	8-DR-1 Driver Return	ORG-GRY
		8	8-DR-8 Driver Return	-
		9	8-DR-4 Driver Return	ORG-WHT
		10	8-DR-2 Driver Return	ORG-VIO
		11	8-DR-3 Driver Return	ORG-BLU
CN9	.100" 8-Pin Header (Black)	1	V+	-
		2	V+	-
		3	8-SW-24 Switch	GRY-RED
		4	8-SW-25 Switch	GRY-BRN
		5	8-SW-26 Switch	VIO-WHT
		6	8-SW-27 Switch	VIO
		7	Ground	BLK-GRN
		8	Ground	BLK-VIO
CN10	.100" 9-Pin Header	1	V+	-
		2	8-SW-28 Switch	GRY-WHT
		3	8-SW-29 Switch	GRY-VIO
		4	8-SW-30 Switch	GRY-BLU
		5	8-SW-31 Switch	GRY-GRN
		6	8-SW-16 Switch	GRY-YEL
		7	Ground	BLK-GRN
		8	Ground	BLK-GRN
		9	Ground	BLK-GRN

CN11	.100" 12-Pin Header	1	V+	-
		2	8-SW-26 Switch	-
		3	8-SW-27 Switch	-
		4	8-SW-17 Switch	LGN-RED
		5	8-SW-18 Switch	LGN-ORG
		6	8-SW-19 Switch	LGN-YEL
		7	8-SW-20 Switch	LGN-BLU
		8	8-SW-21 Switch	LGN-VIO
		9	8-SW-22 Switch	LGN-GRY
		10	8-SW-23 Switch	-
		11	Ground	BLK-ORG
		12	Ground	BLK-ORG
CN12	.100" 10-Pin Header (Orange)	1	V+	-
		2	8-SW-8 Switch	WHT-BRN
		3	8-SW-9 Switch	WHT-RED
		4	8-SW-10 Switch	WHT-ORG
		5	8-SW-11 Switch	WHT-RED
		6	8-SW-12 Switch	WHT-GRN
		7	8-SW-13 Switch	WHT-BLU
		8	8-SW-14 Switch	PNK-BLK
		9	8-SW-15 Switch	PNK-BRN
		10	Ground	BLK-RED
CN13	.100" 10-Pin Header	1	V+	-
		2	8-SW-0 Switch	-
		3	8-SW-1 Switch	-
		4	8-SW-2 Switch	-
		5	8-SW-3 Switch	-
		6	8-SW-4 Switch	-
		7	8-SW-5 Switch	-
		8	8-SW-6 Switch	-
		9	8-SW-7 Switch	-
		10	Ground	-
CN14	.100" 8-Pin Header	1	Ground	-
		2	8-LP-7 Driver Return	-
		3	8-LP-6 Driver Return	-
		4	8-LP-5 Driver Return	-
		5	8-LP-4 Driver Return	-
		6	8-LP-3 Driver Return	-
		7	LED V+	-
		8	LED V+	-
CN15	.100" 7-Pin Header	1	LED V+	YEL-BLK
		2	LED V+	YEL-RED
		3	LED V+	-
		4	-	-
		5	8-LP-0 GI Return	WHT-BLK
		6	8-LP-1 GI Return	RED-BLK
		7	8-LP-2 GI Return	-
CN2	.100" 6-Pin Header, Node Extension Bus	1	Ground	BLK
		2	DIN	VIO-BLK
		3	DOUT	VIO-BRN
		4	SCK	VIO-RED
		5	RCK	VIO-ORG
		6	V+	RED
CN3	.100" 6-Pin Header, Node Extension Bus	1	Ground	BLK
		2	DIN	VIO-BLK
		3	DOUT	VIO-BRN
		4	SCK	VIO-RED
		5	RCK	VIO-ORG
		6	V+	RED



4.4 MID UPPER PLAYFIELD 48V DRIVER PINOUT NODE 9

520-7017-72 / 520-1057-00

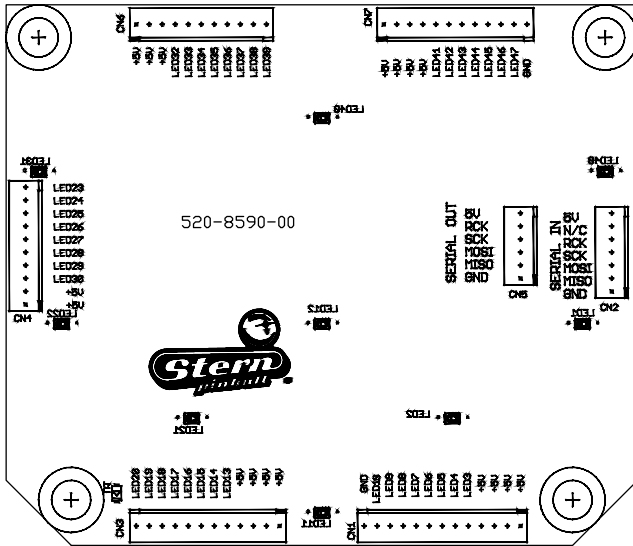


ID	Type	Pin	Description	Wire Color
SW1	Address DIP	-	Node 9 - OFF-OFF-ON-OFF	-
CN4	RJ45	-	SPIKE Node Bus	Multi
CN5	RJ45	-	SPIKE Node Bus	Multi
CN6	.156" 5-Pin Header Node Power	1	Ground	BLK
		2	Key	Key
		3	N/C	-
		4	N/C	-
		5	48VDC In	GRY
CN7	.156" 4-Pin Header (White)	1	48V Driver Power	GRY-BRN
		2	9-DR-8 Driver Return	YEL-ORG
		3	9-DR-6 Driver Return	YEL-GRN
		4	9-DR-7 Driver Return	YEL-BLU
CN8	.156 11-Pin Header (White)	1	48V Driver Power	GRY-BRN
		2	48V Driver Power	GRY-BRN
		3	48V Driver Power	GRY-BRN
		4	48V Driver Power	GRY-BRN
		5	9-DR-0 Driver Return	BRN-RED
		6	9-DR-5 Driver Return	-
		7	9-DR-1 Driver Return	YEL-WHT
		8	9-DR-8 Driver Return	-
		9	9-DR-4 Driver Return	ORG-RED
		10	9-DR-2 Driver Return	ORG-BLK
		11	9-DR-3 Driver Return	ORG-BRN
CN9	.100" 8-Pin Header (Black)	1	V+	RED
		2	V+	-
		3	9-SW-24 Switch	LGN-ORG
		4	9-SW-25 Switch	LGN-YEL
		5	9-SW-26 Switch	LGN-BLU
		6	9-SW-27 Switch	LGN-VIO
		7	Ground	BLK-BLU
		8	Ground	BLK-BLU
CN10	.100" 9-Pin Header	1	V+	RED
		2	9-SW-28 Switch	GRY-BLK
		3	9-SW-29 Switch	GRY-BRN
		4	9-SW-30 Switch	GRY-RED
		5	9-SW-31 Switch	GRY-ORG
		6	9-SW-16 Switch	GRY-YEL
		7	Ground	BLK-BLU
		8	Ground	BLK-BLU
		9	Ground	BLK-BLU

CN11	.100" 12-Pin Header	1	V+	RED
		2	9-SW-26 Switch	-
		3	9-SW-27 Switch	-
		4	9-SW-17 Switch	TAN-ORG
		5	9-SW-18 Switch	TAN-YEL
		6	9-SW-19 Switch	TAN-GRN
		7	9-SW-20 Switch	TAN-BLU
		8	9-SW-21 Switch	-
		9	9-SW-22 Switch	TAN-WHT
		10	9-SW-23 Switch	TAN
		11	Ground	BLK-GRY
		12	Ground	BLK-GRY
CN12	.100" 10-Pin Header (Orange)	1	V+	RED
		2	9-SW-8 Switch	WHT-BRN
		3	9-SW-9 Switch	WHT-RED
		4	9-SW-10 Switch	WHT-ORG
		5	9-SW-11 Switch	WHT-YEL
		6	9-SW-12 Switch	WHT-GRN
		7	9-SW-13 Switch	-
		8	9-SW-14 Switch	-
		9	9-SW-15 Switch	WHT-GRY
		10	Ground	BLK-WHT
CN13	.100" 10-Pin Header	1	V+	-
		2	9-SW-0 Switch	-
		3	9-SW-1 Switch	-
		4	9-SW-2 Switch	-
		5	9-SW-3 Switch	-
		6	9-SW-4 Switch	-
		7	9-SW-5 Switch	-
		8	9-SW-6 Switch	-
		9	9-SW-7 Switch	-
		10	Ground	-
CN14	.100" 8-Pin Header	1	Ground	-
		2	9-LP-7 Driver Return	-
		3	9-LP-6 Driver Return	-
		4	9-LP-5 Driver Return	-
		5	9-LP-4 Driver Return	BRN-VIO
		6	9-LP-3 Driver Return	BRN-WHT
		7	LED V+	YEL
		8	LED V+	YEL
CN15	.100" 7-Pin Header	1	LED V+	YEL-BLK
		2	LED V+	YEL-RED
		3	LED V+	-
		4	-	-
		5	9-LP-0 GI Return	WHT-BLK
		6	9-LP-1 GI Return	RED-BLK
		7	9-LP-2 GI Return	-
CN2	.100" 6-Pin Header, Node Extension Bus	1	Ground	BLK
		2	DIN	VIO-BLK
		3	DOUT	VIO-BRN
		4	SCK	VIO-RED
		5	RCK	VIO-ORG
		6	V+	RED
CN3	.100" 6-Pin Header, Node Extension Bus	1	Ground	-
		2	DIN	-
		3	DOUT	-
		4	SCK	-
		5	RCK	-
		6	V+	-

4.5 LOWER CENTER LED BOARD 8B

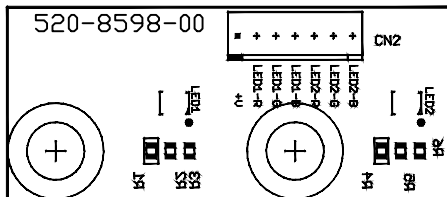
520-8590-00



ID	Type	Pin	Description	Wire Color
CN1	.100" 13-Pin Header	1	+5 VDC	RED
		2	+5 VDC	RED
		3	+5 VDC	-
		4	+5 VDC	-
		5	LED 3	RED-BRN
		6	LED 4	GRN-BRN
		7	LED 5	BLU-BRN
		8	LED 6	RED-ORG
		9	LED 7	GRN-ORG
		10	LED 8	BLU-ORG
		11	LED 9	ORG-BRN
		12	LED 10	ORG-BLK
		13	GND	-
CN2	.100" 7-Pin Header	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	NC	-
		7	+5 VDC IN	RED
CN3	.100" 12-Pin Header	1	+5 VDC	RED
		2	+5 VDC	RED
		3	+5 VDC	-
		4	+5 VDC	-
		5	LED 13	RED-YEL
		6	LED 14	GRN-YEL
		7	LED 15	BLU-YEL
		8	LED 16	RED-VIO
		9	LED 17	GRN-VIO
		10	LED 18	BLU-VIO
		11	LED 19	ORG-RED
		12	LED 20	ORG-YEL

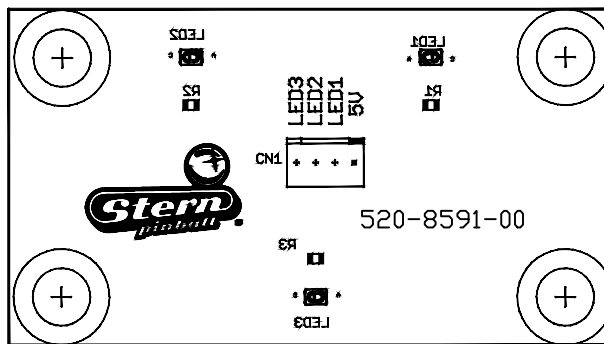
CN4	.100" 10-Pin Header	1	+5 VDC	RED
		2	+5 VDC	RED
		3	LED 23	ORG-GRN
		4	LED 24	ORG-BLU
		5	LED 25	ORG-VIO
		6	LED 26	BRN-RED
		7	LED 27	BRN-ORG
		8	LED 28	BRN-VIO
		9	LED 29	ORG-GRY
		10	LED 30	ORG-WHT
CN5	.100" 6-Pin Header	1	Ground	BLK
		2	MISO Output Data	VIO-BLK
		3	MOSI Input Data	VIO-BRN
		4	SCK Serial Clock	VIO-RED
		5	RCK Register Clock	VIO-ORG
		6	V+	RED
CN6	.100" 11-Pin Header	1	+5 VDC	RED
		2	+5 VDC	RED
		3	+5 VDC	-
		4	LED 32	-
		5	LED 33	-
		6	LED 34	-
		7	LED 35	-
		8	LED 36	-
		9	LED 37	-
		10	LED 38	YEL-GRY
		11	LED 39	YEL-WHT
CN7	.100" 12-Pin Header	1	+5 VDC	RED
		2	+5 VDC	RED
		3	+5 VDC	RED
		4	+5 VDC	-
		5	LED 41	BRN-YEL
		6	LED 42	BRN-BLU
		7	LED 43	BRN-GRY
		8	LED 44	BRN-GRN
		9	LED 45	BRN
		10	LED 46	BRN-WHT
		11	LED 47	ORG
		12	GND	-

4.6 MID FAR LEFT LED BOARD 8B1 520-8598-00



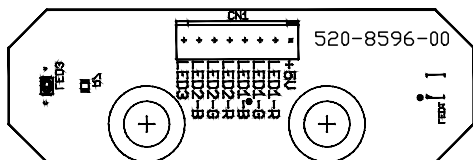
ID	Type	Pin	Description	Wire Color
CN1	.100" 7-Pin Header	1	+5 VDC	RED
		2	LED1-R	RED-BRN
		3	LED1-G	GRN-BRN
		4	LED1-B	BLU-BRN
		5	LED2-R	RED-ORG
		6	LED2-G	GRN-ORG
		7	LED2-B	BLU-ORG

4.8 LOWER LEFT LED BOARD 8B3 520-8591-00



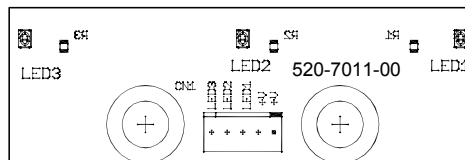
ID	Type	Pin	Description	Wire Color
CN1	.100" 4-Pin Header	1	+5 VDC	RED
		2	LED 1	ORG-BLU
		3	LED 2	ORG-GRN
		4	LED 3	ORG-VIO

4.7 3-LED BOARD 8B2 520-8596-00



ID	Type	Pin	Description	Wire Color
CN1	.100" 8-Pin Header	1	+5 VDC	RED
		2	LED1-R	RED-YEL
		3	LED1-G	GRN-YEL
		4	LED1-B	BLU-YEL
		5	LED2-R	RED-VIO
		6	LED2-G	GRN-VIO
		7	LED2-B	BLU-VIO
		8	LED3	ORG-RED

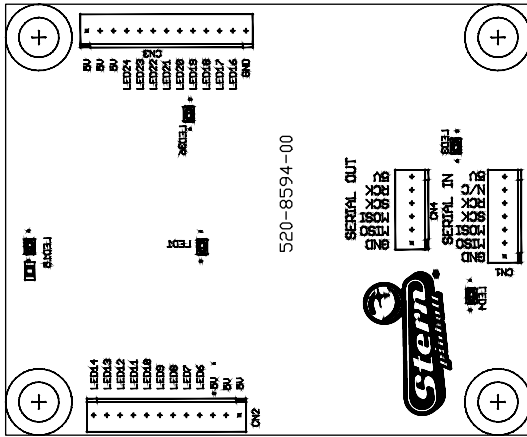
4.9 3-LED BOARD 8B4 520-7011-00



ID	Type	Pin	Description	Wire Color
CN1	.100" 5-Pin Header	1	5V	RED
		2	5V	-
		3	LP-1 Light Return	BRN-WHT
		4	LP-2 Light Return	BRN
		5	LP-3 Light Return	BRN-GRN

4.10 MID RIGHT LED BOARD 8C

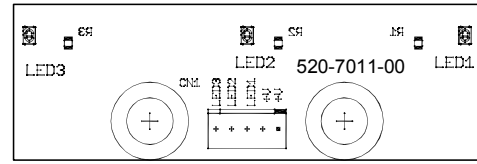
520-8594-00



ID	Type	Pin	Description	Wire Color
CN1	.100" 7-Pin Header	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	NC	-
		7	+5 VDC IN	RED
CN2	.100" 12-Pin Header	1	+5 VDC	RED
		2	+5 VDC	RED
		3	+5 VDC	-
		4	LED 6	BLU-RED
		5	LED 7	BLU-YEL
		6	LED 8	BLU-GRN
		7	LED 9	RED-GRY
		8	LED 10	GRN-GRY
		9	LED 11	BLU-GRY
		10	LED 12	RED-WHT
		11	LED 13	GRN-WHT
		12	LED 14	BLU-WHT
CN3	.100" 13-Pin Header	1	+5 VDC	RED
		2	+5 VDC	RED
		3	+5 VDC	-
		4	LED 16	RED-BRN
		5	LED 17	GRN-BRN
		6	LED 18	BLU-BRN
		7	LED 19	RED-ORG
		8	LED 20	GRN-ORG
		9	LED 21	BLU-ORG
		10	LED 22	ORG-BLK
		11	LED 23	ORG-BRN
		12	LED 24	ORG-RED
		13	GND	-
CN4	.100" 6-Pin Header	1	Ground	-
		2	MISO Output Data	-
		3	MOSI Input Data	-
		4	SCK Serial Clock	-
		5	RCK Register Clock	-
		6	V+	-

4.11 3-LED BOARD 8C1

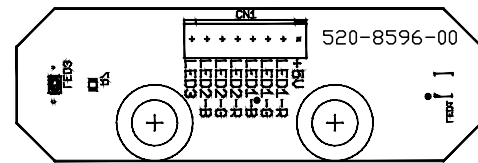
520-7011-00



ID	Type	Pin	Description	Wire Color
CN1	.100" 5-Pin Header	1	5V	RED
		2	5V	-
		3	LP-1 Light Return	BLU-GRN
		4	LP-2 Light Return	BLU-YEL
		5	LP-3 Light Return	BLU-RED

4.12 3-LED BOARD 8C2

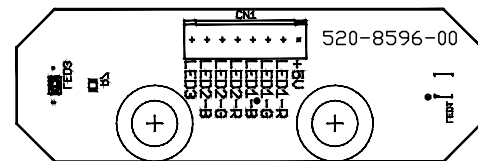
520-8596-00



ID	Type	Pin	Description	Wire Color
CN1	.100" 8-Pin Header	1	+5 VDC	RED
		2	LED1-R	RED-GRY
		3	LED1-G	GRN-GRY
		4	LED1-B	BLU-GRY
		5	LED2-R	RED-WHT
		6	LED2-G	GRN-WHT
		7	LED2-B	BLU-WHT
		8	LED3	ORG-BRN

4.13 3-LED BOARD 8C3

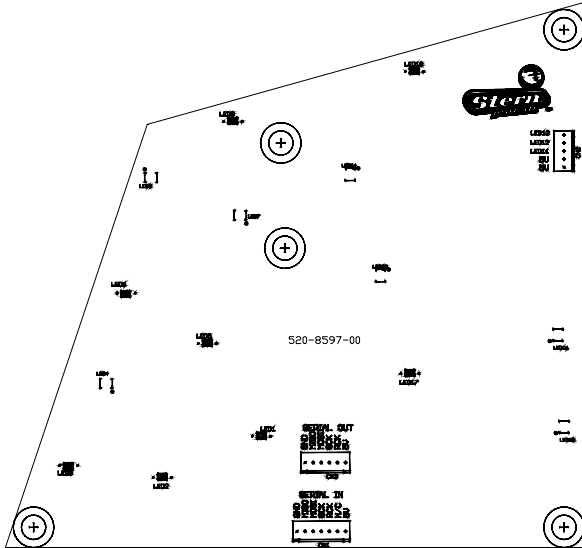
520-8596-00



ID	Type	Pin	Description	Wire Color
CN1	.100" 8-Pin Header	1	+5 VDC	RED
		2	LED1-R	RED-BRN
		3	LED1-G	GRN-BRN
		4	LED1-B	BLU-BRN
		5	LED2-R	RED-ORG
		6	LED2-G	GRN-ORG
		7	LED2-B	BLU-ORG
		8	LED3	ORG-BLK

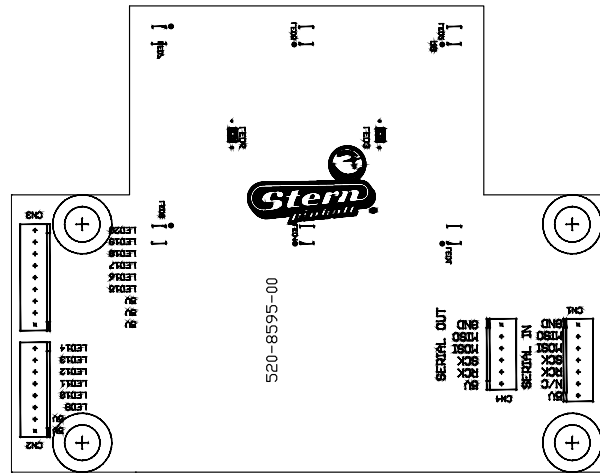


4.14 UPPER CENTER LED BOARD 9A 520-8597-00



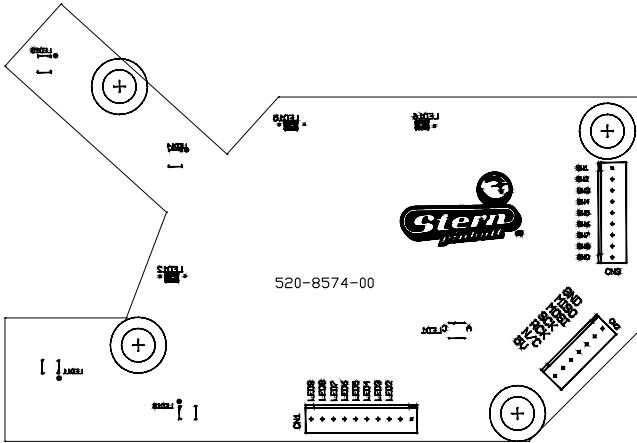
ID	Type	Pin	Description	Wire Color
CN1	.100" 7-Pin Header	1	Ground	BLK
		2	MISO Output Data	VIO-BLK
		3	MOSI Input Data	VIO-BRN
		4	SCK Serial Clock	VIO-RED
		5	RCK Register Clock	VIO-ORG
		6	NC	-
		7	+5 VDC IN	RED
CN2	.100" 5-Pin Header	1	+5 VDC	RED
		2	+5 VDC	-
		3	LED 11	ORG-YEL
		4	LED 12	ORG-GRN
		5	LED 13	ORG-BLU
CN3	.100" 6-Pin Header	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	V+	RED

4.15 MID CENTER LED BOARD 9B 520-8595-00

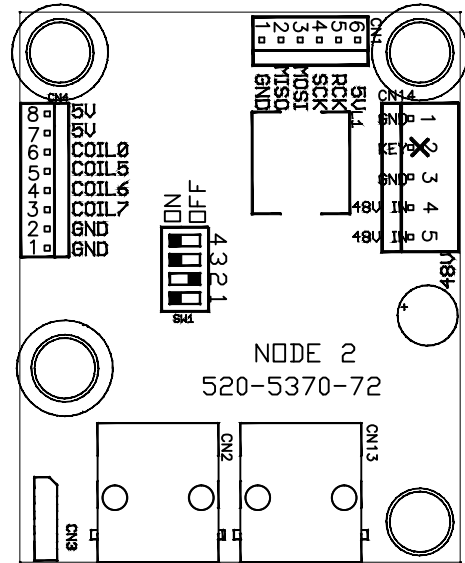


ID	Type	Pin	Description	Wire Color
CN1	.100" 7-Pin Header	1	Ground	BLK
		2	MISO Output Data	VIO-BLK
		3	MOSI Input Data	VIO-BRN
		4	SCK Serial Clock	VIO-RED
		5	RCK Register Clock	VIO-ORG
		6	NC	-
		7	+5 VDC IN	RED
CN2	.100" 8-Pin Header	1	+5 VDC	RED
		2	+5 VDC	-
		3	LED 9	ORG-VIO
		4	LED 10	ORG-GRY
		5	LED 11	ORG-WHT
		6	LED 12	RED-YEL
		7	LED 13	GRN-YEL
		8	LED 14	BLU-YEL
CN3	.100" 9-Pin Header	1	+5 VDC	RED
		2	+5 VDC	-
		3	+5 VDC	-
		4	LED 15	RED-VIO
		5	LED 16	GRN-VIO
		6	LED 17	BLU-VIO
		7	LED 18	RED-GRY
		8	LED 19	GRN-GRY
		9	LED 20	BLU-GRY
CN4	.100" 6-Pin Header	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	V+	RED

4.16 MINI PLAYFIELD LED BOARD 9C 520-8574-00 **4.17 SPI NODE 2 520-5370-72**



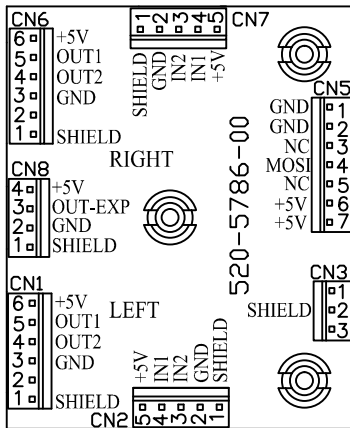
ID	Type	Pin	Description	Wire Color
CN1	.100" 10-Pin Header	1	+5 VDC	RED
		2	+5 VDC	RED
		3	LED 2	BRN-BLK
		4	LED 3	BRN-BLK
		5	LED 4	BRN-RED
		6	LED 5	BRN-ORG
		7	LED 6	ORG-RED
		8	LED 7	ORG-GRN
		9	LED 8	ORG-BLU
		10	LED 9	ORG-BLK
CN2	.100" 7-Pin Header	1	Ground	BLK
		2	MISO Output Data	VIO-BLK
		3	MOSI Input Data	VIO-BRN
		4	SCK Serial Clock	VIO-RED
		5	RCK Register Clock	VIO-ORG
		6	NC	-
		7	+5 VDC IN	RED
CN3	.100" 9-Pin Header	1	SW1	WHT-BRN
		2	SW2	WHT-RED
		3	SW3	WHT-ORG
		4	SW4	WHT-YEL
		5	SW5	WHT-GRN
		6	SW6	WHT-BLU
		7	SW7	-
		8	SW8	-
		9	GND	BLK



ID	Type	Pin	Description	Wire Color
SW1	Address DIP	-	Node 2- ON-OFF-ON-ON	-
CN2	RJ45	-	SPIKE Node Bus	Multi
CN13	RJ45	-	SPIKE Node Bus	Multi
CN14	.156" 5-Pin Header Node Power	1	Ground	BLK
		2	Key	Key
		3	N/C	-
		4	N/C	-
		5	48VDC In	GRY
CN1	.100" 6-Pin Header, Node Extension Bus	1	Ground	BLK
		2	DIN	-
		3	DOUT	GRN
		4	SCK	-
		5	RCK	-
		6	V+	RED
CN4	.100" 8-Pin Header	1	GND	-
		2	GND	-
		3	COIL 7	-
		4	COIL 6	-
		5	COIL 5	-
		6	COIL 0	-
		7	5V	-
		8	5V	-

4.18 BLADE LIGHTS BOARD

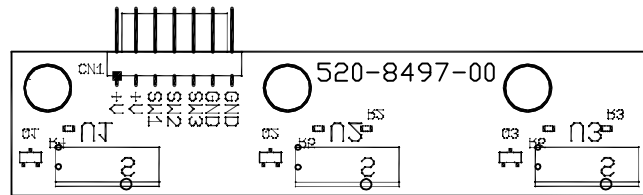
520-5786-00



ID	Type	Pin	Description	Wire Color
CN1	.100" 6-Pin Header	1	SHIELD	DRAIN
		2	N/C	-
		3	GND	BLK
		4	OUT2	WHT
		5	OUT1	GRN
		6	+5	RED
CN2	.100" 5-Pin Header	1	SHIELD	DRAIN
		2	GND	BLK
		3	IN2	WHT
		4	IN1	GRN
		5	+5	RED
CN3	.100" 3-Pin Header	1	N/C	-
		2	SHIELD	-
		3	N/C	-
CN5	.100" 7-Pin Header	1	GND	BLK
		2	GND	-
		3	N/C	-
		4	MOSI	GRN
		5	N/C	-
		6	+5	-
		7	+5	RED
CN6	.100" 6-Pin Header	1	SHIELD	DRAIN
		2	N/C	-
		3	GND	BLK
		4	OUT2	WHT
		5	OUT1	GRN
		6	+5	RED
CN7	.100" 5-Pin Header	1	SHIELD	DRAIN
		2	GND	BLK
		3	IN2	WHT
		4	IN1	GRN
		5	+5	RED
CN8	.100" 4-Pin Header	1	SHIELD	-
		2	GND	-
		3	OUT-EXP	-
		4	+5	-

4.19 3-BANK DROP TARGET BOARD

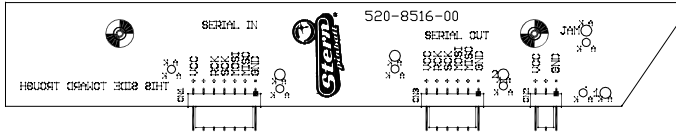
520-8497-00



ID	Type	Pin	Description	Wire Color
CN1	.100" 7-Pin Header	1	+5 VDC IN	RED
		2	+5 VDC IN	-
		3	Sw 1	LGN-ORG
		4	Sw 2	LGN-YEL
		5	Sw 3	LGN-BLU
		6	Ground	-
		7	Ground	BLK-BLU

4.20 TROUGH SERIAL OPTO RECEIVER 8A

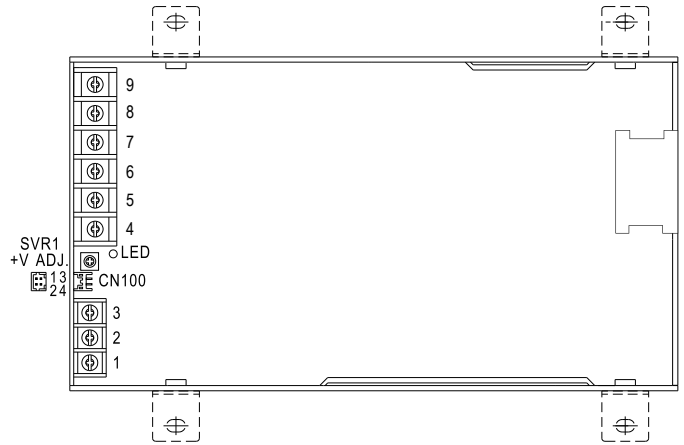
520-8516-00



ID	Type	Pin	Description	Wire Color
CN1	.100" 7-Pin Header	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
CN2	.100" 3-Pin Header	1	Ground	BLK
		2	N/C	-
		3	+5 VDC IN	RED
CN3	.100" 6-Pin Header	1	Ground	-
		2	MISO Output Data	-
		3	MOSI Input Data	-
		4	SCK Serial Clock	-
		5	RCK Register Clock	-
		6	V+	-

4.22 MAIN POWER SUPPLY

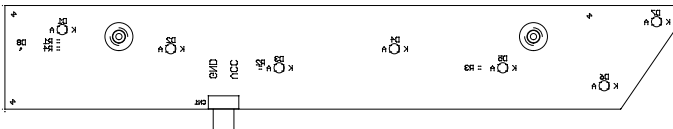
011-5003-00



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

4.21 TROUGH SERIAL OPTO TRANSMITTER

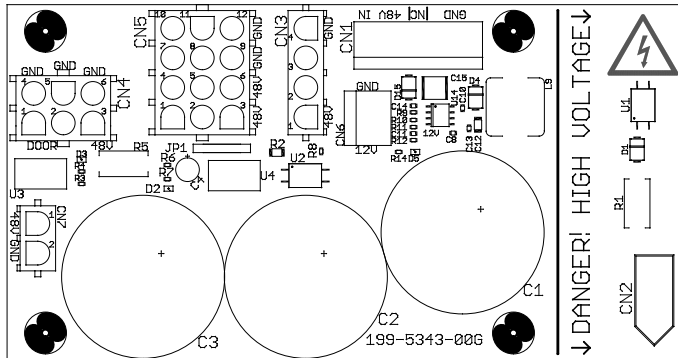
520-5344-00



ID	Type	Pin	Description	Wire Color
CN1	.100" 3-Pin Header	1	Ground	BLK
		2	N/C	-
		3	+5 VDC IN	RED

4.23 POWER DISTRIBUTION BOARD

520-8096-00



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	-
		3	Switched 48V Out (to Node 1)	GRY/YEL
		4	Door Interlock Return Ground	GRY/RED
		5	Door Interlock Return Ground	-
		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
CN6	.156 in 3-Pos Plug: 045-5259-03 Pin: 055-5331-00 (18awg)	1	Ground	-
		2	Ground	-
		3	+12VDC	-
CN7	.084 2-Pos Plug: 045-5200-02 Pin: 055-5033-08	1	+48 VDC to Topper Node	GRY
		2	Ground	BLK

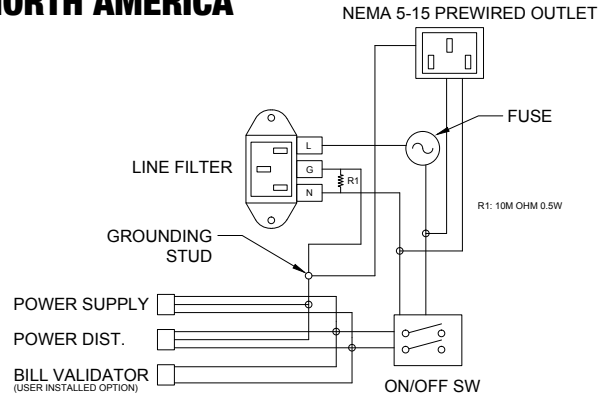
4.24 POWER PLUG WIRING

CAUTION

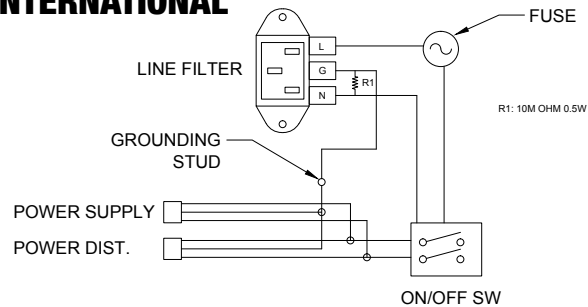
TO MAINTAIN SAFETY, GROUND WIRE FROM LINE FILTER IS TO BE MOUNTED FIRST ON GROUNDING STUD AND SECURED WITH NUT. ALL OTHER GROUNDS MAY THEN BE ATTACHED TO GROUNDING STUD.

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 30G	200-5000-05
220/240v (Europe, Australia, UK)	5 A	Slow Blow 5 x 20mm	200-5003-00



5. PARTS REFERENCE

5.1 PLAYFIELD RUBBER PARTS

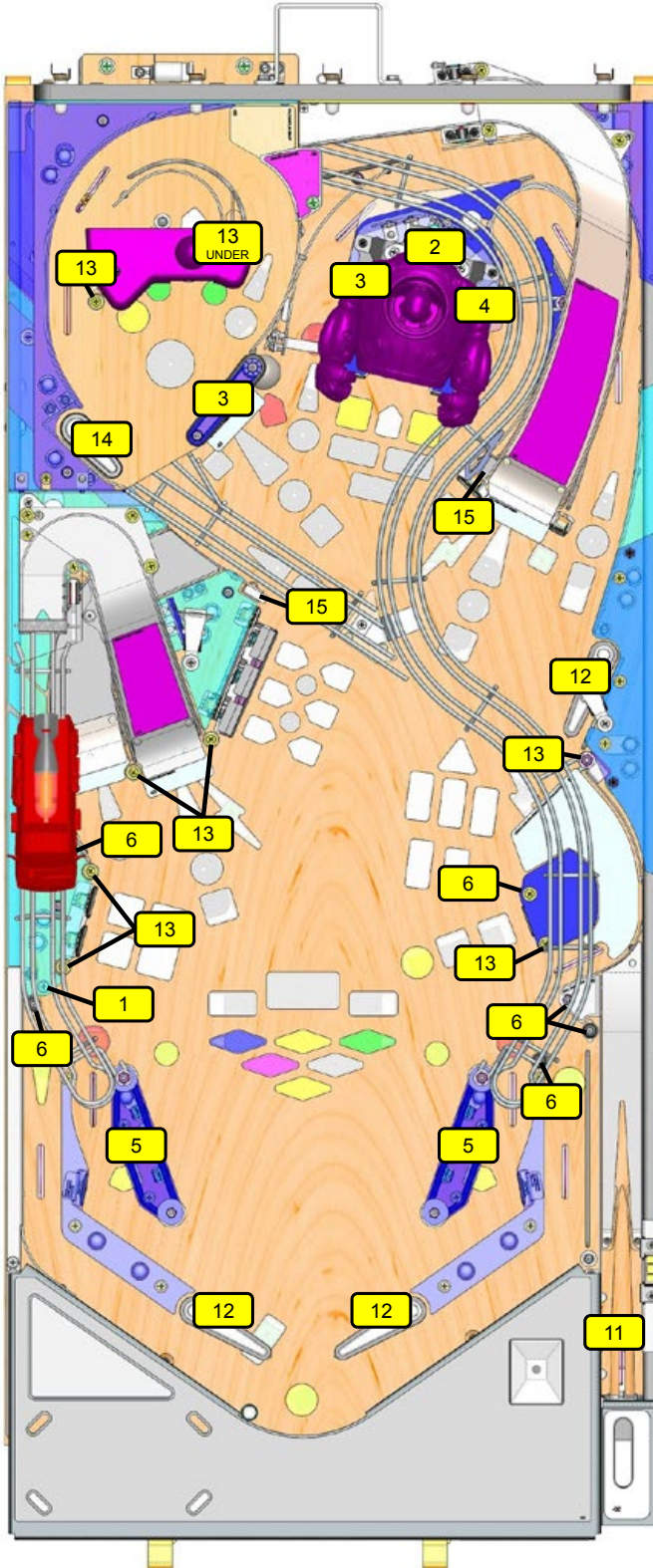


Figure 5.1.1. Rubber o-ring part locations

RUBBER O-RINGS

ID	Qty	Size (ID)	Size (OD)	Durometer	Color	Part Number
1	1	3/16"		50	Black	545-5348-01
2	1	3/4"		50	Black	545-5348-04
3	2	1-1/4"		50	Black	545-5348-06
4	1	1-1/2"		50	Black	545-5348-07
5	2	2-1/2"		50	Black	545-5348-09
6	6		7/16"	50	Black	545-5348-17

Figure 5.2.2. 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	1	Plunger Tip	Black	545-5276-00
12	3	Flipper Rubber	Black	545-5277-00
13	8	Post Sleeve	Black	545-5308-00
14	1	Small Flipper Rubber	Black	545-5207-00
15	2	Bumper Pad	Blue	626-5057-01
16	2	Bumper Pad (Sub assemblies)	Black	545-5105-00
17	3	Bumper Pad (Flippers)	Black	545-5428-00

Figure 5.2.3. Other rubber part numbers and usage

5.2 RUBBER SIZE CHART

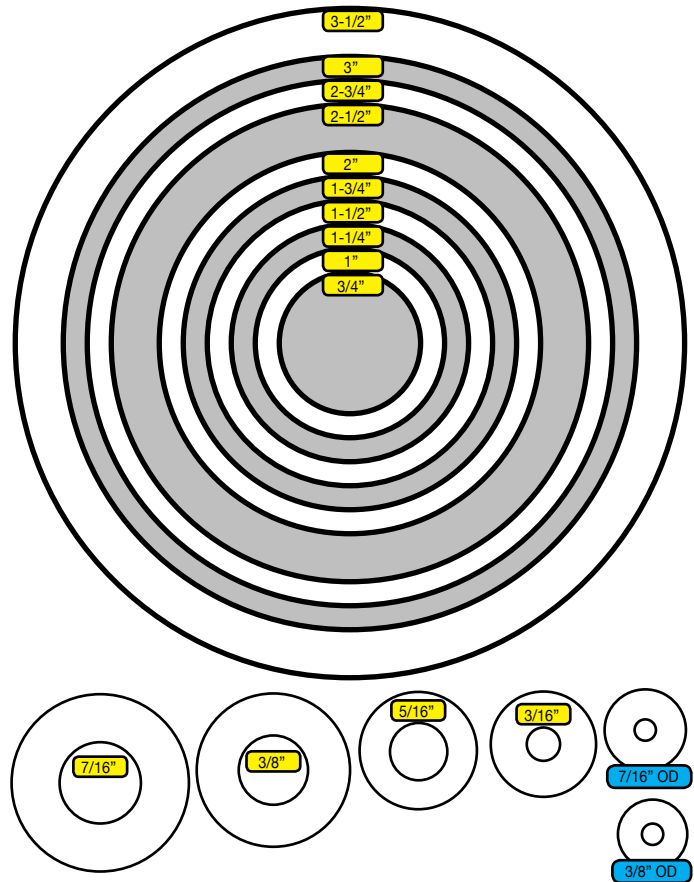
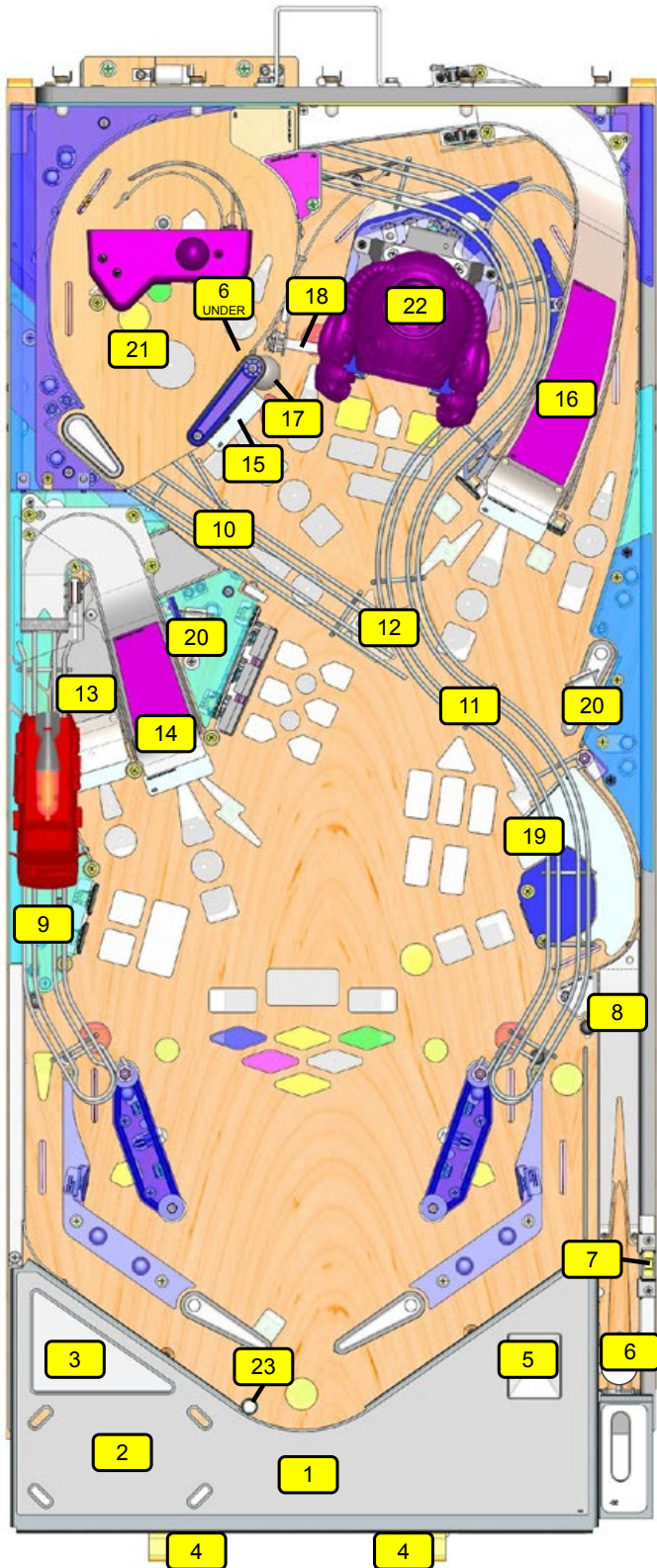


Figure 5.2.1. Rubber ring inner diameter sizing tool. Hold ring up to chart and read largest size on inside of ring. Dimensions are Inner Diameter (ID) unless otherwise noted as Outer Diameter (OD).

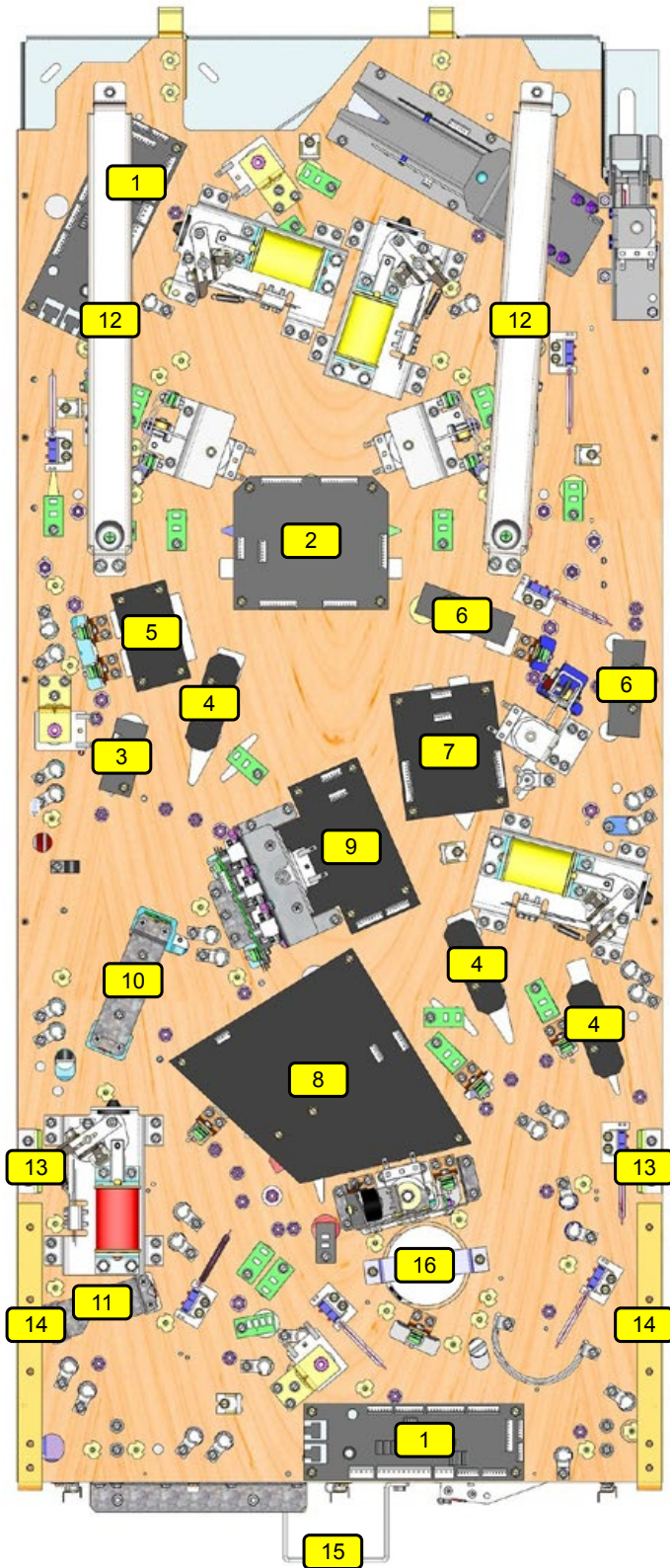
5.3 PLAYFIELD ASSEMBLIES, TOP



ID	Part Number	Description	Qty
1	500-2505-U6	Bottom Arch Assembly	1
2	755-51U6-12-Y	Instruction Card	1
3	755-7665-00	SPI Card	1
4	535-8385-00	Welded Hanger Bracket	2
5	509-2020-00	QR Reader	1
6	260-5000-00	Pinballs	7
7	500-6815-00	Bubble Level Assembly	1
8	535-2720-04	Shooter Lane Ramp	1
9	511-3068-00	Left Wire Ramp Assembly	1
10	515-2782-00	Upper Left Wire Ramp	1
11	515-2781-00	Right Wire Ramp	1
12	237-5871-01	Screw	1
	242-5005-00	Washer	1
13	510-1054-00	Riveted Crossover Ramp	1
14	500-1203-00	Left Lower Ramp Assembly	1
15	500-1202-00	Upper Left Ramp Assembly	1
16	500-1201-00	Right Ramp Assembly	1
17	515-1935-00	Newton Ball	1
18	511-5977-14	Spinner & Ball Guide Assembly	1
	515-2326-00	Spinner Target	1
19	500-1198-01	Kicker Target Assembly	1
20	545-5409-01	Reflector	2
	535-1324-01	Retaining Clip	2
21	500-7415-00	Mini Playfield Assembly	1
22	500-2631-00	Overlord Assembly	1
23	500-7081-02	Ball Deflector	1

Figure 5.3.1. Major playfield assemblies, Top locations.

5.4 PLAYFIELD ASSEMBLIES, BOTTOM



ID	Part Number	Description	Qty
1	520-7017-72 520-1057-00	Core Node Driver Board	2
2	520-8590-00	LED Board - 8b	1
3	520-8598-00	LED Board - 8b1	1
4	520-8596-00	LED Board - 8b2, 8c2, 8c3	3
5	520-8591-00	LED Board - 8b3	1
6	520-7011-00	LED Board - 8b4, 8c1	2
7	520-8594-00	LED Board - 8c	1
8	520-8597-00	LED Board - 9a	1
9	520-8595-00	LED Board - 9b	1
10	511-5988-00	Opto Assembly - Crossover Entry	1
11	511-5989-00	Opto Assembly - Orbit	1
12	535-0781-01	Playfield Support Rail	2
13	500-5329-03	Pivot Bracket Assembly	2
14	535-5988-01	Edge Slide Bracket	2
15	535-2288-00	Handle	1
16	511-5065-ND	Magnet	1

Figure 5.4.1. Major playfield assemblies, Bottom locations.

5.5 BACKBOX PARTS

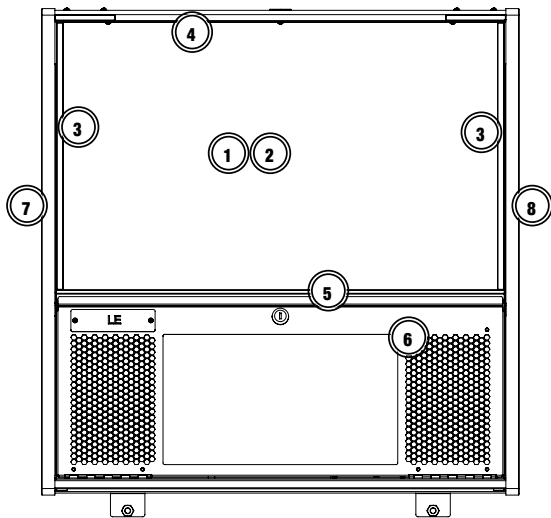


Figure 5.5.1. Backbox external assemblies and components

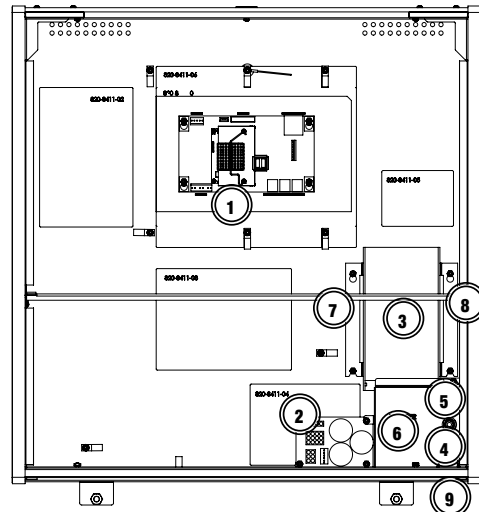


Figure 5.5.2. Backbox internal assemblies and components

EXTERNAL

ID	Part Number	Description	Qty
1	660-5052-00	Backglass	1
2	830-8426-U6	Mirror Backglass [LE]	1
	830-8427-U7	Translite Art [Premium]	1
3	545-5018-17	Plastic Extrusion 15-.450"	2
4	545-5018-15	Glass Channel 26"	1
5	545-6313-01	Glass Lift Channel 26"	1
6	500-9996-00	LCD Speaker Panel Assembly	1
7	820-90U6-01	Left Backbox Decal [LE]	1
	820-76U7-01	Left Backbox Decal [Premium]	1
8	820-90U6-02	Right Backbox Decal [LE]	1
	820-76U7-02	Right Backbox Decal [Premium]	1

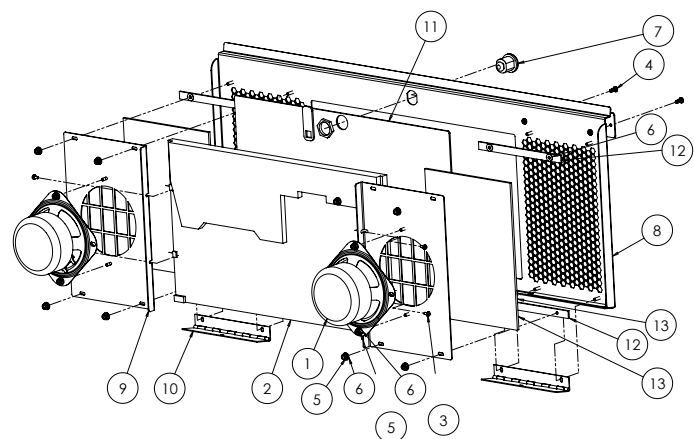
INTERNAL

ID	Part Number	Description	Qty
1	509-1003-01	CPU Node Board	1
2	520-8096-00	Power Distribution Board	1
3	011-5003-00	Power Supply 48V/500W	1
4	515-9769-00	Utility Outlet (USA)	1
5	205-5001-00	Fuse Holder - Screw In	1
	200-5000-05	8A SB Fuse	1
6	535-1130-00	Cover AC	1
7	535-1129-00	Power Supply Bracket	1
8	535-1129-01	Power Supply Bracket	1
9	180-5001-03	Power Switch	1

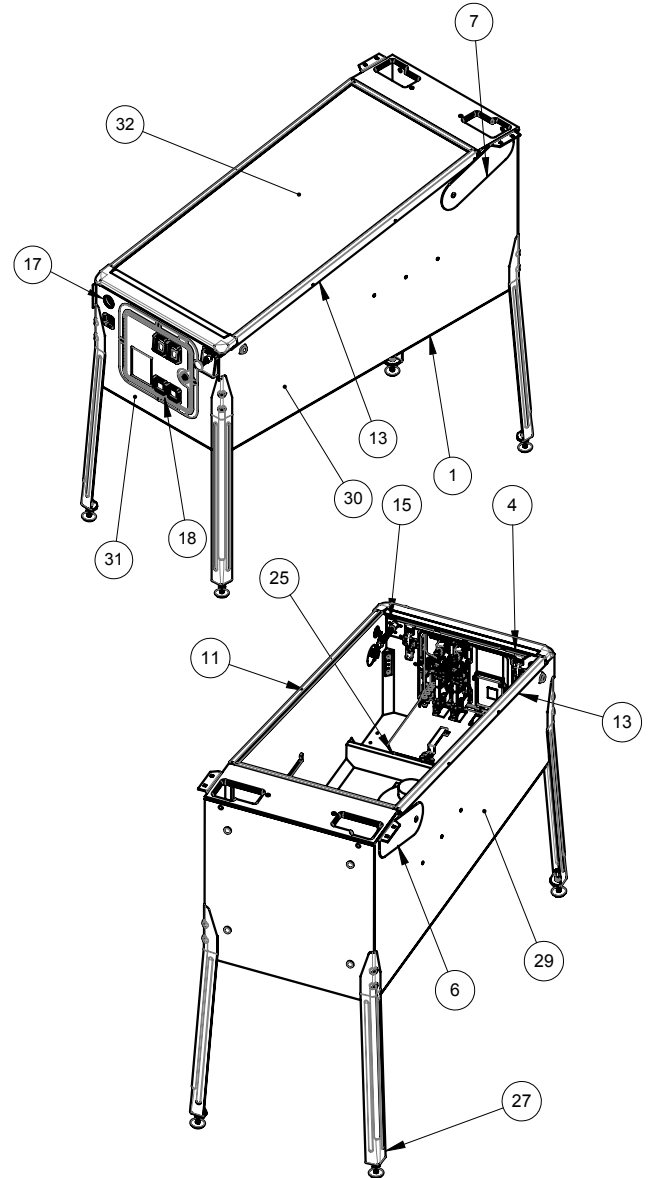
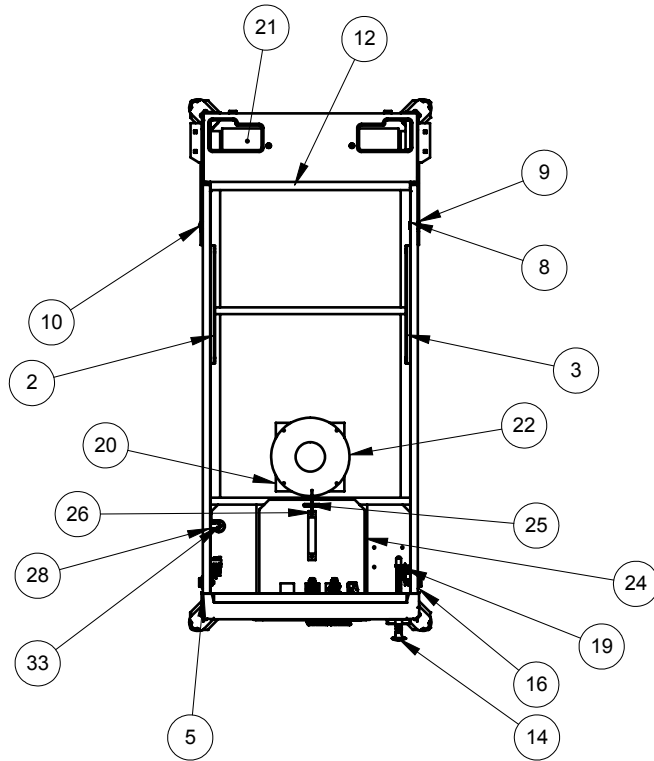
5.6 SPEAKER PANEL PARTS

500-9996-00 / 500-2442-U6

ID	Part Number	Description	Qty
1	031-5004-02	Speaker [Premium]	2
	031-5017-00	Speaker Upgrade 35w 4ohm 5-1/4" Dia. [LE]	2
2	116-0023-00	1366 x 768 Display LCD Panel	1
3	237-6188-01	Screw, M3x0.5 X 6MM PPH Sems Zinc	4
4	237-6307-06	6-32 X 3/8" Torx Stainless Steel Screw	2
5	240-5005-00	6-32 Nylon Stop Nut	12
6	242-5001-00	#6 Washer	16
7	355-5168-00-00	Nut: Lock w/ Cam	1
8	515-9842-00	Speaker Panel - LCD	1
9	515-9843-00	Speaker Plate [Premium]	2
	515-1941-00	Speaker Plate 5-1/4" [LE]	2
10	515-9845-00	Hinge, Speaker Panel, LCD	2
11	545-9877-00	LCD Window	1
12	545-9877-01	Spacer, Small - LCD Speaker Panel	4
13	626-5109-00	Speaker Foam - LCD Panel [Premium]	2
	626-5113-00	Speaker Gasket [LE]	2
14	545-1046-14	Speaker Ring [LE]	2



5.7 CABINET PARTS

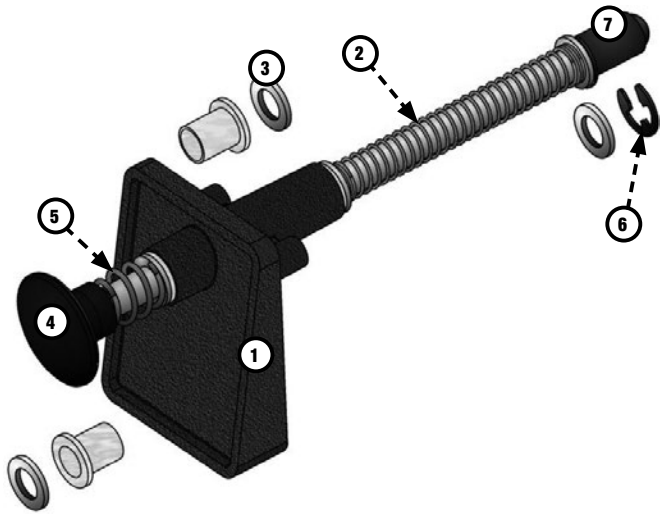


ID	Part Number	Description	Qty
1	525-6026-01	Cabinet (Melamine Single Button)	1
2	535-5989-00	Slide & Pivot Bracket - Left Side	1
3	535-5990-00	Slide & Pivot Bracket - Right Side	1
4	535-2051-00	Cabinet Playfield Support Bracket	1
5	500-2440-43	Front Molding Assembly - Sour Apple [LE]	1
	500-2440-00	Front Molding Assembly - Wrinkle Black [Premium]	1
6	535-7999-43L	Pivot Hinge, Left - Sour Apple [LE]	1
	535-7999-00	Pivot Hinge, Left - Wrinkle Black [Premium]	1
7	535-7999-43R	Pivot Hinge, Right - Sour Apple [LE]	1
	535-7999-01	Pivot Hinge, Right - Wrinkle Black [Premium]	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	231-5072-00	1/4-20 X 1/2" Carriage Bolt	2
11	545-5017-00	Plastic Channel	2
12	545-9802-00	Glass Rear Extrusion	1
13	535-2870-01-43	Side Armor Left - Sour Apple [LE]	1
	535-2870-02-43	Side Armor Right - Sour Apple [LE]	1
	535-7297-02	Side Armor - Wrinkle Black [Premium]	2
14	500-2604-07	Ball Shooter Assembly	1
15	535-5027-01	Plunger Support Plate, Notched	1
16	500-1169-36	Flipper Button Assembly (Yellow)	2
17	500-1060-44-LED	Start Button	1
18	501-5018-173	Coin Door 2-Chute No Emboss	1
19	180-5164-01	Flipper Switch, Double	2
20	545-5072-03	Grill - Speaker / Vent	1
21	545-5072-02	Grill - Speaker / Vent	1
22	031-5007-01	Speaker, Cabinet 8" Round, 4 ohm	1
23	545-5090-00	Cash Box - Plastic	1

24	535-5013-03	Cash Box Cover	1
25	535-7562-00	Cash Box Lock Bracket Wire	1
26	535-7772-00	Hair Pin Clip	1
27	500-5921-43	Leg Assembly - Sour Apple [LE]	4
	500-5921-50	Leg Assembly - Wrinkle Black [Premium]	4
28	516-0007-00	Tilt Assembly	1
29	820-90U6-03	Decal, Cabinet Left, Foo Fighters LE	1
	820-76U7-03	Decal, Cabinet Left, Foo Fighters Premium	1
30	820-90U6-04	Decal, Cabinet Right, Foo Fighters LE	1
	820-76U7-04	Decal, Cabinet Right, Foo Fighters Premium	1
31	820-90U6-05	Decal, Cabinet Front, Foo Fighters LE	1
	820-76U7-05	Decal, Cabinet Front, Foo Fighters Premium	1
32	660-5001-00	Playfield Glass [Premium]	1
	660-5053-00	High Resolution Glass [LE]	1
33	520-6967-72	Cabinet Node Board	1
34	031-5016-00	Woofer 8" RD 4 OHM	1
	820-90U6-XX	Cabinet Decal Replacement Set	
	820-76U7-XX		

5.8 BALL SHOOTER ASSEMBLY

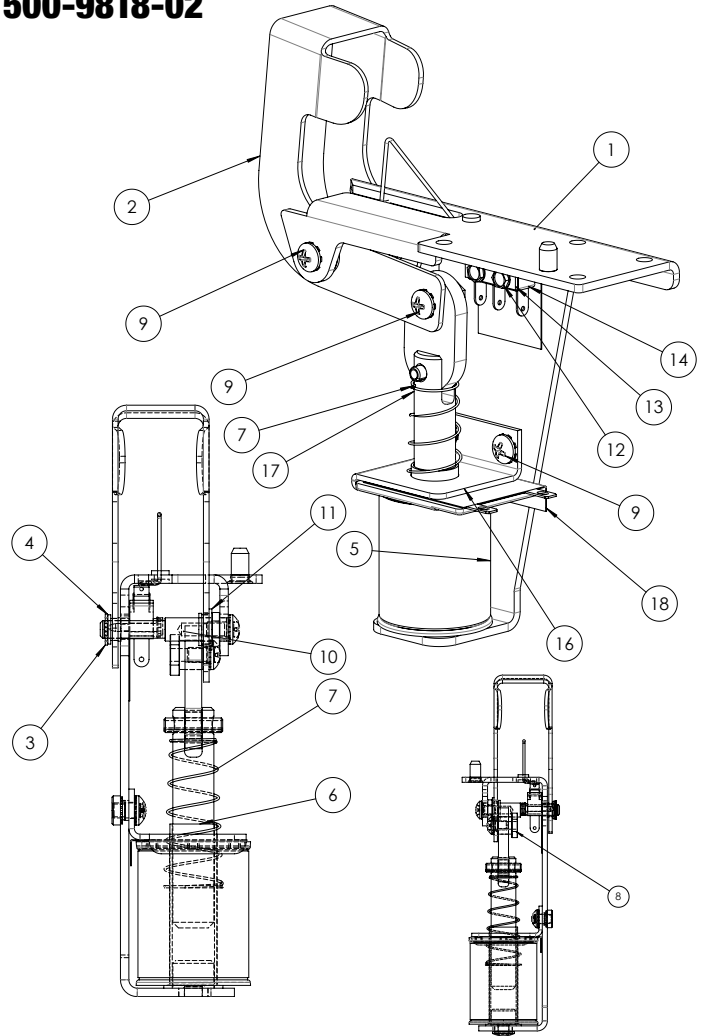
500-2604-07



ID	Part Number	Description	Qty
1	535-5067-02	HOUSING ASSEMBLY	1
2	266-5001-07	COMPRESSED SPRING (LONG) - ORANGE	1
3	242-5014-00	WASHER 3/8 ID X 5/8 OD X 1/16"	3
4	515-6557-00	ROD ASSEMBLY	1
5	266-5010-00	COMPRESSED SPRING (SHORT)	1
6	270-5012-00	RETAINING RING, 3/8"	1
7	545-5276-00	RUBBER TIP	1

5.9 AUTO LAUNCH ASSEMBLY

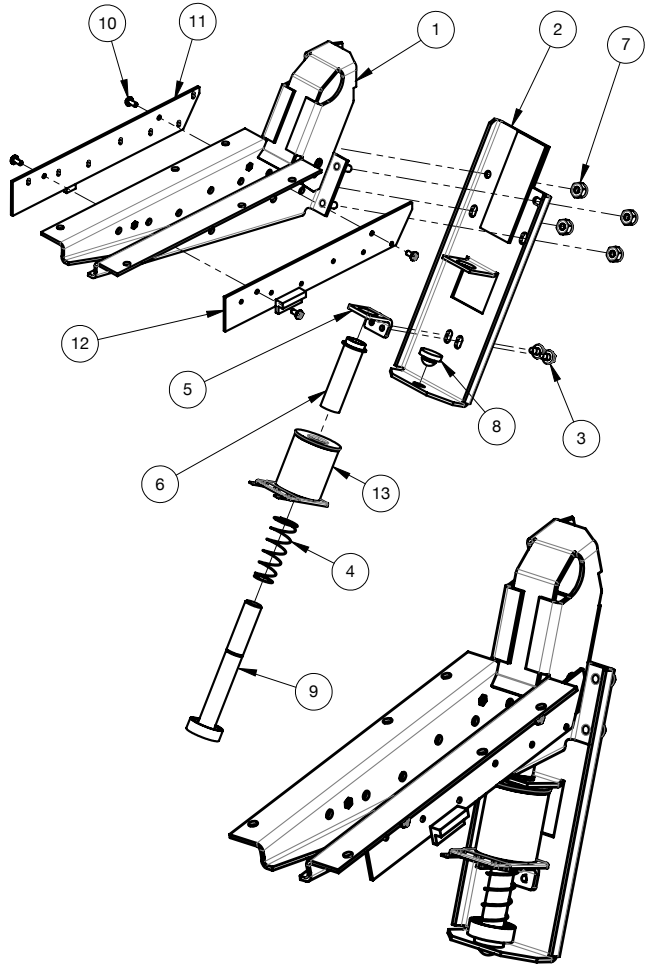
500-9818-02



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

5.10 BALL TROUGH ASSEMBLY

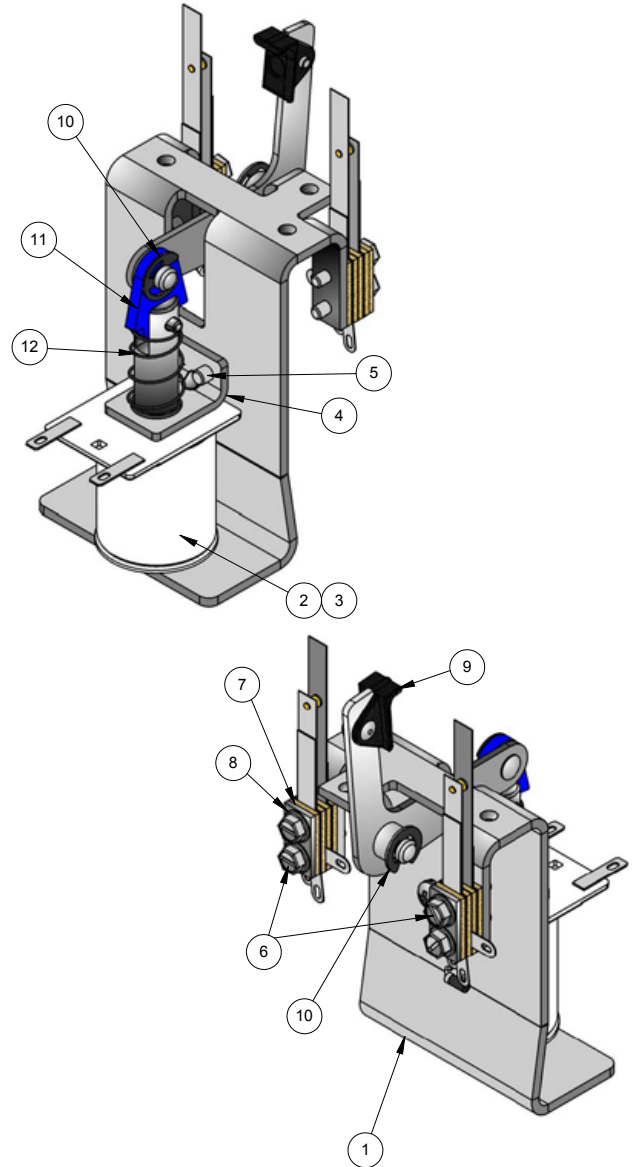
500-9820-01



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	520-8516-00	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

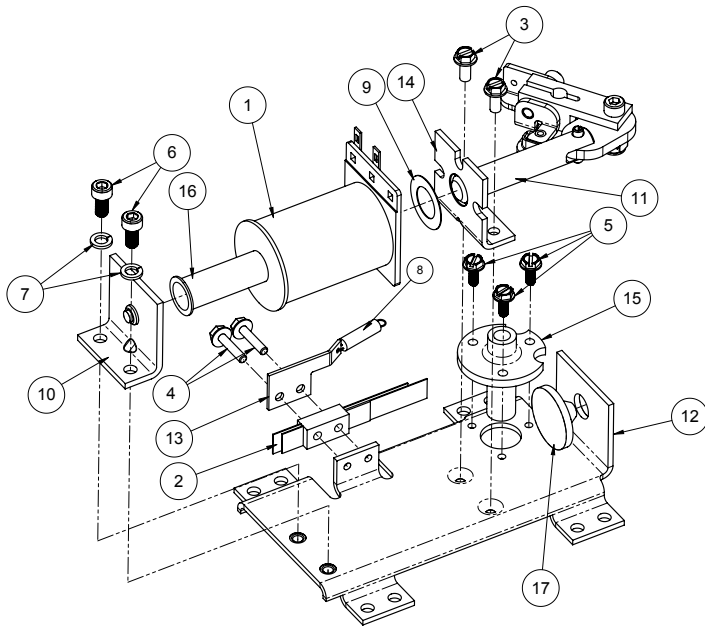
5.11 SLINGSHOT ASSEMBLY

500-9920-01

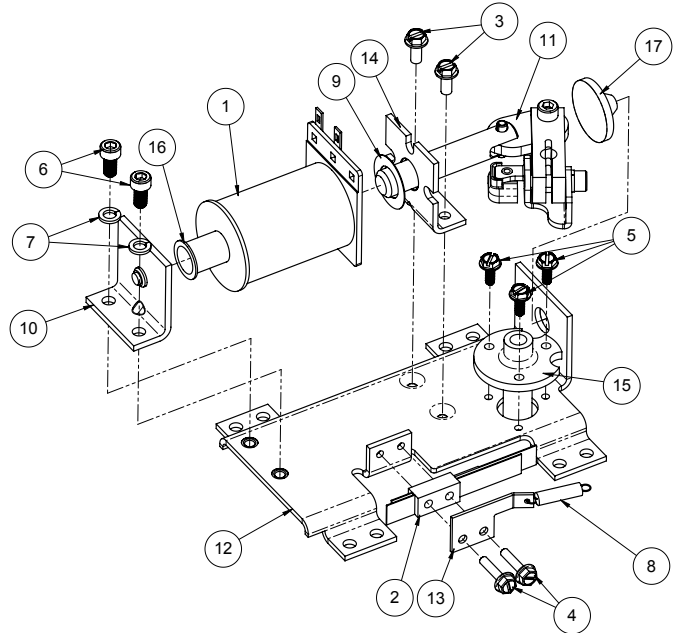


ID	Part Number	Description	Qty
1	515-5339-01	SLINGSHOT BRACKET ASSEMBLY	1
2	090-5044-ND	COIL 26-1200 - NO DIODE	1
3	545-5031-00	COIL SLEEVE	1
4	535-5203-03	COIL RETAINER BRACKET	1
5	232-5301-00	8-32 X 3/8 PPH MS EXT SEMS ZC	2
6	180-5231-00	SWITCH SLING SHOT 2 LUG CENTER	2
7	535-5045-00	SWITCH PLATE	2
8	237-5976-04	6-32 X 5/8 SLOT SER HWH SW	4
9	515-5340-01	ARM & TIP ASSEMBLY	1
10	270-5002-00	RETAINING RING - 1/4 DIA	2
11	515-5338-00	PLUNGER & LINK ASSEMBLY	1
12	266-5020-00	COMP SPRING CONICAL	1
13	036-5604-00	4" GENERIC JUMPER	2

5.12 FLIPPER ASSEMBLY, LEFT LOWER & UPPER: 500-6543-12-ND



5.13 FLIPPER ASSEMBLY, RIGHT LOWER & UPPER: 500-6543-02-ND



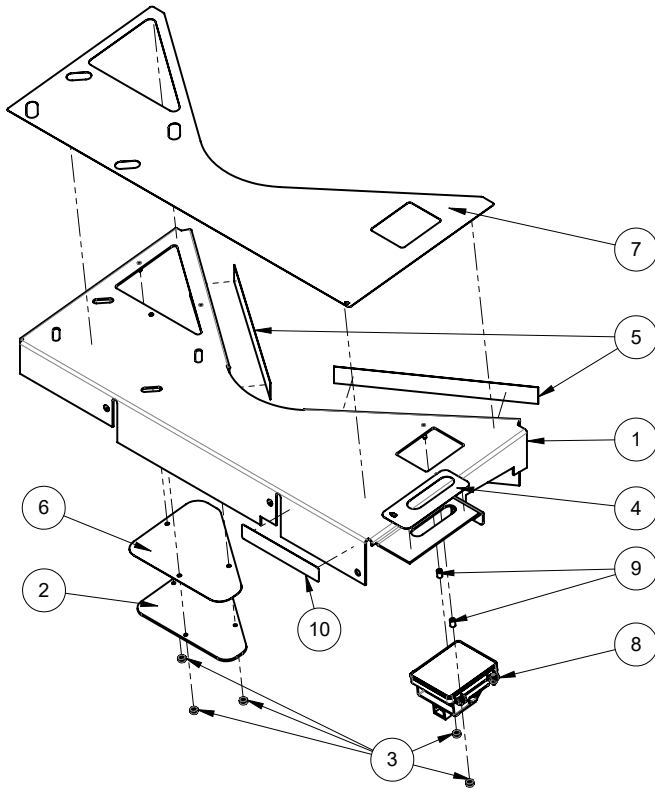
ID	Part Number	Description	Qty
1	090-5032-ND	FLIPPER COIL	1
2	180-5149-00	SWITCH, END-OF-STROKE	1
3	237-5975-00	SCREW, 8-32 X 3/8" HWH SWAGE ZN	2
4	237-5976-04	SCREW, 6-32 X 5/8" HWH SWAGE	2
5	237-6388-00	SCREW, 6-32 X 3/8", SLOTTED HWH, TYPE F	3
6	237-6389-00	SCREW, 10-32 X 3/8", SHC	2
7	244-5003-00	#10 LOCK WASHER, SPLIT	2
8	265-5035-00	EXTENSION SPRING	1
9	269-5002-00	SPRING WASHER	1
10	515-6308-01	COIL STOP ASSEMBLY	1
11	515-7203-01	PLUNGER / CRANK ASSEMBLY	1
12	535-7275-01	FLIPPER BASE PLATE, LEFT	1
13	535-7354-01	SWITCH PLATE / SPRING RTN BRKT	1
14	535-7356-00	COIL BRACKET	1
15	545-5070-00	FLIPPER BUSHING	1
16	545-5388-00	COIL SLEEVE	1
17	545-5428-00	RUBBER BUMPER	1
18	515-5133-08-06	FLIPPER BAT AND SHAFT	1
19	545-5277-00	FLIPPER RUBBER	1

ID	Part Number	Description	Qty
1	090-5032-ND	FLIPPER COIL	1
2	180-5149-00	SWITCH, END-OF-STROKE	1
3	237-5975-00	SCREW, 8-32 X 3/8" HWH SWAGE ZN	2
4	237-5976-04	SCREW, 6-32 X 5/8" HWH SWAGE	2
5	237-6388-00	SCREW, 6-32 X 3/8", SLOTTED HWH, TYPE F	3
6	237-6389-00	SCREW, 10-32 X 3/8", SHC	2
7	244-5003-00	#10 LOCK WASHER, SPLIT	2
8	265-5035-00	EXTENSION SPRING	1
9	269-5002-00	SPRING WASHER	1
10	515-6308-01	COIL STOP ASSEMBLY	1
11	515-7203-00	PLUNGER / CRANK ASSEMBLY	1
12	535-7275-00	FLIPPER BASE PLATE, RIGHT	1
13	535-7354-00	SWITCH PLATE / SPRING RTN BRKT	1
14	535-7356-00	COIL BRACKET	1
15	545-5070-00	FLIPPER BUSHING	1
16	545-5388-00	COIL SLEEVE	1
17	545-5428-00	RUBBER BUMPER	1
18	515-5133-08-06	FLIPPER BAT AND SHAFT	1
19	545-5277-00	FLIPPER RUBBER	1

SMALL UPPER FLIPPER

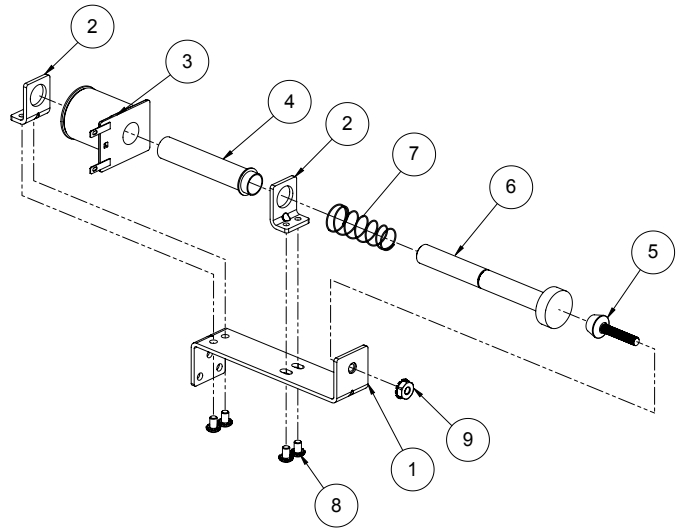
ID	Part Number	Description	Qty
1	544-2001-26-08	SMALL FLIPPER BAT AND SHAFT	1
2	545-5207-00	FLIPPER RUBBER	1
3	545-7911-00	CLOSE OUT PLATE	1
4	242-5008-00	WASHER	1
5	530-5634-05	SMALL FLIPPER SHAFT SPACER	1

5.14 BOTTOM ARCH ASSEMBLY 500-2505-XX



ID	Part Number	Description	Qty
1	510-7805-00	BOTTOM ARCH, STEEL W/ SPADE BOLT, QR READY	1
2	830-8502-XX	LEFT SIDE ARCH PLASTIC	1
3	240-5303-00	4-40 NYLON LOCK NUT	5
4	820-97XX-02	METAL ARCH DECAL SET -02	1
5	545-5212-04	MYLAR PROTECT STRIP 7-5/8"	2
6	545-9923-00	COVER, SIGNATURE PROTECTOR, METAL ARCH	1
7	820-97XX-01	METAL ARCH DECAL SET -01	1
8	509-2020-00	QR SCANNER M306 ASSEMBLY	1
9	254-5090-04	PLASTIC SPACER #4 SCREW, 3/16" OD - 9/32" LENGTH	2
10	820-5422-00	WARNING DECAL, BOTTOM ARCH, QR READER	1

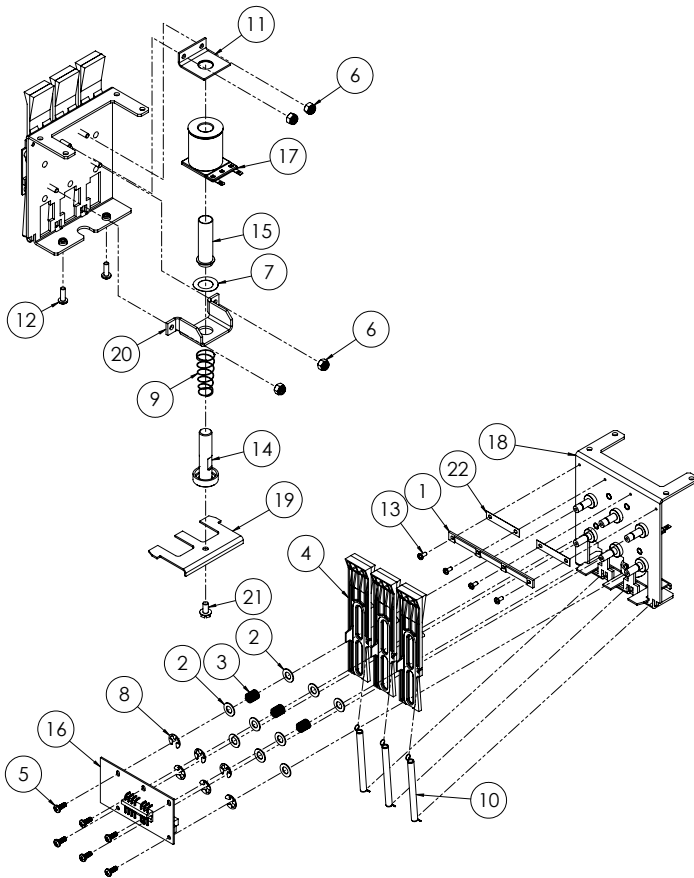
5.15 BALL DEFLECTOR ASSEMBLY 500-7081-02



ID	Part Number	Description	Qty
1	535-9248-00	BRACKET	1
2	535-5203-03	COIL RETAINING BRACKET	2
3	090-5044-ND	COIL 26-1200 - NO DIODE	1
4	545-5847-00	COIL SLEEVE	1
5	280-5014-00	ADJUSTABLE BUMPER/STOP	1
6	515-7653-00	PLUNGER ASSEMBLY	1
7	266-5020-00	COMPRESSION SPRING-CONICAL	1
8	232-5300-00	SCREW, 8-32 X 1/4" PPH SEMS	4
9	240-5208-00	10-32 KEPS NUT	1

5.16 3-BANK DROP TARGET ASSEMBLY

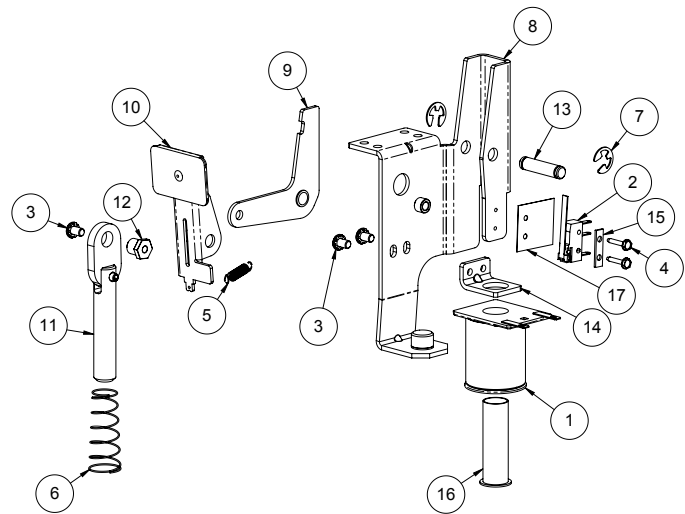
500-1110-03



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-XX	TARGET - ROLLOVER	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	520-8497-00	3 BANK DROP TARGET PCB-OPTO, W/ RIGHT ANGLE CONN	1
17	090-5034-ND	COIL 25-1240 - NO DIODE	1
18	515-9927-03	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

5.17 KICK TARGET ASSEMBLY

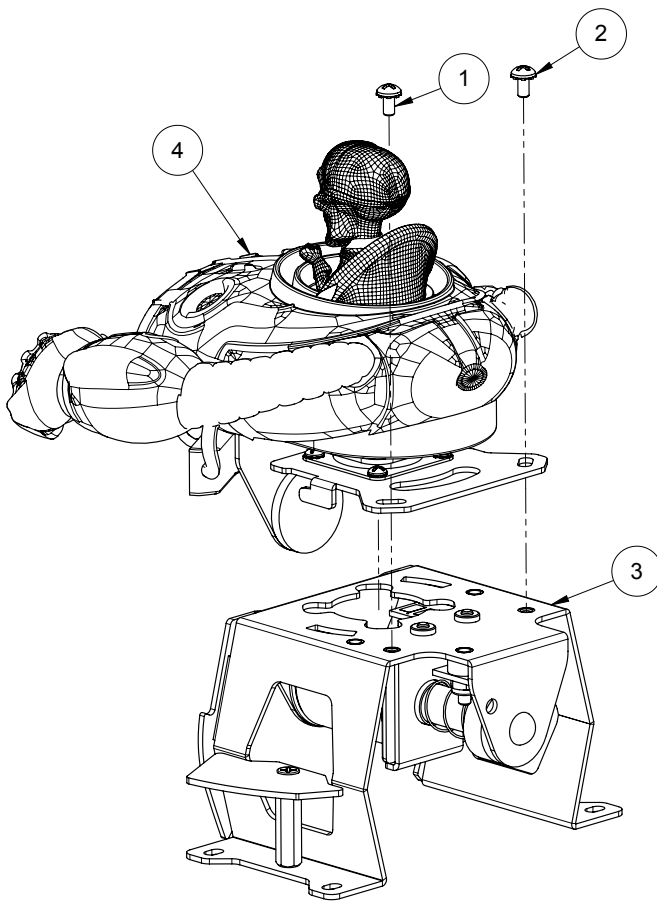
500-1198-01



ID	Part Number	Description	Qty
1	090-5036-ND	COIL, 24-940, NO DIODE	1
2	180-5010-04	MICRO-SWITCH	1
3	232-5300-00	SCREW, 8-32 X 1/4" PPH SEMS	3
4	237-5937-02	SCREW, 2-56 X 1/2" HWH MS	2
5	265-5090-00	EXT SPRING SS 0.188 OPEN HOOKS X 0.75 INSIDE LG	1
6	266-5020-00	COMPRESSION SPRING-CONICAL	1
7	270-5002-00	RETAINING RING - 1/4"	2
8	515-1080-00	KICK TARGET MAIN BRACKET ASSEMBLY	1
9	515-1081-00	KICK TARGET ARM ASSEMBLY	1
10	515-1082-01	KICK TARGET ARM ASSEMBLY 1.50 BLACK	1
11	515-6304-03	PLUNGER / LINK ASSEMBLY	1
12	530-7834-00	PIN: KICKER ARM, AUTO-PLUNGER	1
13	530-7865-08	PIVOT PIN-.250" DIA.	1
14	535-5203-03	COIL RETAINING BRACKET	1
15	535-6539-00	SWITCH BODY PROTECT PLATE	1
16	545-5031-00	COIL SLEEVE	1
17	545-6268-00	FISCHE PAPER	1

5.18 OVERLORD ASSEMBLY

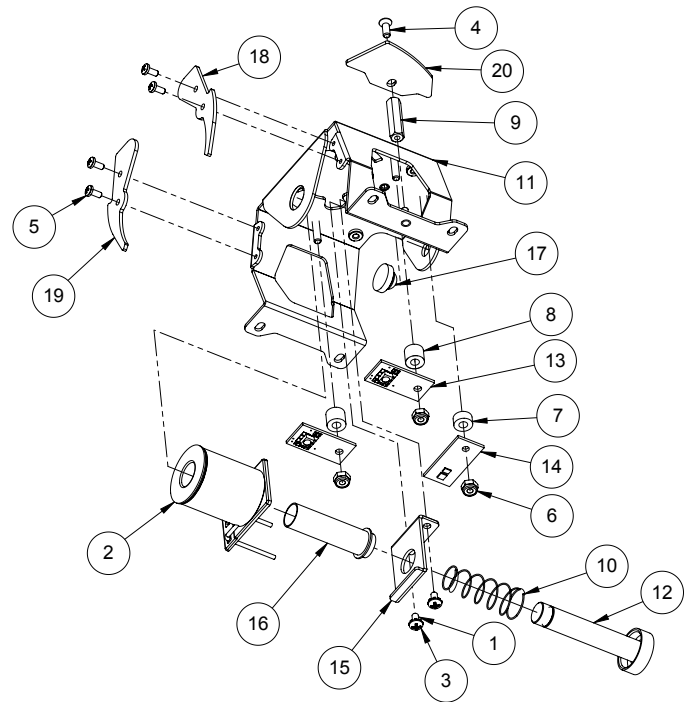
500-2631-00



ID	Part Number	Description	Qty
1	000-5093-00	LOCTITE THREAD LOCK 425 "DARK BLUE CYANOACRYLATE"	1
2	232-5200-00	SCREW, 6-32 X 1/4" PPH SEMS	2
3	511-3100-00	ASM OVERLORD BASE	1
4	511-3101-00	ASM OVERLORD BUSHING	1

5.19 OVERLORD BASE ASSEMBLY

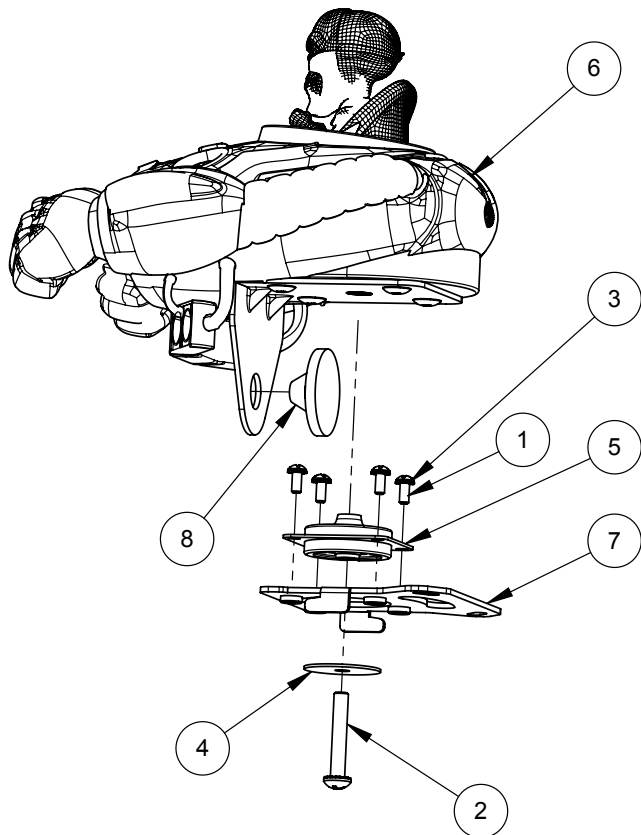
511-3100-00



ID	Part Number	Description	Qty
1	000-5093-00	LOCTITE THREAD LOCK 425 "DARK BLUE CYANOACRYLATE"	1
2	090-5091-00	COIL, 26-1200, NO DIODE, LUGLESS	1
3	232-5200-00	SCREW, 6-32 X 1/4" PPH SEMS	2
4	237-5850-01	SCREW, 6-32 X 3/8 PPH BLACK	1
5	237-6331-00	SCREW, 4-40 X 1/4" PPH MS BLACK	4
6	240-5005-00	6-32 NYLON STOP NUT	3
7	254-5000-18	NYLON SPACER - BLACK - 3/8 OD X .175 ID X 3/16"	1
8	254-5000-20	NYLON SPACER - BLACK - 3/8 OD X .175 ID X 5/16"	2
9	254-5008-06	HEX SPACER - 1"	1
10	266-5020-00	COMPRESSION SPRING-CONICAL	1
11	515-2830-00	BRACKET, OVERLORD	1
12	515-8866-06	PLUNGER ASSEMBLY - FLAT TIP	1
13	520-5333-00	SINGLE RGB BOARD	2
14	520-7000-00	SINGLE FLASH LED BOARD	1
15	535-2831-00	BRACKET, COIL, ANTI-ROTATION, .875"	1
16	545-5076-01	COIL SLEEVE	1
17	545-5105-00	RUBBER BUMPER	1
18	830-5576-95	FOO FIGHTERS PLASTIC -95	1
19	830-5576-96	FOO FIGHTERS PLASTIC -96	1
20	830-8536-94	FOO FIGHTERS PREM-LE PLASTIC -94	1

5.20 OVERLORD BUSHING ASSEMBLY

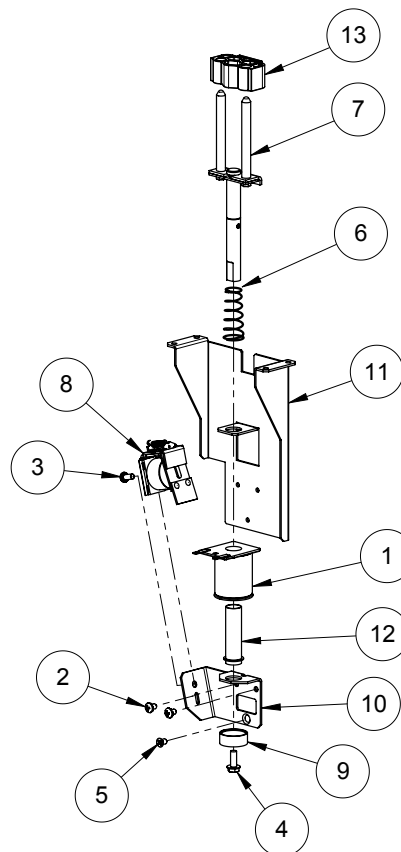
511-3101-00



ID	Part Number	Description	Qty
1	000-5093-00	LOCTITE THREAD LOCK 425 "DARK BLUE CYANOACRYLATE"	1
2	232-5306-00	SCREW, 8-32 X 1" PPH MS SEMS	1
3	237-5909-00	SCREW, 4-40 X 1/4" PPH SEMS	4
4	247-5002-00	WASHER STL ZNC 0.170ID X 0.88OD X .03TH	1
5	282-5004-00	VIBRATION DAMPING MOUNT 45A 1IN CENTERS	1
6	515-2822-00	OVERLORD ASSEMBLY	1
7	535-2832-00	BRACKET, OVERLORD	1
8	545-5428-00	RUBBER BUMPER	1

5.21 OVERLORD BALL LOCK ASSEMBLY

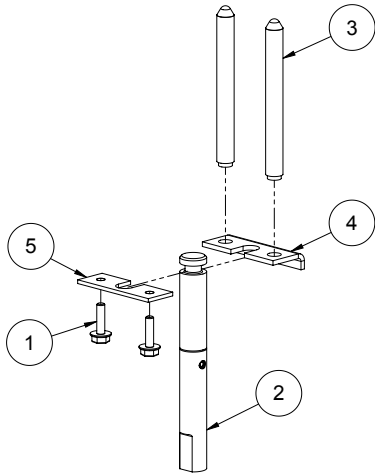
500-2616-00



ID	Part Number	Description	Qty
1	090-5044-ND	COIL 26-1200 - NO DIODE	1
2	232-5300-00	SCREW, 8-32 X 1/4" PPH SEMS	2
3	232-5301-00	SCREW, 8-32 X 3/8" PPH SEMS	1
4	237-5995-00	SCREW, 10-32 X 1/2" HWH SERR MS ZI	1
5	237-6030-02	SCREW, 8-32 X 1/4" PFH MS	1
6	266-5020-02	COMPRESSION SPRING-CONICAL	1
7	511-6003-00	ASM FORK POST OVERLORD	1
8	515-1936-00	RAMP VUK, LATCH COIL ASSEMBLY	1
9	530-5511-00	PLUNGER HEAD	1
10	535-1844-00	BRACKET, RAMP VUK LATCH	1
11	535-5558-00	BRACKET, FORK POST UP/DOWN	1
12	545-5076-01	COIL SLEEVE	1
13	545-6816-01	BEARING BLOCK - BALL LOCK	1

5.22 OVERLORD FORK POST ASSEMBLY

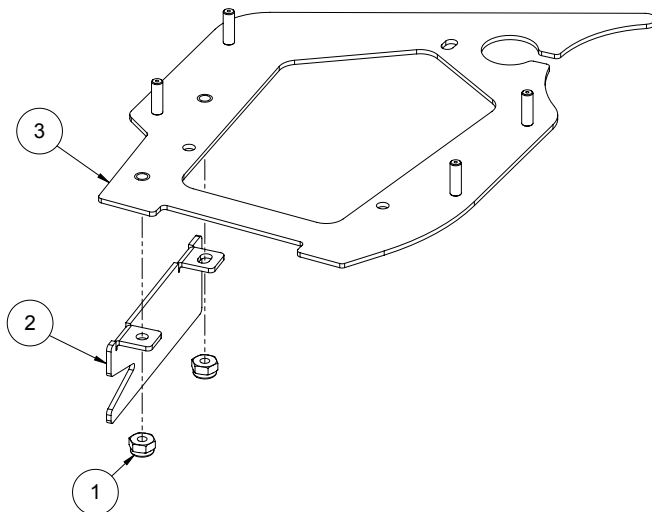
511-6003-00



ID	Part Number	Description	Qty
1	237-5976-03	SCREW, 6-32 X 1/2" HWH MS	2
2	515-2791-00	FORK POST PLUNGER ASSEMBLY	1
3	530-6564-00	BALL LOCK BAR	2
4	535-0394-00	BRACKET, LOCK BAR SUPPORT	1
5	535-0395-00	LIFT PLATE, BALL LOCK	1

5.23 OVERLORD BASE PLATE ASSEMBLY

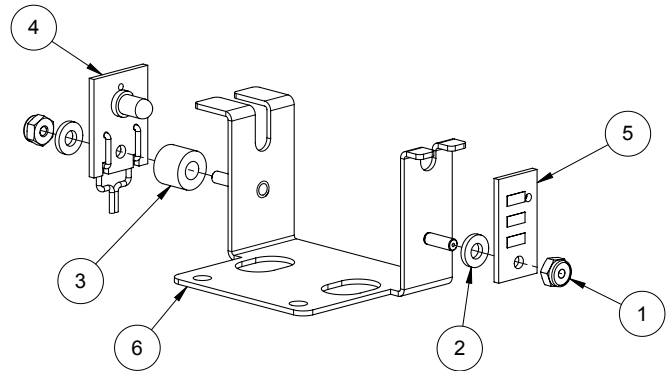
511-3102-00



ID	Part Number	Description	Qty
1	240-5005-00	6-32 NYLON STOP NUT	2
2	535-2720-26	BALL GUIDE, FOO FIGHTERS, -26	1
3	535-2830-00	PLATE, OVERLORD, PROTECTOR	1

5.24 OVERLORD BALL LOCK OPTO ASSEMBLY

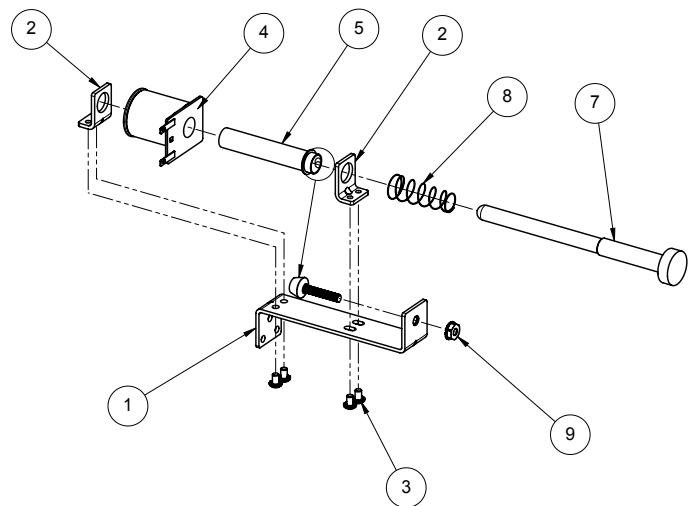
511-5977-12



ID	Part Number	Description	Qty
1	240-5303-00	4-40 NYLON LOCK NUT	2
2	242-5079-00	WASHER, .150 I.D. X .312 O.D. X .050 THICK	2
3	254-5000-20	NYLON SPACER - BLACK - 3/8 OD X .175 ID X 5/16"	1
4	515-0215-00	LONG RANGE OPTO EMITTER ASSEMBLY	1
5	520-8068-00	PCB, IR OPTO RECEIVER	1
6	535-2720-12	BALL GUIDE, FOO FIGHTERS, -12	1

5.25 UP POST ASSEMBLY

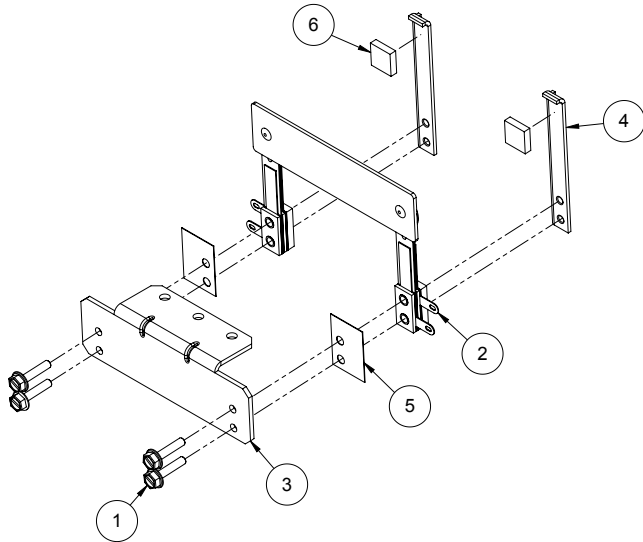
500-6657-04-ND



ID	Part Number	Description	Qty
1	535-9248-00	BRACKET	1
2	535-5203-03	COIL RETAINING BRACKET	2
3	232-5300-00	SCREW, 8-32 X 1/4" PPH SEMS	4
4	090-5044-ND	COIL 26-1200 - NO DIODE	1
5	545-5847-00	COIL SLEEVE	1
6	280-5014-00	ADJUSTABLE BUMPER/STOP	1
7	515-7223-00	SOLID PLUNGER ASSEMBLY	1
8	266-5022-00	COMPRESSION SPRING-CONICAL	1
9	240-5208-00	10-32 KEPS NUT	1

5.26 REVERSE MOUNT PADDLE TARGET ASSEMBLY

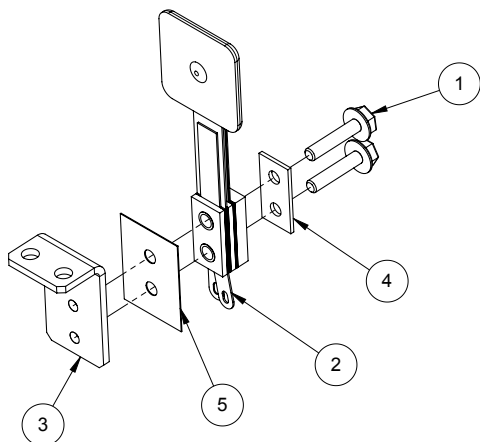
511-5985-00



ID	Part Number	Description	Qty
1	237-5976-04	SCREW, 6-32 X 5/8" HWH SWAGE	4
2	510-1084-00	ASM DUAL TARGET LUGS OUT	1
3	535-2766-00	BRACKET, PADDLE TARGET, 3.625", REVERSE MOUNT	1
4	535-9823-01	SWITCH BACK PLATE	2
5	545-7874-00	FISCHE PAPER - S/U TARGET	2
6	626-5029-00	FOAM PAD	2

5.27 INLANE TARGET ASSEMBLY

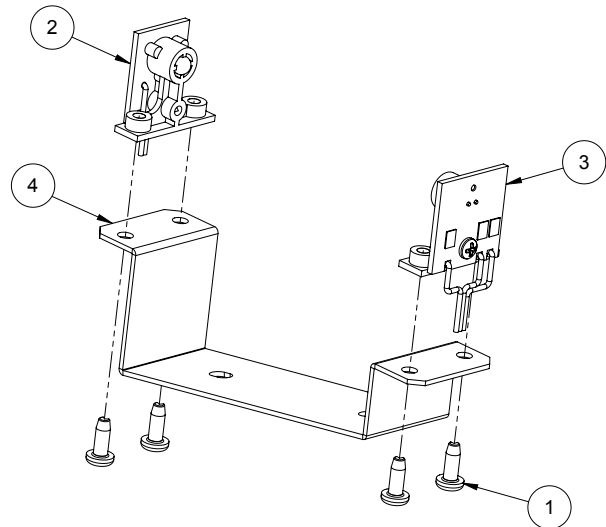
500-2621-00



ID	Part Number	Description	Qty
1	237-5976-04	SCREW, 6-32 X 5/8" HWH SWAGE	2
2	515-9783-00-00	1" SQ. TARGET SWITCH - ANTILOFT- 2 LUG - BLACK	1
3	535-2808-00	TARGET, STANDUP BRACKET NO BACKER	1
4	535-7344-00	SWITCH PLATE	1
5	545-9782-00	FISCHE PAPER-SYMMETRICAL	1

5.28 CROSSOVER ENTRY OPTO BRACKET ASSEMBLY

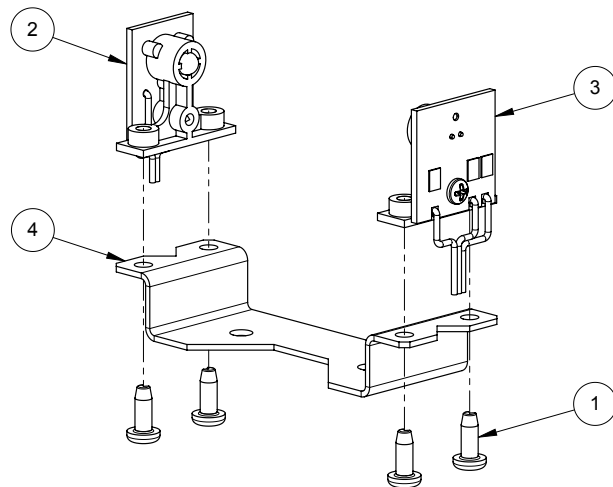
511-5988-00



ID	Part Number	Description	Qty
1	237-5880-00	SCREW, #6 X 3/8 PPH T-25	4
2	515-0215-00	LONG RANGE OPTO EMITTER ASSEMBLY	1
3	515-0215-01	LONG RANGE OPTO RECEIVER ASSEMBLY	1
4	535-2787-00	BRACKET, OPTO, FOO FIGHTERS	1

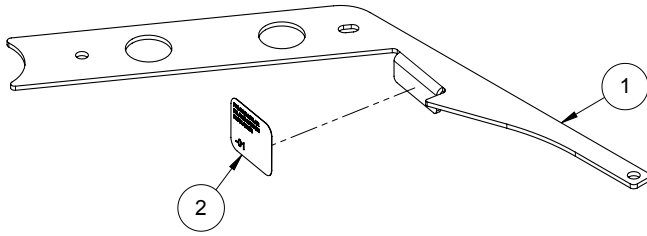
5.29 LEFT LOOP OPTO BRACKET ASSEMBLY

511-5989-00



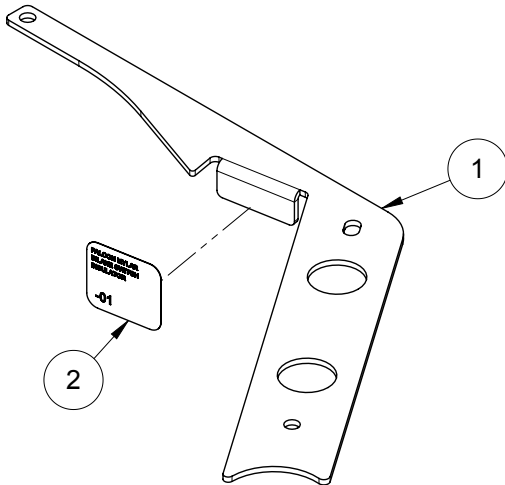
ID	Part Number	Description	Qty
1	237-5880-00	SCREW, #6 X 3/8 PPH T-25	4
2	515-0215-00	LONG RANGE OPTO EMITTER ASSEMBLY	1
3	515-0215-01	LONG RANGE OPTO RECEIVER ASSEMBLY	1
4	535-2788-00	BRACKET, OPTOS, 3in	1

5.30 BALL GUIDE 01 ASSEMBLY 511-5977-01



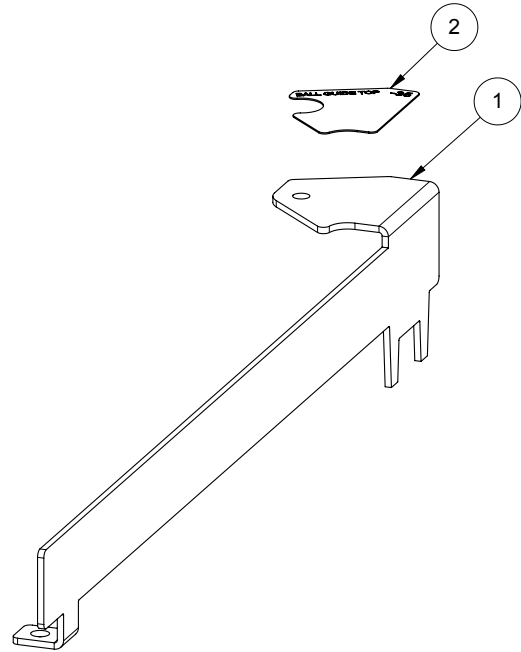
ID	Part Number	Description	Qty
1	535-2720-01	LEFT RETURN INLANE BALL GUIDE, FOO FIGHTERS	1
2	820-7934-01	MYLAR -01 FOO FIGHTERS	1

5.31 BALL GUIDE 02 ASSEMBLY 511-5977-02



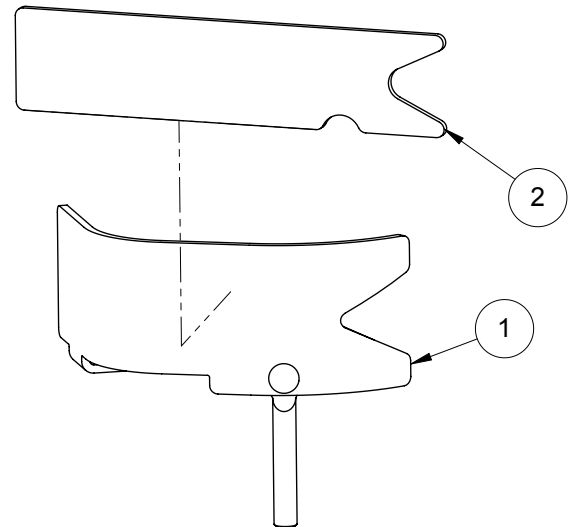
ID	Part Number	Description	Qty
1	535-2720-02	RIGHT RETURN INLANE BALL GUIDE, FOO FIGHTERS	1
2	820-7934-01	MYLAR -01 FOO FIGHTERS	1

5.32 BALL GUIDE 03 ASSEMBLY 511-5977-03



ID	Part Number	Description	Qty
1	535-2720-03	BALL GUIDE, FOO FIGHTERS, -03	1
2	820-7935-35	FOO FIGHTERS DECAL -35 BALL GUIDE TOP	1

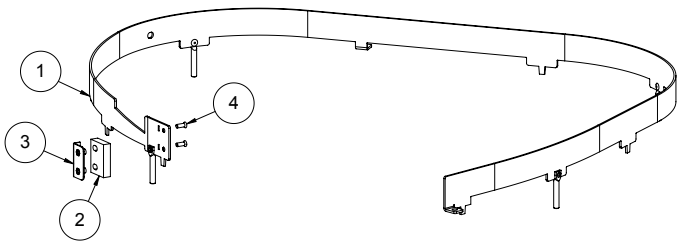
5.33 BALL GUIDE 08 ASSEMBLY 511-5977-08



ID	Part Number	Description	Qty
1	535-2720-08	BALL GUIDE, FOO FIGHTERS, -08	1
2	820-7944-00	FOO FIGHTERS BALL GUIDE CUSHION	1

5.34 BALL GUIDE 10 ASSEMBLY

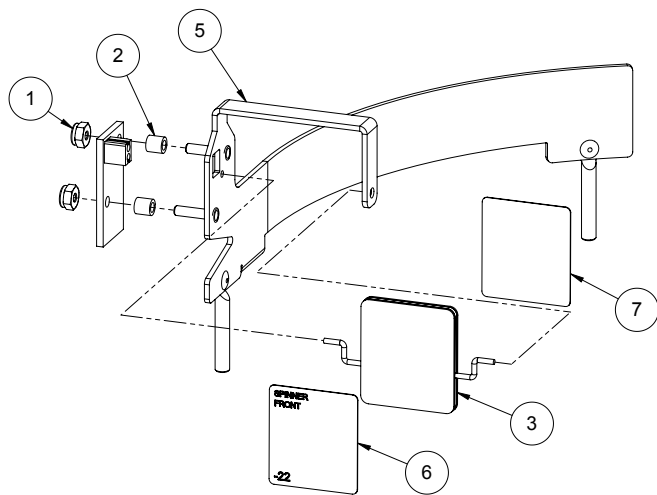
511-5977-10



ID	Part Number	Description	Qty
1	535-2720-10	BALL GUIDE, FOO FIGHTERS, -10	1
2	626-5057-01	RUBBER BUMPER	1
3	535-1355-00	RIGHT RAMP EDGE PROTECTOR	1
4	237-6151-00	SCREW, 4-40 X 5/16" PFH U/C MS	2

5.35 BALL GUIDE 14 ASSEMBLY

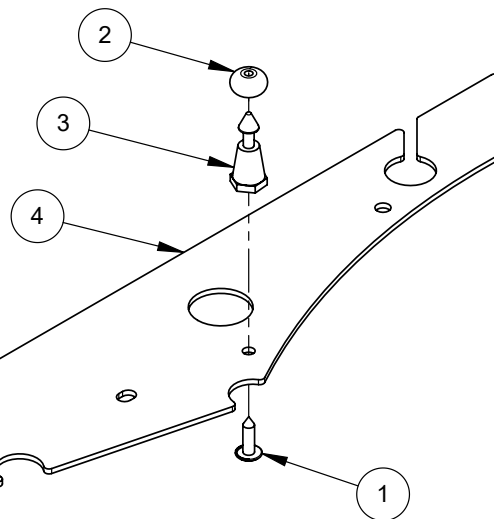
511-5977-14



ID	Part Number	Description	Qty
1	240-5303-00	4-40 NYLON LOCK NUT	2
2	254-5090-01	PLASTIC SPACER #4 SCREW, 3/16" OD - 3/16" LENGTH	2
3	515-2326-00	SPINNER TARGET, REFLECTIVE OPTO	1
4	520-8541-00	PCA SPINNER REFLECTIVE OPTIC	1
5	535-2720-14	BALL GUIDE, FOO FIGHTERS, -14	1
6	820-7935-22	FOO FIGHTERS DECAL -22 SPINNER FRONT	1
7	820-7935-23	FOO FIGHTERS DECAL -23 SPINNER BACK	1

5.36 PLASTIC 05 ASSEMBLY

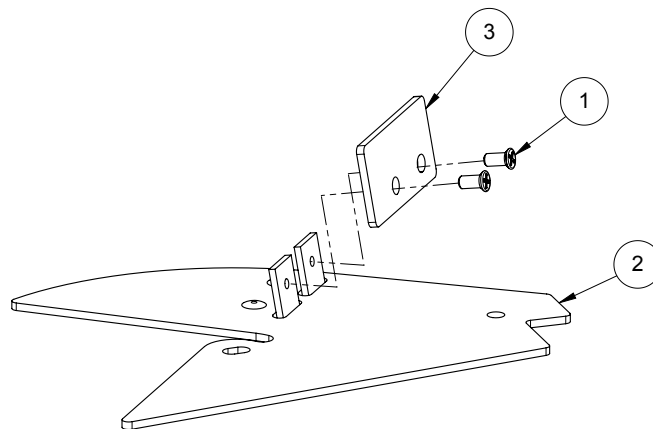
511-5978-05



ID	Part Number	Description	Qty
1	237-5809-00	SCREW, #6 X 1/2" PTH A	1
2	545-5348-17	7/16 O.D. RUBBER RING - BLACK	1
3	550-5052-02	MINI POST - RED	1
4	830-5576-05	FOO FIGHTERS PLASTIC -05	1

5.37 PLASTIC 06 ASSEMBLY

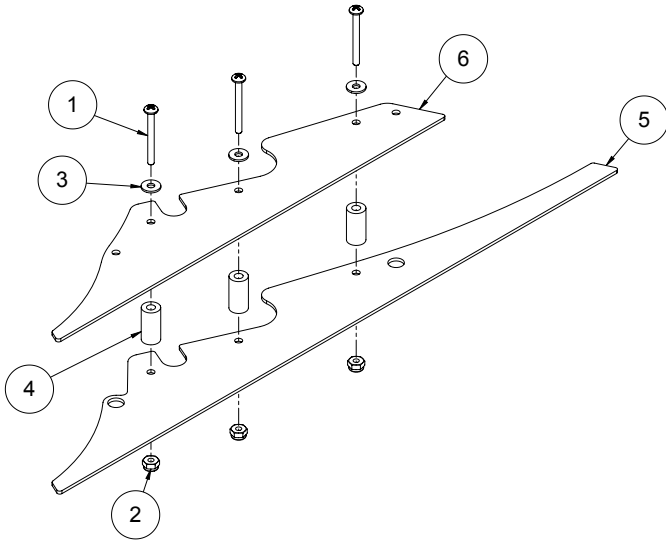
511-5978-06



ID	Part Number	Description	Qty
1	237-5983-04	SCREW, 4-40 X 1/4" PFH - BLACK - 82° UC	2
2	510-5809-06	RIVETED PLASTIC -06	1
3	830-5576-32	FOO FIGHTERS PLASTIC -32	1

5.38 PLASTIC 08 ASSEMBLY

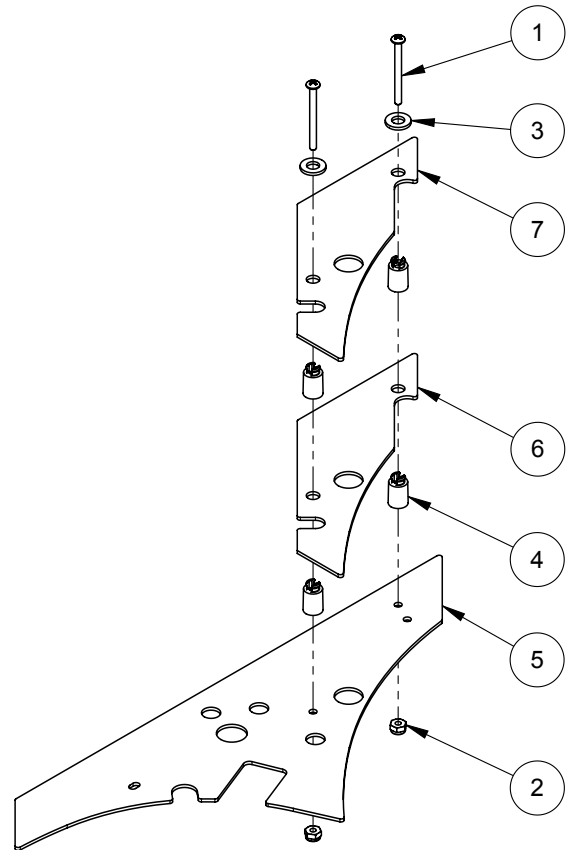
511-5978-08



ID	Part Number	Description	Qty
1	237-5508-00	SCREW, 6-32 X 1-1/4 PPH MS	3
2	240-5005-00	6-32 NYLON STOP NUT	3
3	242-5001-00	#6 WASHER	3
4	254-5000-07	NYLON SPACER - BLACK - 3/8 OD X .175 ID X 3/4"	3
5	830-5576-08	FOO FIGHTERS PLASTIC -08	1
6	830-5576-48	FOO FIGHTERS PLASTIC -48	1

5.40 PLASTIC 14 ASSEMBLY

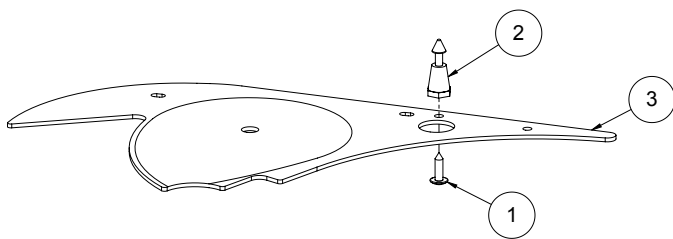
511-5978-14



ID	Part Number	Description	Qty
1	237-5510-00	SCREW, 6-32 X 1-1/2" PPH MS	2
2	240-5005-00	6-32 NYLON STOP NUT	2
3	242-5008-00	WASHER, 1/4" ID X 1/2" OD X 1/16" THICK	2
4	254-5054-00	PLASTICS MTG SPACER, .500	4
5	830-8536-14	FOO FIGHTERS PREM-LE PLASTIC -14	1
6	830-8536-88	FOO FIGHTERS PREM-LE PLASTIC -88	1
7	830-8536-89	FOO FIGHTERS PREM-LE PLASTIC -89	1

5.39 PLASTIC 12 ASSEMBLY

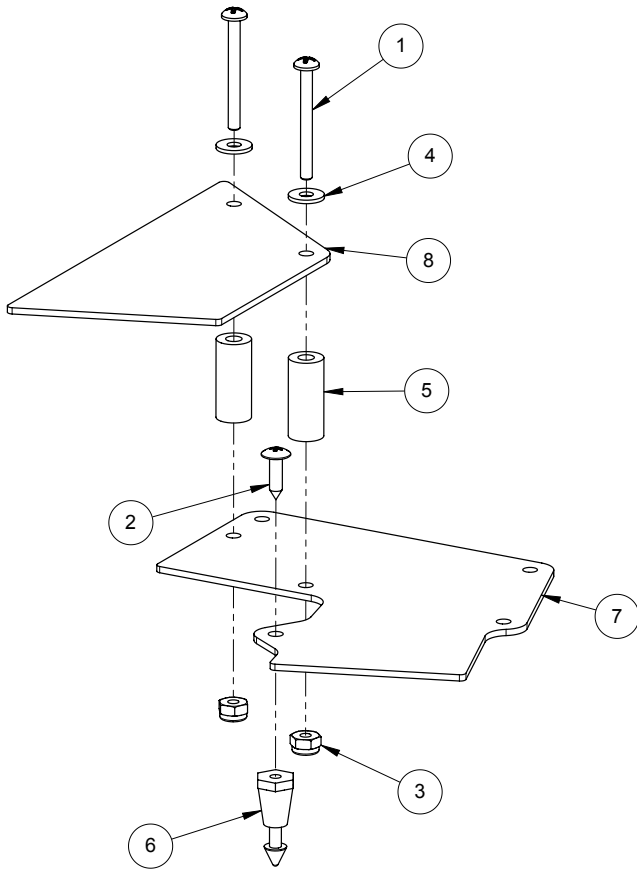
511-5978-12



ID	Part Number	Description	Qty
1	237-5809-00	SCREW, #6 X 1/2" PTH A	1
2	550-5052-01	MINI POST - CLEAR	1
3	830-8536-12	FOO FIGHTERS PREM-LE PLASTIC -12	1

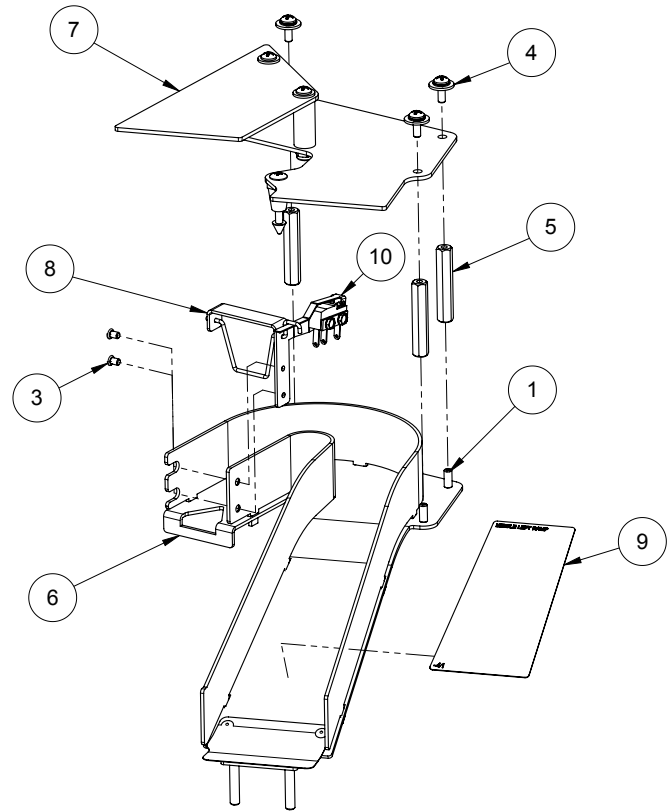
5.41 LOWER RAMP PLASTIC STACK ASSEMBLY

511-5978-71



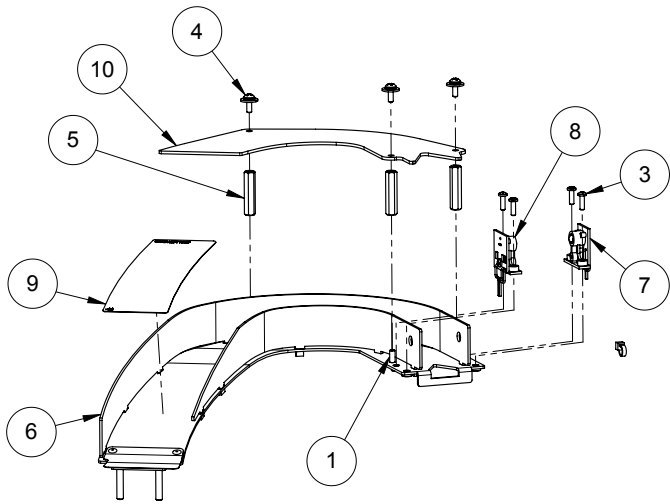
ID	Part Number	Description	Qty
1	237-5508-00	SCREW, 6-32 X 1-1/4 PPH MS	2
2	237-5809-00	SCREW, #6 X 1/2" PTH A	1
3	240-5005-00	6-32 NYLON STOP NUT	2
4	242-5001-00	#6 WASHER	2
5	254-5000-11	NYLON SPACER - BLACK - 3/8 OD X .175 ID X 7/8"	2
6	550-5052-01	MINI POST - CLEAR	1
7	830-5576-71	FOO FIGHTERS PLASTIC -71	1
8	830-5576-90	FOO FIGHTERS PLASTIC -90	1

5.42 LOWER LEFT RAMP ASSEMBLY 500-1203-00



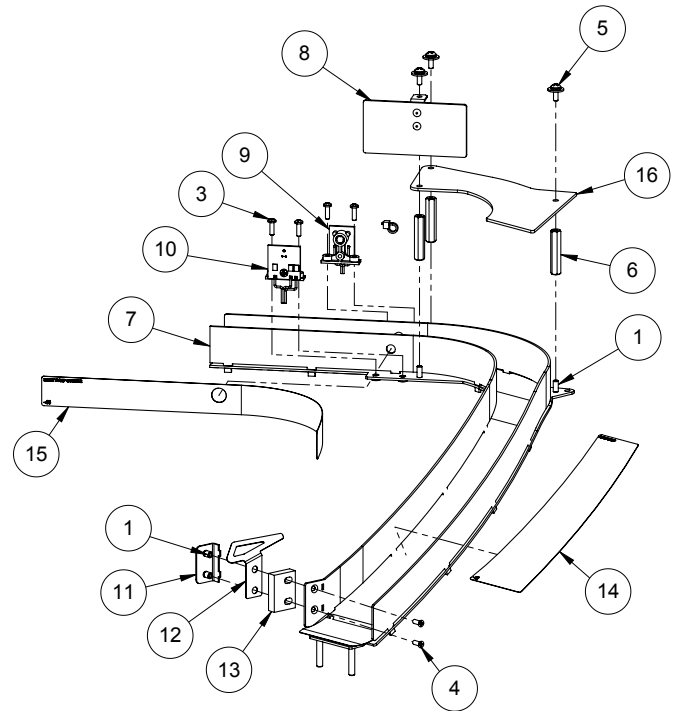
ID	Part Number	Description	Qty
1	000-5093-00	LOCTITE THREAD LOCK 425 "DARK BLUE CYANOACRYLATE"	1
2	040-5016-00B	CABLE CLAMP 0.38 BLACK	1
3	237-6087-00	4-40 x 3/16 PFH 82° U/C MS - ZINC	2
4	237-6378-00	#6-32 X 3/8 PAN PHILLIPS w/DOUBLE SEMS	4
5	254-5008-33	HEX SPACER - 1 3/8 "	3
6	510-1053-00	RIVETED METAL RAMP, LOWER LEFT	1
7	511-5978-71	LOWER LEFT RAMP PLASTIC STACK	1
8	511-9753-00	RAMP ROLLUNDER GATE, ASM	1
9	820-7935-41	FOO FIGHTERS DECAL -41 LOWER LEFT RAMP	1
10	180-5087-00	SWITCH - GATE	1

5.43 UPPER LEFT RAMP ASSEMBLY 500-1202-00



ID	Part Number	Description	Qty
1	000-5093-00	LOCTITE THREAD LOCK 425 "DARK BLUE CYANOACRYLATE"	1
2	040-5001-00B	CABLE TIE, BLACK	1
3	237-5997-00	SCREW, 4-40 X 3/8" PPH MS BLACK	4
4	237-6378-00	#6-32 X 3/8 PAN PHILLIPS w/DOUBLE SEMS	3
5	254-5008-17	HEX SPACER - 1 1/8 "	3
6	510-1052-00	RIVETED METAL RAMP LEFT UPPER FOO FIGHTERS	1
7	515-0215-00	LONG RANGE OPTO EMITTER ASSEMBLY	1
8	515-0215-01	LONG RANGE OPTO RECEIVER ASSEMBLY	1
9	820-7935-44	FOO FIGHTERS DECAL -44 UPPER LEFT RAMP	1
10	830-5576-83	FOO FIGHTERS PLASTIC -83	1

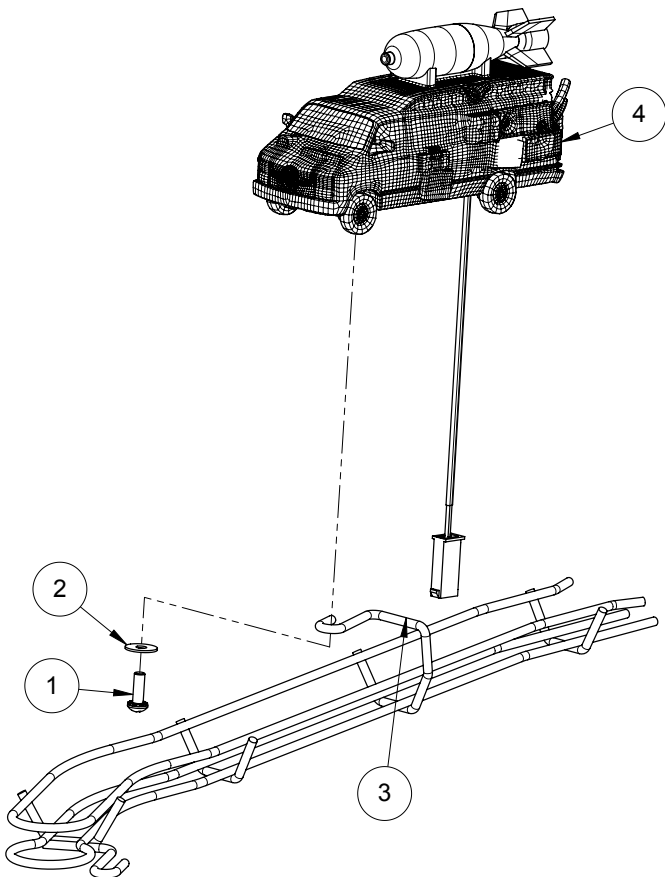
5.44 RIGHT RAMP ASSEMBLY 500-1201-00



ID	Part Number	Description	Qty
1	000-5093-00	LOCTITE THREAD LOCK 425 "DARK BLUE CYANOACRYLATE"	1
2	040-5001-00B	CABLE TIE, BLACK	1
3	237-5997-00	SCREW, 4-40 X 3/8" PPH MS BLACK	4
4	237-6151-00	SCREW, 4-40 X 5/16" PFH U/C MS	2
5	237-6378-00	#6-32 X 3/8 PAN PHILLIPS w/DOUBLE SEMS	3
6	254-5008-11	HEX SPACER - 1 1/4 "	3
7	510-1051-00	RIVETED METAL RAMP RIGHT UPPER FOO FIGHTERS	1
8	510-5809-34	RIVETED PLASTIC -34	1
9	515-0215-00	LONG RANGE OPTO EMITTER ASSEMBLY	1
10	515-0215-01	LONG RANGE OPTO RECEIVER ASSEMBLY	1
11	535-1355-00	RIGHT RAMP EDGE PROTECTOR PRO	1
12	535-2720-27	DEFLECTOR	1
13	626-5057-01	GUIDE BUMPER	1
14	820-7935-42	FOO FIGHTERS DECAL -42 RIGHT RAMP	1
15	820-7935-43	FOO FIGHTERS DECAL -43 RIGHT RAMP OUTSIDE	1
16	830-5576-72	FOO FIGHTERS PLASTIC -72	1

5.45 LEFT WIRE RAMP ASSEMBLY

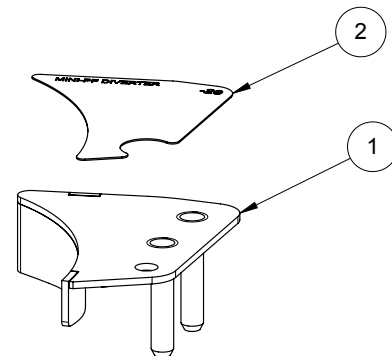
511-3068-00



ID	Part Number	Description	Qty
1	232-5302-00	SCREW, 8-32 X 1/2" PPH MS SEMS	1
2	242-5015-00	#8 WASHER - .170 ID X 1/2 OD X .042	1
3	515-2783-00	WIRE RAMP, FOO FIGHTERS, LEFT	1
4	515-2821-00	VAN ASSEMBLY (PREMIUM/LE)	1

5.46 MINI PLAYFIELD UPPER DIVERTER ASSEMBLY

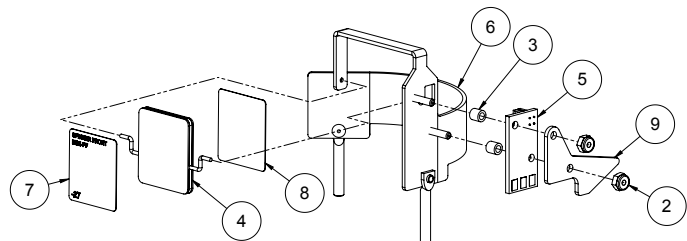
511-8878-00



ID	Part Number	Description	Qty
1	535-2797-00	DIVERTER, FOO FIGHTERS, UPPER PF	1
2	820-7935-29	FOO FIGHTERS DECAL -29 MINI-PF DIVERTER	1

5.47 MINI PLAYFIELD SPINNER ASSEMBLY

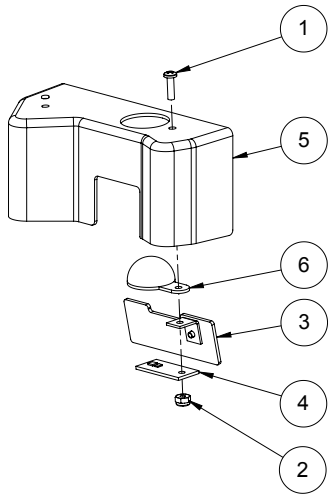
511-5977-23



ID	Part Number	Description	Qty
1	036-8062-01	CBL OPTO RECEIVER	1
2	240-5303-00	4-40 NYLON LOCK NUT	2
3	254-5090-01	PLASTIC SPACER #4 SCREW, 3/16" OD - 3/16" LENGTH	2
4	515-2326-00	SPINNER TARGET, REFLECTIVE OPTO	1
5	520-8541-00	PCA SPINNER REFLECTIVE OPTIC	1
6	535-2720-23	BALL GUIDE, FOO FIGHTERS, -23	1
7	820-7935-27	FOO FIGHTERS DECAL -27 SPINNER FRONT MINI-PF	1
8	820-7935-28	FOO FIGHTERS DECAL -28 SPINNER BACK MINI-PF	1
9	830-8536-36	FOO FIGHTERS PREM-LE PLASTIC -36	1

5.48 MINI PLAYFIELD CENTER COVER ASSEMBLY

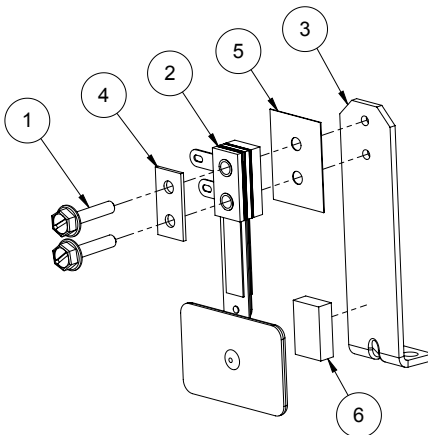
511-8874-00



ID	Part Number	Description	Qty
1	237-5502-03	SCREW, 6-32 X 1/2" PPH MS BLACK	1
2	240-5005-00	6-32 NYLON STOP NUT	1
3	510-5809-38	RIVETED PLASTIC -38	1
4	520-7000-00	SINGLE FLASH LED BOARD	1
5	545-7654-00	TRIMMED COVER, UPPER PF, FOO FIGHTERS	1
6	550-5510-02	HAT - TRIMMED - RED SB	1

5.49 MINI PLAYFIELD UPPER TARGET ASSEMBLY

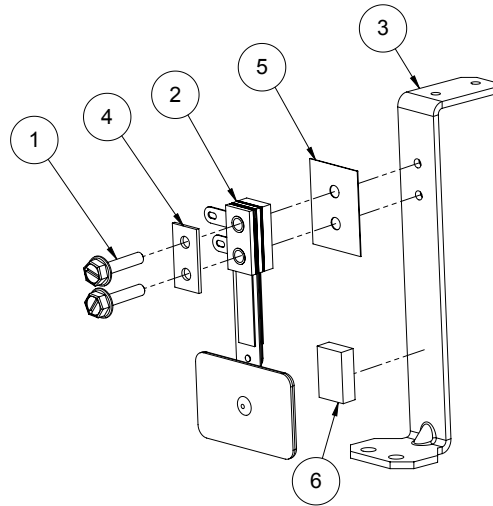
511-8875-00



ID	Part Number	Description	Qty
1	237-5976-04	SCREW, 6-32 X 5/8" HWH SWAGE	2
2	515-9784-00-02	1" X 1-1/2" RECT. TARGET SWITCH - 2 LUG - ANTILOFT - BLACK	1
3	535-2005-00	BRACKET, UPSIDE DOWN TARGET	1
4	535-7344-00	SWITCH PLATE	1
5	545-9782-00	FISCHE PAPER-SYMMETRICAL	1
6	626-5078-00	3/16" FOAM PAD	1

5.50 MINI PLAYFIELD WIDE TARGET ASSEMBLY

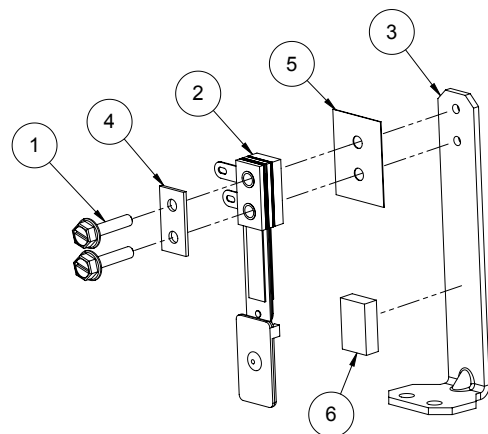
511-8954-00



ID	Part Number	Description	Qty
1	237-5976-04	SCREW, 6-32 X 5/8" HWH SWAGE	2
2	515-9784-00-02	1" X 1-1/2" RECT. TARGET SWITCH - 2 LUG - ANTILOFT - BLACK	1
3	535-2763-01	BRACKET, 1/2" TARGET, AND MOUNT	1
4	535-7344-00	SWITCH PLATE	1
5	545-9782-00	FISCHE PAPER-SYMMETRICAL	1
6	626-5078-00	3/16" FOAM PAD	1

5.51 MINI PLAYFIELD NARROW TARGET ASSEMBLY

511-5983-00

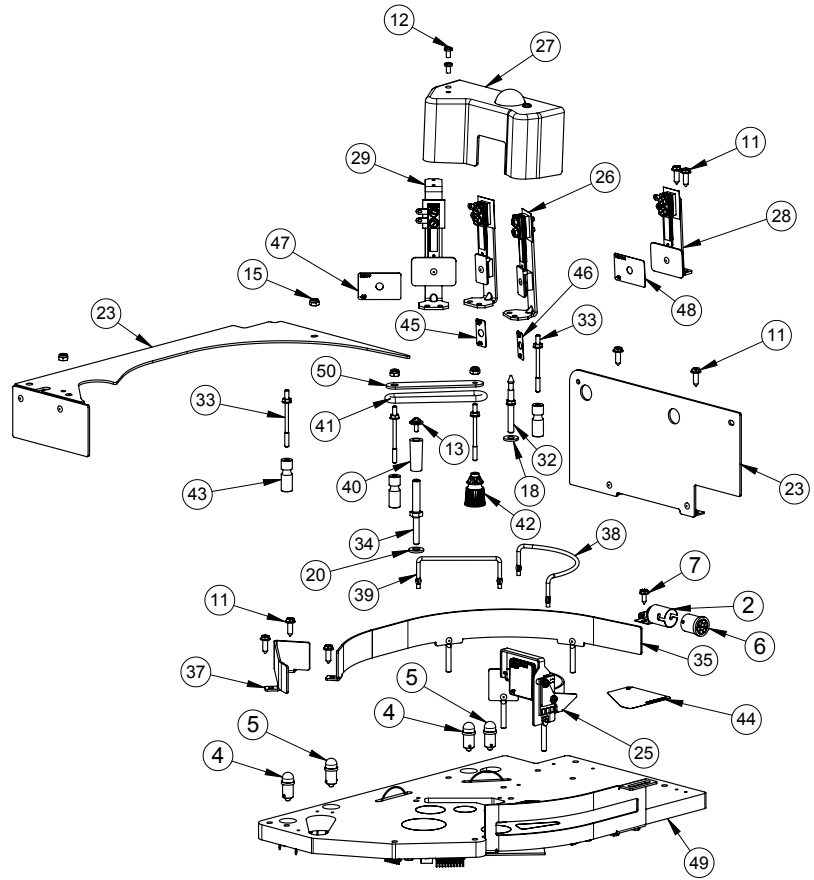
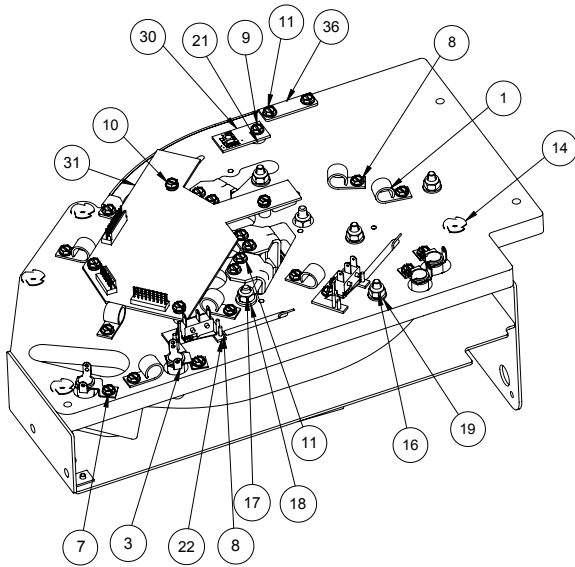


ID	Part Number	Description	Qty
1	237-5976-04	SCREW, 6-32 X 5/8" HWH SWAGE	2
2	515-9785-00-02	1/2" TARGET SWITCH - ANTILOFT - 2 LUG - Black	1
3	535-2763-00	BRACKET, 1/2" TARGET, INVERTED	1
4	535-7344-00	SWITCH PLATE	1
5	545-9782-00	FISCHE PAPER-SYMMETRICAL	1
6	626-5078-00	3/16" FOAM PAD	1



5.52 MINI PLAYFIELD ASSEMBLY

500-7415-00

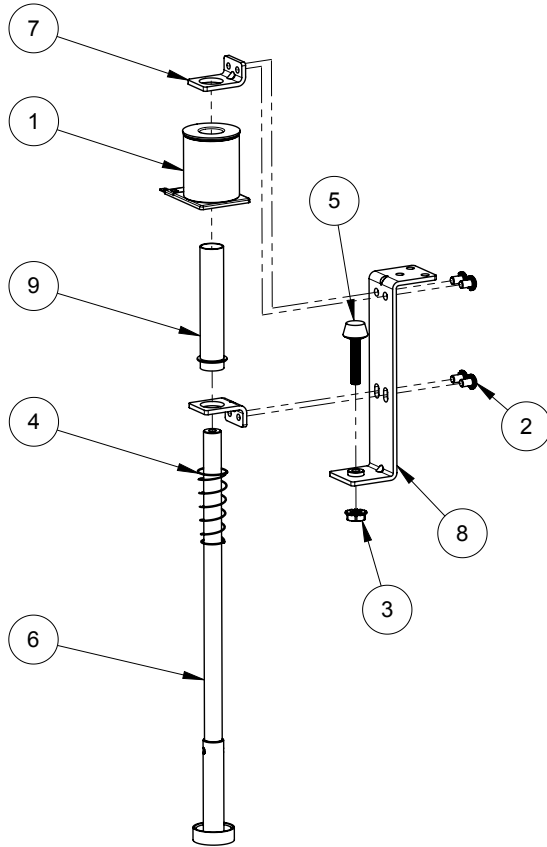


ID	Part Number	Description	Qty
1	040-5016-00B	CABLE CLAMP 0.38 BLACK	7
2	077-5100-00	LAYDOWN STANDARD SOCKET	1
3	077-5223-00	SOCKET - 2-LUG, SHORT	4
4	112-5034-02F	RED, FROSTED	2
5	112-5034-08F	DOUBLE LED, BAYONET BASE	2
6	113-5045-08	MULTI-LED FLASHER, 5 VDC - WHITE	1
7	234-5000-00	SCREW, #6 X 3/8" HWH	5
8	234-5001-02	SCREW, #6 X 1/2" HWH	11
9	234-5002-00	SCREW, #6 X 5/8" HWH	1
10	234-5003-00	SCREW, #6 X 3/4" HWH	4
11	234-5101-00	SCREW, #8 X 1/2" SLT HWH AB ZINC	16
12	237-5500-01	SCREW, #6-32 X 1/4" PPH MS BLACK	2
13	237-6378-00	SCREW, #6-32 X 3/8 PAN PHILLIPS w/DOUBLE SEMS	1
14	240-5002-00	6-32 T-NUT	4
15	240-5005-00	6-32 NYLON STOP NUT	4
16	240-5102-00	8-32 NYLON LOCK NUT	4
17	240-5203-00	10-32 NYLON LOCK NUT	2
18	242-5003-00	#10 FLAT WASHER - 1/2" O.D. X .062 THICK	3
19	242-5005-00	#8 WASHER	4
20	242-5008-00	WASHER, 1/4" ID X 1/2" OD X 1/16" THICK	1
21	254-5000-18	NYLON SPACER - BLACK - 3/8 OD X .175 ID X 3/16"	1
22	500-9935-03	P/F ROLLOVER SWITCH ASSY-NO DIODE	2
23	510-5809-81	RIVETED PLASTIC -81	1
23	510-5809-85	RIVETED PLASTIC -85	1

25	511-5977-23	ASM BG -23 UPPER PF	1
26	511-5983-00	ASM NARROW TARGET INVERTED	2
27	511-8874-00	MINI PF, CENTER COVER, FOO FIGHTERS	1
28	511-8875-00	ASM UPPER TARGET	1
29	511-8954-00	ASM WIDE TARGET MINI PF, FOO FIGHTERS	1
30	520-5333-00	SINGLE RGB BOARD	1
31	520-8574-00	PCA MINI PF LED AND SW FOO FIGHTERS	1
32	530-5005-00	MINI-POST (MACHINE THREAD)	1
33	530-5012-02	6-32 POST SCREW	4
34	530-5332-01	HEX BUMPER POST	1
35	535-2720-21	BALL GUIDE, FOO FIGHTERS, -21	1
36	535-2720-22	BALL GUIDE, FOO FIGHTERS, -22	1
37	535-2720-24	BALL GUIDE, FOO FIGHTERS, -24	1
38	535-2721-04	WIRE BG, FOO FIGHTERS, -04	1
39	535-5356-15	BALL GUIDE RAIL .120 - 2.75"	1
40	545-5308-00-65	POST - RUBBER - 3/8 O.D. X 1-1/16 - 65 A - BLACK	1
41	545-5348-06	RUBBER RING	1
42	550-5034-01	GROOVED JEWEL PLASTIC POST, CLEAR	1
43	550-5059-01	PLASTIC POST - CLEAR	3
44	820-7934-06	MYLAR: FOO FIGHTERS -06	1
45	820-7935-24	FOO FIGHTERS DECAL -24 MINI-PF LEFT	1
46	820-7935-25	FOO FIGHTERS DECAL -25 MINI-PF RIGHT	1
47	820-7935-26	FOO FIGHTERS DECAL -26 MINI-PF	1
48	820-7935-30	FOO FIGHTERS DECAL -30 MINI-PF #2	1
49	830-71U6-00	FOO FIGHTERS MINI-PF	1
50	830-8536-84	PLASTIC, FOO FIGHTERS PREM-LE -84	1

5.53 MINI PLAYFIELD UP POST ASSEMBLY

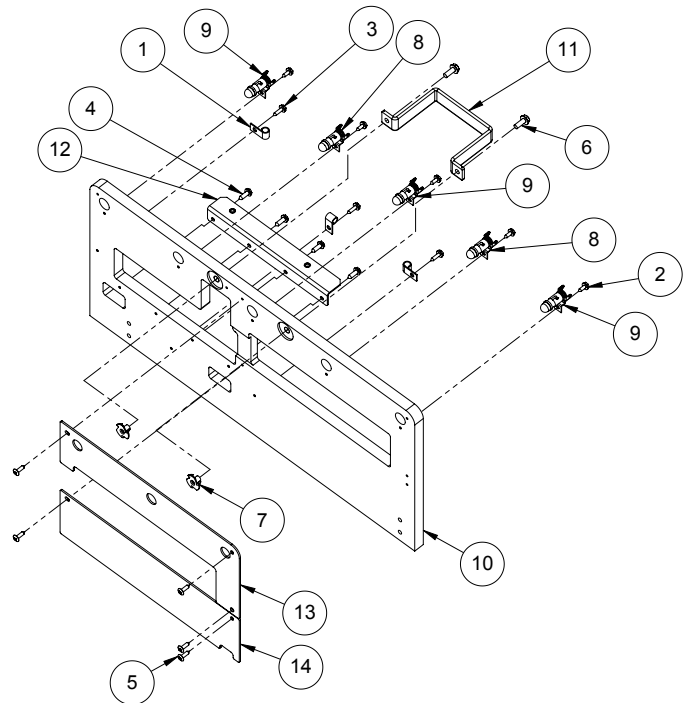
500-2618-00



ID	Part Number	Description	Qty
1	090-5044-ND	COIL 26-1200 - NO DIODE	1
2	232-5300-00	SCREW, 8-32 X 1/4" PPH SEMS	4
3	240-5208-00	10-32 KEPS NUT	1
4	266-5020-00	COMPRESSION SPRING-CONICAL	1
5	280-5014-00	ADJUSTABLE BUMPER/STOP	1
6	515-2787-00	PLUNGER ASM, FOO FIGHTERS DIVERTER	1
7	535-5203-03	COIL RETAINING BRACKET	2
8	535-9248-00	BRACKET	1
9	545-5847-00	COIL SLEEVE	1

5.54 BACK PANEL ASSEMBLY

500-2611-00



ID	Part Number	Description	Qty
1	040-5000-03	1/4" CABLE CLAMP	3
2	234-5000-00	SCREW, #6 X 3/8" HWH	5
3	234-5001-02	SCREW, #6 X 1/2" HWH	3
4	234-5101-00	SCREW, #8 X 1/2" SLT HWH AB ZINC	4
5	237-5809-00	SCREW, #6 X 1/2" PTH A	5
6	237-5995-00	SCREW, 10-32 X 1/2" HWH SERR MS ZI	2
7	240-5204-00	#10-32 T-NUT	2
8	519-5223-2F-LED	ASM-2 V/LUG SCK/LED FROST RED	2
9	519-5223-8F-LED	ASY-2 V/LUG SCK/LED FROST WHITE	3
10	525-9755-00	FOO FIGHTERS BACK PANEL	1
11	535-2288-00	HANDLE, BACKPANEL	1
12	535-2781-00	FOO FIGHTERS MINI PF SUPPORT	1
13	830-5576-86	FOO FIGHTERS PLASTIC -86	1
14	830-5576-87	FOO FIGHTERS PLASTIC -87	1

6. SPECIFICATIONS

500-55U6-01

SPECIFICATIONS, MECHANICAL, GAME SETUP

Specification	Imperial	Metric
Weight	210 lbs	96 kg
Max dimensions, leg levers 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.

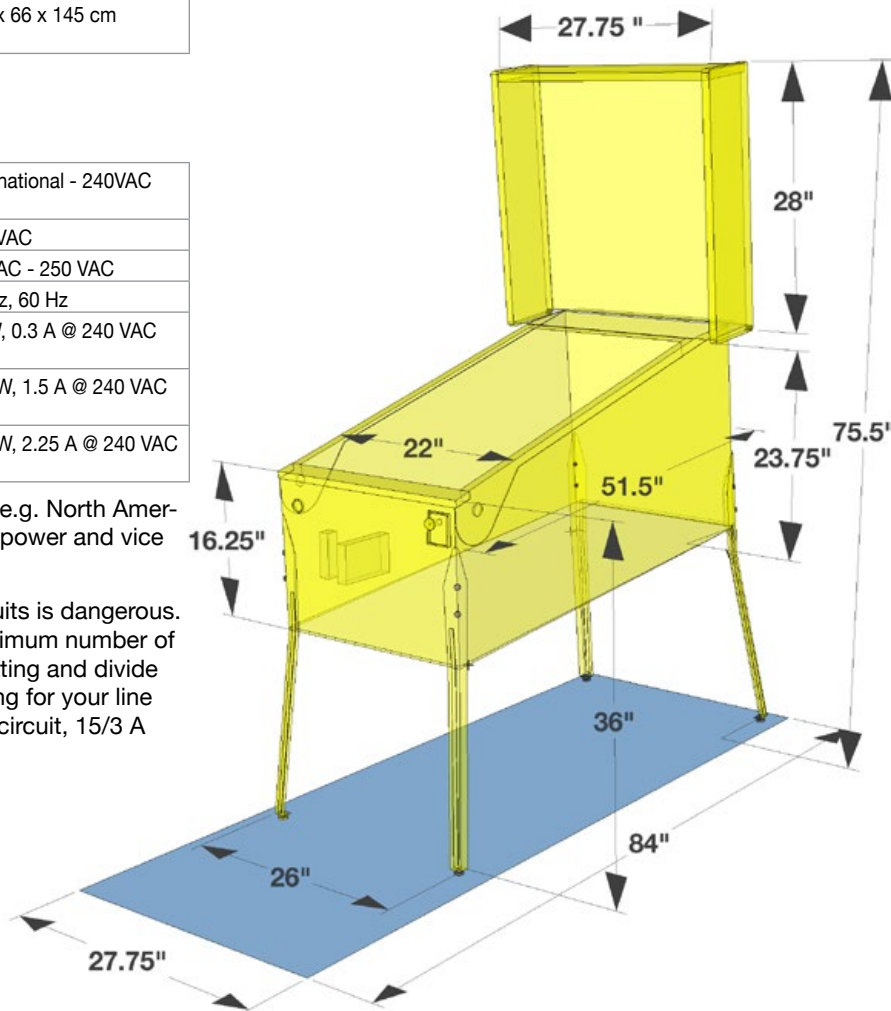
WARNING: Overloading electrical supply circuits is dangerous. Do not overload circuits. To calculate the maximum number of games for a circuit, check circuit amperage rating and divide by the game Nominal Line Power Current rating for your line voltage. For example, a 15A 120V household circuit, 15/3 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) If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified person in order to avoid hazard.

6.1 GAME DIMENSIONS



6.2 WARRANTY

500-55U6-01

Stern Pinball machines are assembled in Elk Grove Village, 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 ensure 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 / LCD Display: 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.

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

ATTENTION! IMPORTANT WARRANTY INFORMATION

The electronics system, node network architecture, mechanical devices and associated software control systems in this pinball machine are designed to work with genuine Stern Pinball accessories and devices.

Installation of non-authorized accessories, lamps, LED's, motors or other devices or modification of electro-mechanical devices may damage the system and will void your warranty.

6.3 WARNINGS, COMPLIANCE, AND LEGAL NOTICES

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 lightheadedness, 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 servicing any electrical components.

PERCHLORATE MATERIAL - Special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate

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.

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FOO FIGHTERS

1-800-KICKERS

PARTS.SERVICE@STERNPINBALL.COM

WWW.STERNPINBALL.COM

FACEBOOK.COM/STERNPINBALL

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