Halloween and Ultraman Manual

Version 1.0 - April 2024

Contents

Unboxing: Set up and moving

First time setup instructions:

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 HANGLING. PINBALL MACHINES WEIGH OVER 250LBS.
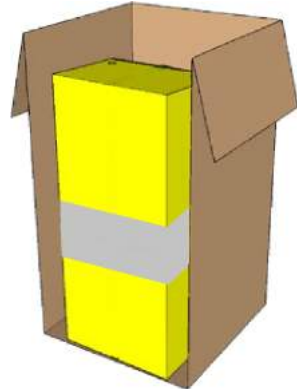
1. Locate the side labeled "TRUCK THIS SIDE ONLY". The bottom of The game faces this side.
2. Open the top box flaps by pulling Hard in an upward motion on each Flap. If the flaps are taped, cut the Tape first, taking care to avoid the box staples

3. Remove the four (4) foam pieces and one (1) narrow box which contain the four (4) identical legs with levelers.
4. DO NOT CUT CLING FILM YET. keep backbox secured in the down position
5. With the utility knife, carefully cut down the left and right corners

6. Let the face fall forward and remove the entire side by carefully cutting the bottom.
7. With the game still in its folded po-sition, 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,   l 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.
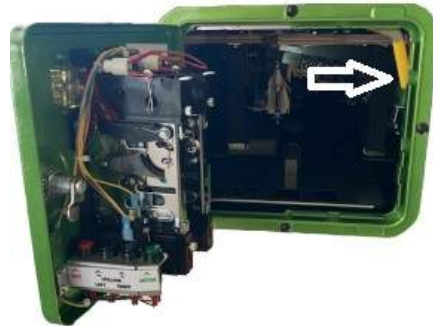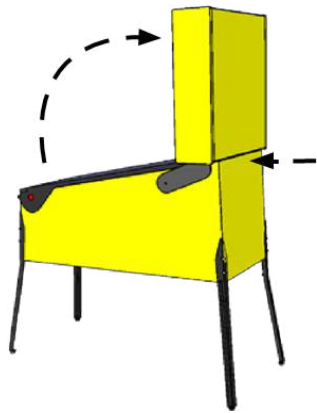
24. Remove Cling Film and carefully raise the backbox to an upright position and secure with latch.

25. Reach inside the cabinet and slide handle to the left.
26. Now remove the Front top molding lock bar..

27. Carefully remove the playfield glass by sliding it toward you, place it in a safe location.
28. Remove all playfield shipping tie downs, shipping blocks, and packing foam if present.
29. Follow any game-specific unpacking instructions included in the playfield, if present.
30. Grasp the lower arch between the flippers, and firmly but gently pull directly up to raise the playfield 8 to 12 inches.
31. While holding the playfield up, pull the playfield toward you until the two playfield supports are over the front edge of the cabinet.
32. Rest the playfield on the front edge of the cabinet.
33. CAREFULLY raise and pull the playfield forward while lifting up and rest it against the backbox.
34. Visually inspect all cabinet cables and connector terminations; ensure no wires or cables are pinched and that the cable harness is not pulled tight.
35. Locate the plumb bob in the parts bag in the cash box.
36. (Optional step. If not installed, the game will not register tilts) Slide plumb bob onto the hanger wire. Note: the vertical position of the plumb bob affects the tilt sensitivity higher and makes the game more sensitive to tilting.
37. Tighten the thumb screw finger tight.
38. Install the correct number of pinballs. Refer to the decal on the lock down assembly for the correct number of pinballs.

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 (50lb 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 Legs and Stand Up
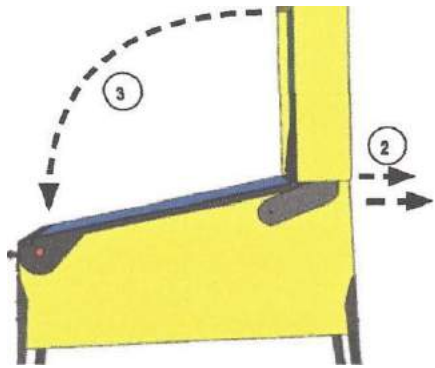
2. Remove the back box securing bolts
3. Carefully lower the backbox onto the side rails. Use a piece of cardboard or suitable padding between the backbox and the game.

4. Securely strap the back box to the game
5. The game may be transported with the legs on. If the legs must be removed, follow the remaining steps.
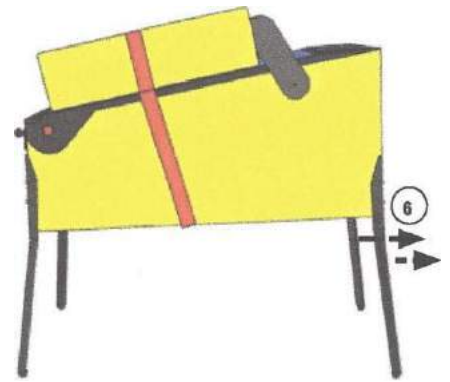
6. Remove the legs, rear legs first. Use a stool or a friend to support the rear of the game.
7. Rest the rear of the game on the ground
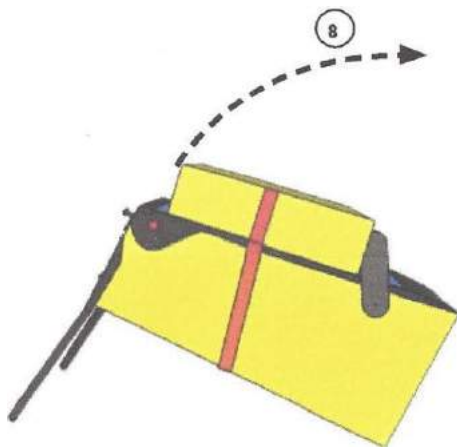
8. Stand the game up on its back.
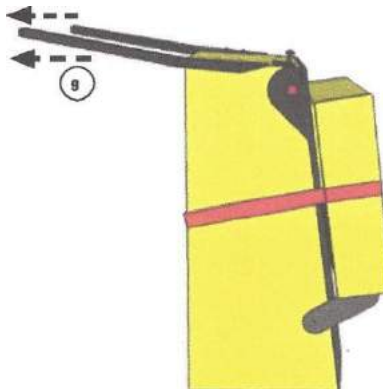
9. Remove the front two legs.
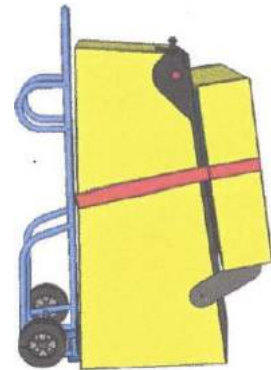
10. Secure all loose parts and transport with a hand truck in the upright position.

SPOOKY PINBALL
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Menu Options

Menu accessible inside coin door
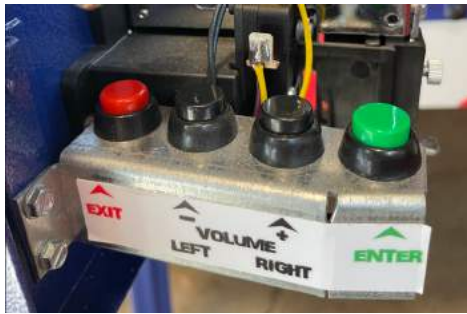
SWITCH TEST

As switches are hit on the playfield they will appear in the format
{time}_SW_{switch_number}_{name}_{active/inactive}
i.e. 77716__SW_54_standup3_ACTIVE

STUCK SWITCH TEST

Any switches that are active will show here

LIGHT TEST

- **ALL ON -** Turns on all LEDs
- **ALL OFF -** Turns off all LEDs
- **CYCLE -** Automatically cycles through each LED
- **INDIVIDUAL TEST -** Test a single LED
- **FLASHER TEST -** Test flasher LEDs

STANDARD SETTINGS

- **LIGHT STRIP POWER**
- **MATCH BOOST**
- **TIMED PLUNGE**
- **SHAKER MOTOR**
- **TOPPER MOTOR**
- **EXTRA BALLS**
- **SFX MODIFIER** (-10 to +10, default 0)
- **VOICE MODIFIER** (-10 to +10, default 0)
- **BALLS PER GAME**
- **TILT WARNINGS**

GAME FEATURES

- **LIFTER SHAKE**
- **SUBWAY WAVE**
- **WIZARD PLAY**
- **ADULT MODE**
- **SANITARIUM TIMER**
- **DIVERT RIGHT OFFSET**
- **DIVERT LEFT OFFSET**
- **MODES NEEDED FOR JACK MB**
- **LAURIE HEALTH DECAY**

COIL SETTINGS

- **MIDDLE DROP RESET**
- **MIDDLE DROP KNOCKDOWN**
- **RIGHT SLING**
- **BANK TARGET RESET**
- **RIGHT FRONT DROP KNOCKDOWN**
- **RIGHT FRONT DROP RESET**
- **LEFT SLING**
- **TROUGH**
- **AUTOFIRE**
- **KNOCKER**
- **UPPER DROP RESET**
- **MIDDLE SCOOP**

COIL TEST

- **COIL (UPPERFLIPPER_LEFT)**
- **ETC**

SERVO TEST

- **LEFT SUBWAY TOP**
- **LEFT SUBWAY BOTTOM**
- **ETC**

TOPPER TEST

- **TOPPER OFF/ON**

MUSIC TEST

- **ANNIE COMBO MODE**
- **MAIN LOOP**

- **ETC**

PRICING

- **BONUS CREDIT AFTER:** - after X coins give a bonus credit. 0=disabled.
- **BONUS CREDIT COUNT:** - extra credits given when "bonus credit after" is reached
- **COINS PER CREDIT**
- **FREE PLAY [true|false]**
- **LEFT COIN VALUE**
- **RIGHT COIN VALUE**

REPLAY

- **REPLAY TYPE** [fixed|dynamic]
- **REPLAY BACKDOWN AMOUNT** - auto adjust: decrease Replay Score by X
- **REPLAY INCREASE AMOUNT** - auto adjust: increase Replay Score by X
- **LOSING STREAK THRESHOLD** [default 3] - auto adjust, (per game NOT per player) only decrement Replay Score every X games where no-one got Replay
- **REPLAY MINIMUM SCORE** [25M-150M, default 25M] // auto adjust only
- **REPLAY MAXIMUM SCORE** [100M-300M, default 100M] // auto adjust only
- **REPLAY SCORE** [5M-300M, default 20M]
- **REPLAY AWARD** [credit|extra ball|disabled]

UTILITIES

- **ENABLE FLIPPERS**
- **BURN IN**
- **RESET SCORES**

AUDITS

- **GAMES PLAYED**
- **LEFT COINS INSERTED**
- **RIGHT COINS INSERTED**

Basic Rules

- With the ball in the shooter lane, use flippers to move lit skillshot target (value displayed on screen).
- Knock down 3 drop targets in the central bank to light the right scoop to start a mode. In modes, follow instructions and lit shots.
- Hit the center ramp three times to open the upper playfield (starts House/Jirahs). Lower Mike/Jirahs health by ripping spinners, then hit upper drop target and crossover to start multiball.
- Middle playfield scoop starts Sanitarium/Bemular phase 1. Get both middle playfield standups and back in scoop to start multiball
- Shoot all three left scoops to start Hedge/Baltan multiball
- Lower right target five times will advance Judith Tombstone/Science Patrol and eventually trap the ball that can be hit to release for multiball or saved as extra ball to be released on drain. Will trap instantly if hit from skill shot.

Coils: Wire Colors, Locations, and Types

Sol_Bank_0

Solenoid Number	Wire Color	Location	Coil Info
0	Yellow/Black	Upper Left Flipper High	FL 11629 Blue
N/A	Key		
1	Yellow/Green	Upper Left Flipper Hold	FL 11629 Blue
2	Purple/Black	Upper Right Flipper High	FL 11629 Blue
3	Purple/Green	Upper Right Flipper Hold	FL 11629 Blue
4	Purple/Red	Upper Drop Reset	26 1200 Green
5	Yellow/Blue	Middle Playfield Scoop	23 800 Yellow
6	Yellow/Red	Middle PF Drop Reset	26 1200 ND Green
7	Yellow/Brown	Middle PF Drop Knockdown	SM 26 600 Yellow
50V	Purple & Yellow	Power (serial to this chain)	

Sol_Bank_1

Solenoid Number	Blue Chain	Location	Coil Info
8	(not used)		
9	Blue/Red	Right Sling	23 800 Yellow
N/A	Key		
10	(not used)		
11	Blue/Gray	3 Drop Bank Reset	26 1200 Green
12	Blue/White	Lower Right Drop Knockdown	12V PIN-A-27700 White
13	Blue/Purple	Lower Right Drop Reset	26 1200 ND Green
14	Blue/Black	Right Flipper High Power	FL 11629 Blue
15	Blue/Green	Right Flipper Hold	FL 11629 Blue
50V	Blue	Power (serial to this chain)	

Sol_Bank2

Solenoid Number	Orange Chain	Location	Coil Info
16	Orange/Blue	Left Sling	23 800 Yellow
17	Orange/Gray	Dump Mech	23 800 ND Yellow
18	Orange/White	Trough	26 1200 ND Green
N/A	Key		
19	Orange/Black	Left Flipper High	FL 11629 Blue
20	Orange/Green	Left Flipper Hold	FL 11629 Blue
21	Orange/Purple	Auto Launch	23 800 Yellow
22	Brown/Yellow	Knocker	23 800 Yellow
23	Brown/Red	Shaker	
50V	Orange	Power (serial to this chain)	

Switch Wire Colors and Locations

Bank 0		
Switch #	Location	Wire Color
0	(not used)	n/a
1	(not used)	n/a
Key	Key	Key
2	(not used)	n/a
3	(not used)	n/a
4	Upper Left EOS	Blue
5	Middle Left Target	Green
6	Mid PF Scoop	Yellow
7	Middle Right Target	Orange
Ground		Black

Bank 1		
Switch #	Location	Wire Color
8	(not used)	n/a
9	(not used)	n/a
10	(not used)	n/a
Key	Key	Key
11	(not used)	n/a
12	Left Spinner	Blue
13	Right Spinner	Green
14	Upper PF Entry	Yellow
15	Upper Right EOS	Orange
Ground		Black

Bank 2		
Switch #	Location	Wire Color
16	Trough 5	Purple
17	(not used)	n/a
18	Trough 7	White
19	Trough 6	Red
Key	Key	Key
20	Trough 4	Blue
21	Trough 3	Green
22	Trough 2	Yellow
23	Shooter Lane	Orange
Ground		Black

Bank 3		
Switch #	Location	Wire Color
24	(no)t used	n/a
25	(not used)	n/a
26	Up PF Drop	Gray
27	Drop Bank Mid	Red
28	Drop Bank Right	Purple
Key	Key	Key
29	Drop Bank Left	Green
30	Mid PF Drop	Yellow
31	Lower Drop	Orange
Ground		Black

Bank 4		
Switch #	Location	Wire Color
32	Capture Target	Green
33	Right Outlane	Gray
34	(not used)	n/a
35	Right Orbit	Red
36	Right EOS	Purple
37	Right Sling	Blue
Key	Key	Key
38	Standup 6	Yellow
39	Standup 5	Orange
Ground		Black

Bank 5		
Switch #	Location	Wire Color
40	(not used)	n/a
41	Left Ramp	Grey
42	(not used)	n/a
43	(not used)	n/a
44	(not used)	n/a
45	(not used)	n/a
46	(not used)	n/a
Key	Key	Key
47	(not used)	n/a
Ground		Black

Bank 6

Switch #	Location	Wire Color
48	Left Orbit	Orange
49	Left EOS	Grey
50	Left Outlane	White
51	Left Sling	Red
52	Standup 1	Purple
53	Standup 2	Blue
54	Standup 3	Green
55	Standup 4	Yellow
Key		
Ground		Black

Bank 7

Switch #	Location	Wire Color
56	Coin Left	Gray
57	(not used)	
58	(not used)	
59	Coin Right	Purple
60	Menu Enter	Blue
61	Volume Up	Green
62	Volume Down	Yellow
63	Menu Back	Orange
Ground		Black
Key		

Opto

Switch #	Location
0	Trough Jam
1	Trough 1
2	Left Subway 1
3	Crossover
4	Mid Ramp Make
5	Playfield Drop Scoop
6	Right Lift
7	Front Right Scoop
8	Lower R Drop
9	Left Subway 2
10	Left Subway 4
11	Mid Ramp
12	Left Bot Scoop
13	Left Top Scoop
14	Left Subway 3
15	Left Mid Scoop

Cabinet 0

Switch #	Location	Wire Color
Key		
81	Left Flipper	Yellow
82	Right Upper Flipper	Red
83	Left Upper Flipper	Purple
84	(not used)	
85	Tilt	Green
86	(not used)	
87	Start	Orange
Ground		Black

Cabinet 1

Switch #	Location	Wire Color
89	Start Light Ground	Brown
90	Start Light Power	Yellow
Key		
91	(not used)	
92	(not used)	
93	(not used)	
94	(not used)	
95	(not used)	
Ground	(not used)	

Light Wire Colors and Locations

General Illumination and Flashers

GI Bank 0	Location	Wire Color
Key		
0	(not used)	
1	Topper Motor	Gray
2	Back Board Right	Red
3	(not used)	
4	(not used)	
5	Backboard Mid Right	Green
6	Backboard Mid Left	Yellow
7	Backboard Left	Orange
12V	Power	Pink

GI Bank 1	Location	Wire Color
8	(not used)	
Key		
9	(not used)	
10	Ramps	Red
11	Lower Right GI	Purple
12	Upper Right GI	Blue
13	Lower Right Scoop	Green
14	Upper Left GI	Yellow
15	Lower Left GI	Orange
12V	Power	Pink

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RGB Lights for Halloween inserts and playfield LED strips

There are two light "chains" plugged into the Pinotaur. If something goes wrong with a light board or connection, no others later in the chain will work. So, identify the first one in the chain that doesn't work, and it's likely that one or the one before it. The numbers represent the wiring order.

CHAIN 1				CHAIN 2			
#	Name	#	Name	#	Name	#	Name
PLUG	ON PINOTAUR			PLUG	ON PINOTAUR		
0	center_ramp_blade	35	asylum_3	70	upper strip - right	108	right_spinner
1	center_ramp_handle	36	house_1	71	upper strip	109	house_spinner_1
2	bank_3	37	house_2	72	upper strip	110	house_spinner_2
3	bank_2	38	house_3	73	upper strip	111	house_spinner_3
4	bank_1	39	house_mode_right	74	upper strip	112	house_spinner_4
5	target_5	40	house_mode_left	75	upper strip	113	super_exit
6	left_ramp_handle	41	sub_wizard	76	upper strip	114	middle_right_target
7	left_ramp_blade	42	wizard_right	77	upper strip	115	middle_drop_target
8	target_4	43	wizard_left	78	upper strip	116	middle_drop_on_target
9	left_orbit_blade	44	pumpkin_state	79	upper strip	117	middle_left_target
10	left_orbit_handle	45	judith_tomb	80	upper strip	118	lower strip - left
11	left_orbit_blood	46	infected_state	81	upper strip	119	lower strip
12	top_mike_blood	47	left_ramp_blood	82	upper strip	120	lower strip
13	top_mike_blade	48	pumpkin_eye_left	83	upper strip	121	lower strip
14	top_mike_handle	49	pumpkin_nose	84	upper strip	122	lower strip
15	mid_mike_blood	50	pumpkin_mouth_1	85	upper strip	123	lower strip
16	mid_mike_blade	51	pumpkin_mouth_2	86	upper strip	124	lower strip
17	mid_mike_handle	52	pumpkin_mouth_3	87	upper strip	125	lower strip
18	low_mike_blood	53	pumkpin_eye_right	88	upper strip	126	lower strip
19	low_mike_blade	54	target_6	89	upper strip	127	lower strip
20	low_mike_handle	55	right_ramp_blade	90	upper strip	128	lower strip
21	left_outlane	56	right_ramp_handle	91	upper strip	129	lower strip
22	inlane_left_top	57	right_ramp_blood	92	upper strip	130	lower strip
23	inlane_left_mid	58	right_subway_scoop	93	upper strip	131	lower strip
24	inlane_left_bottom	59	right_orbit_handle	94	upper strip	132	lower strip
25	save_light	60	right_handle_blood	95	upper strip	133	lower strip
26	hedge_progress_1	61	extra_ball_1	96	upper strip	134	lower strip
27	hedge_progress_2	62	inlane_right_bottom	97	upper strip	135	lower strip
28	hedge_progress_3	63	inlane_right_mid	98	upper strip	136	lower strip
29	hedge_mode_right	64	inlane_right_top	99	upper strip	137	lower strip
30	hedge_mode_left	65	right_outlane	100	upper strip	138	lower strip
31	asylum_1	66	extra_ball_2	101	upper strip	139	lower strip
32	asylum_2	67	extra_ball_3	102	upper strip	140	lower strip
33	asylum_mode_left	68	extra_ball_4	103	upper strip	141	lower strip
34	asylum_mode_right	69	right_orbit_blade	104	upper strip - left	142	lower strip
			END OF CHAIN 1	105	crossover_drop_target	143	lower strip
				106	crossover_blood	144	lower strip
				107	left_spinner	145	lower strip - right
							END OF CHAIN 2

Light Strip Wiring

Red: VCC (voltage)
Yellow: CI/CO (clock in/out)
White: DI/DO (data in/out)
Black: GND (ground)

Speaker and Topper Lights

These are connected to the LED Breakout Board in the backbox (see boards section for more detail).
Serial 1: Speakers (left 12 LEDs then right 12 LEDs)
Serial 2: Topper (18 LEDs)

Fuses

Location	Name	Type	Amps	Quantity
Pinotaur	Main 12V	Fast Blow	5A	1
Pinotaur	Main 5V	Fast Blow	8A	1
Pinotaur	Servos	Fast Blow	3A	1
Pinotaur	Solenoids	Slow Blow	3A	3
Shaker Interface Board	Shaker	Fast Blow	5A	1

Pinotaur Board Layout

Switch 6	Switch 4	Switch 2	Switch 0
Switch 7	Switch 5	Switch 3	Switch 1

GI 1	GI 0

Opto Section

3	2	1	0
7	6	5	4
11	10	9	8
15	14	13	12

Sol Bank 0

Servo 1   Servo 3   Servo 5
Servo 0   Servo 2   Servo 4

Sol Bank 1

RGB 1

RGB 0

Servo (Fast Blow) — 3 Amp

Sol Bank 2

3 amp

3 amp

3 amp

Solenoid Fuses (Slow Blow)
*5 amp slow blow may be used here if you need to up fuse.

Main 12v (Fast Blow)   5 Amp

8 Amp   Main 5v (Fast Blow)

Solenoid Power   Cabinet Bank 1   Cabinet Bank 0   USB   Board Power

FUNCTIONAL BLOCK DIAGRAM

SERIAL RGB CHAIN 0

SERIAL RGB CHAIN I

48V SOLENOID POWER SUPPLY	HOST PC		

RELAY

RELAY CONTROL

USB

ATMEL SAMD21 ARM MCU

DMA SPI BUS — APA 102 → APA 102 → ~

DMA SPI BUS — APA 102 → APA 102 → ~

FAULT | CURRENT SENSOR | ADC READ

ADC READ — CURRENT SENSOR — 5V

48V

SPI BUS

GPIO

5V

FET BANK

24 COILS ~

OUTPUT REGISTERS

MCU TIMER INTERRUPT SYSTEM

SERVO BANK ~ MAX 6

SPI BUS

SPI BUS

16 GI BANKS

GI LIGHT BANK

OUTPUT REGISTERS

12V

STEPPER/ DC DRIVER SLOT — MOTOR 0

FROM PLAYFIELD → 64 MAIN SWITCHES

STEPPER/ DC DRIVER SLOT — MOTOR I

FROM PLAYFIELD → 16 OPTO SWITCHES

STEPPER/ DC DRIVER SLOT — MOTOR 2

FROM CABINET → 16 CABINET SWITCHES
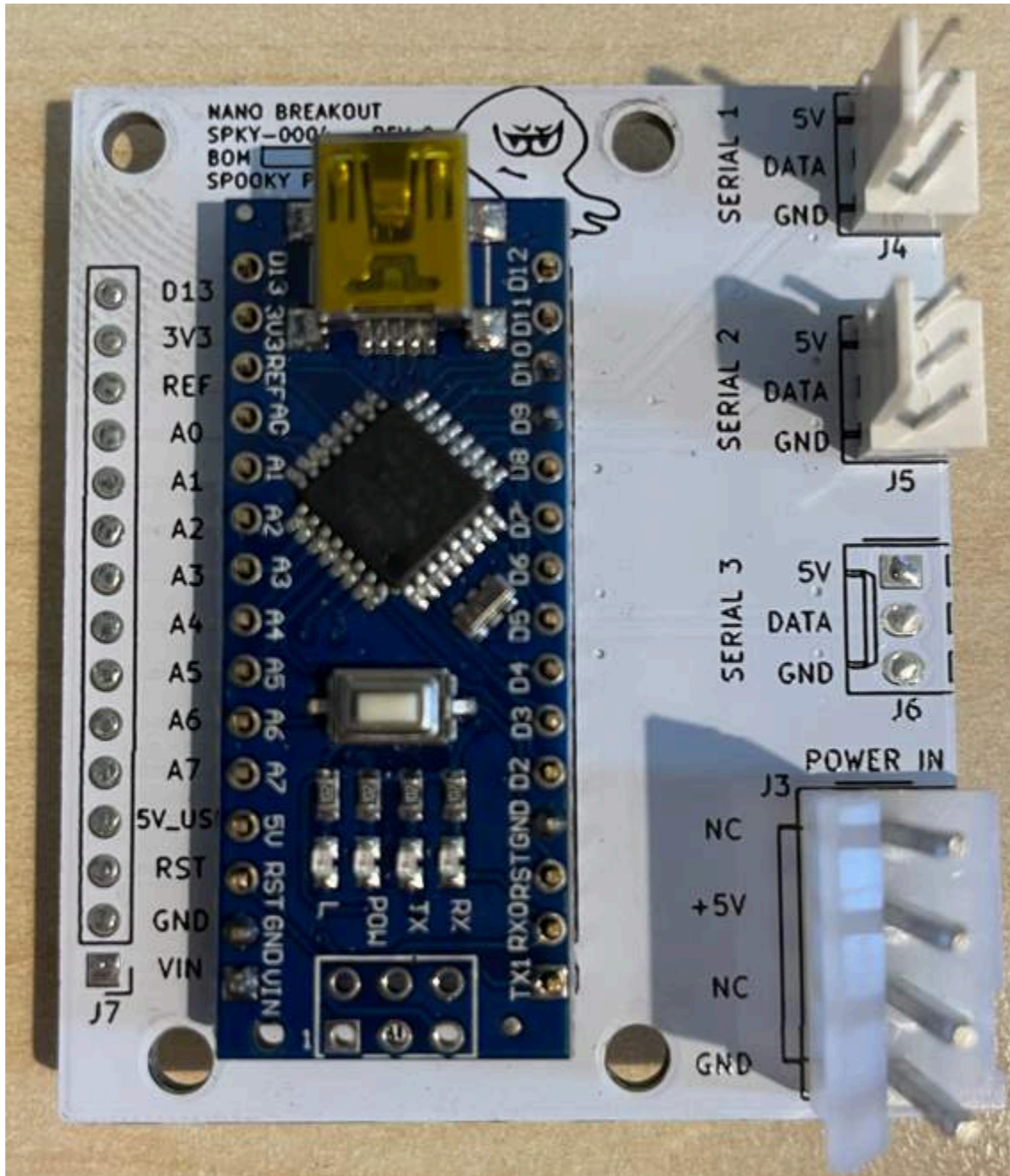
STEPPER/ DC DRIVER SLOT — MOTOR 3

SPOOKY PINBALL
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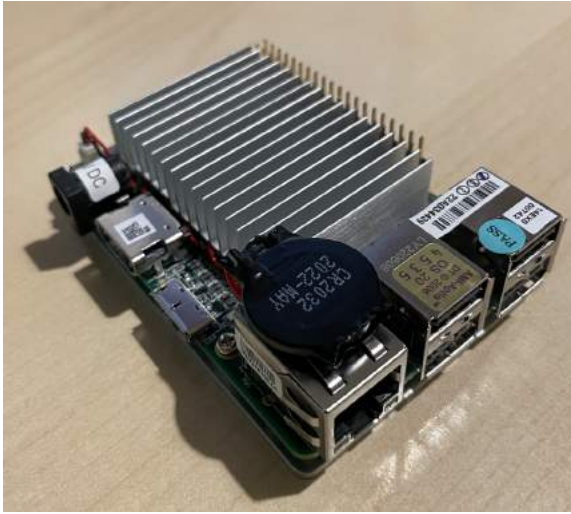# Breakout Board for Speaker and Topper Lights

- Serial 1 [D10] Speakers (left 12 LEDs then right 12 LEDs)
- Serial 2 [D9] Topper (18 LEDs)
- LEDs are WS2812B

Computer

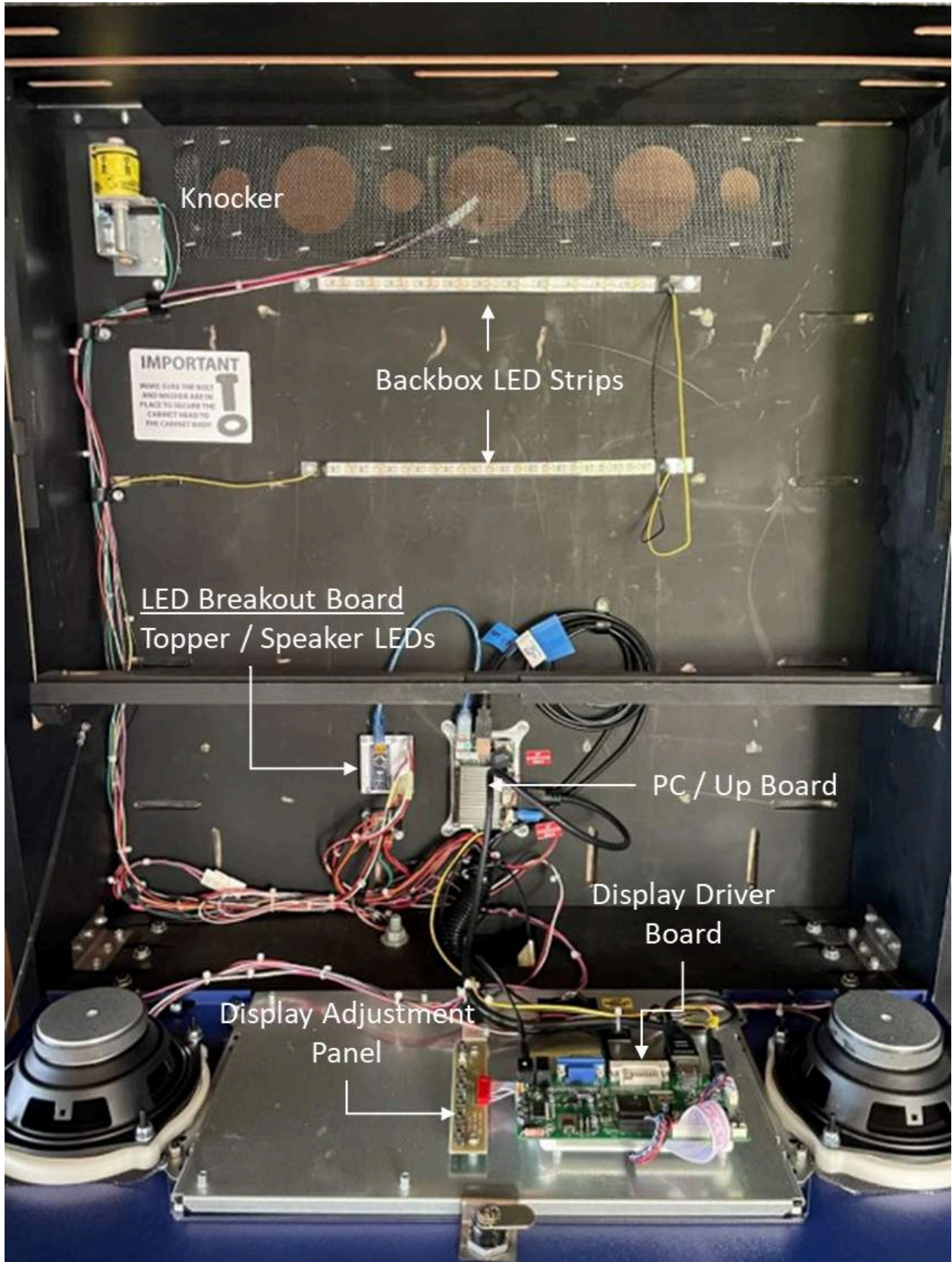There are two types of computers that control game logic

| UP Board	Ouvislite/Kamuri Mini PC
• 5V power • 4 x USB • HDMI • audio is fed via HDMI to LCD output audio jack • LAN (unused)	• 12V power • 4x USB • 2x HDMI • VGA (unused) • 3mm audio jack • LAN (unused)

Backbox Components

LCD Display

Recommended Settings: (access using Display Adjustment Panel board to the left of the Display's Driver board)

Brightness - 40%
Contrast - 80%
Gamma - On
(note audio jack plugged into left port for UP Board Mini PC)
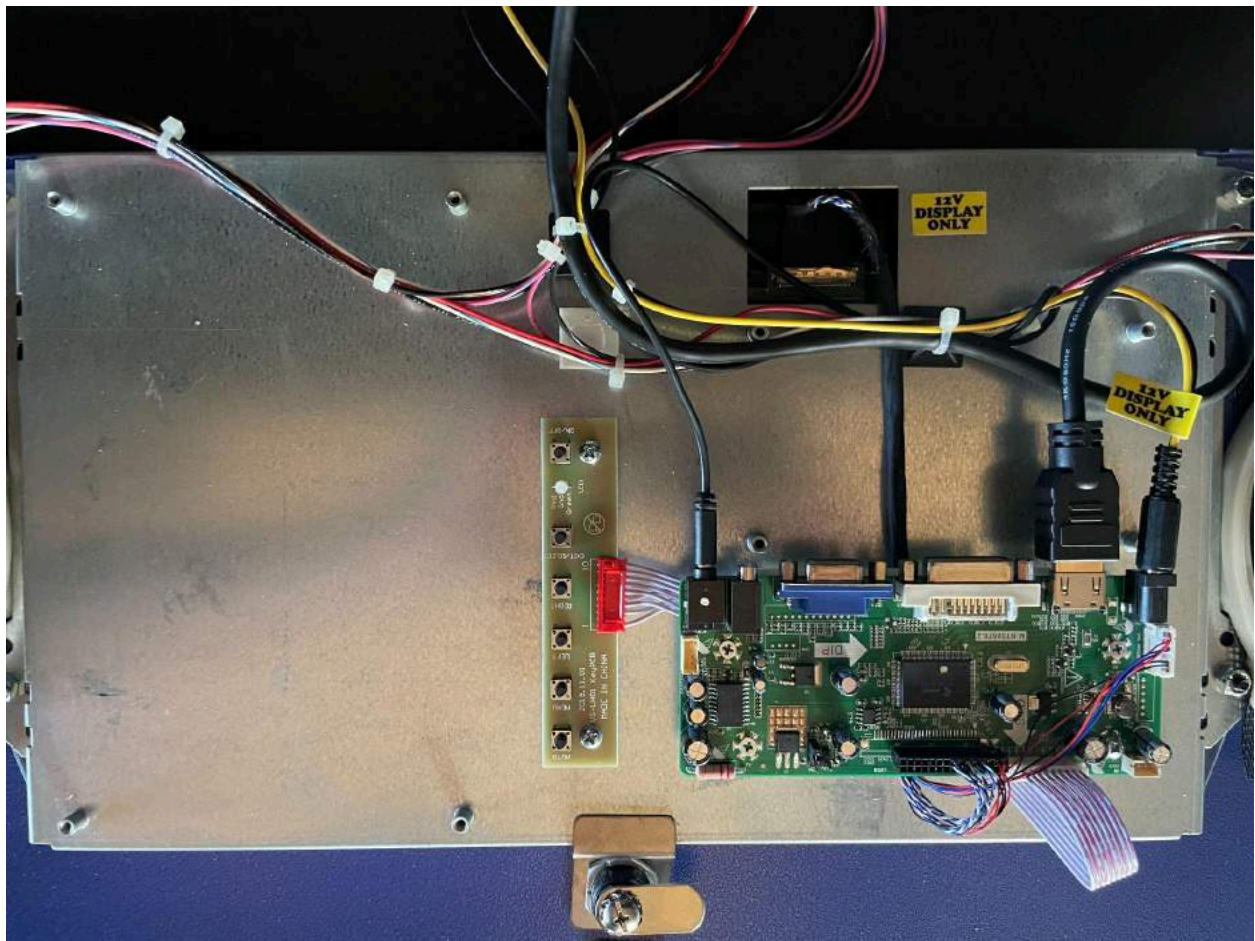
Screen Size   27 Inches
Display Resolution Maximum 1920x1080
Brand   VSDISPLAY
Connectivity Technology   VGA, DVI, HDMI
Display Type   LCD

About this item:
- Compatible Work With: 27inch 1920x1080: TPM270WF1-MWN1

- HDMI DVI VGA AUDIO LCD Board for LVDS Interface LCD Screen
- Video Input: HDMI DVI VGA
- Audio Input: HDMI
- Audio Output: Speaker Connector
- Recommend Power Adapter Spec.
        - Input Power Adapter: 12Vdc More than 2A.
            (VSDISPLAY Power Adapter, AC 100-240V Input to 12V DC,2A Output ,Power
Supply, US Plug , Fit SC24W-1202000U jhd-ap024u-120200ba-a , Fit for All Types of
VSDISPLAY LCD Controller Board)
        Goes into Standby Mode When No Input Signal Standby Mode power usage <1W.
- Packing list :
        1× HD-MI VGA DVI LCD Controller Board M.NT68676.3 (new version)
        1× Inverter Board
        1× LVDS Signal Cable
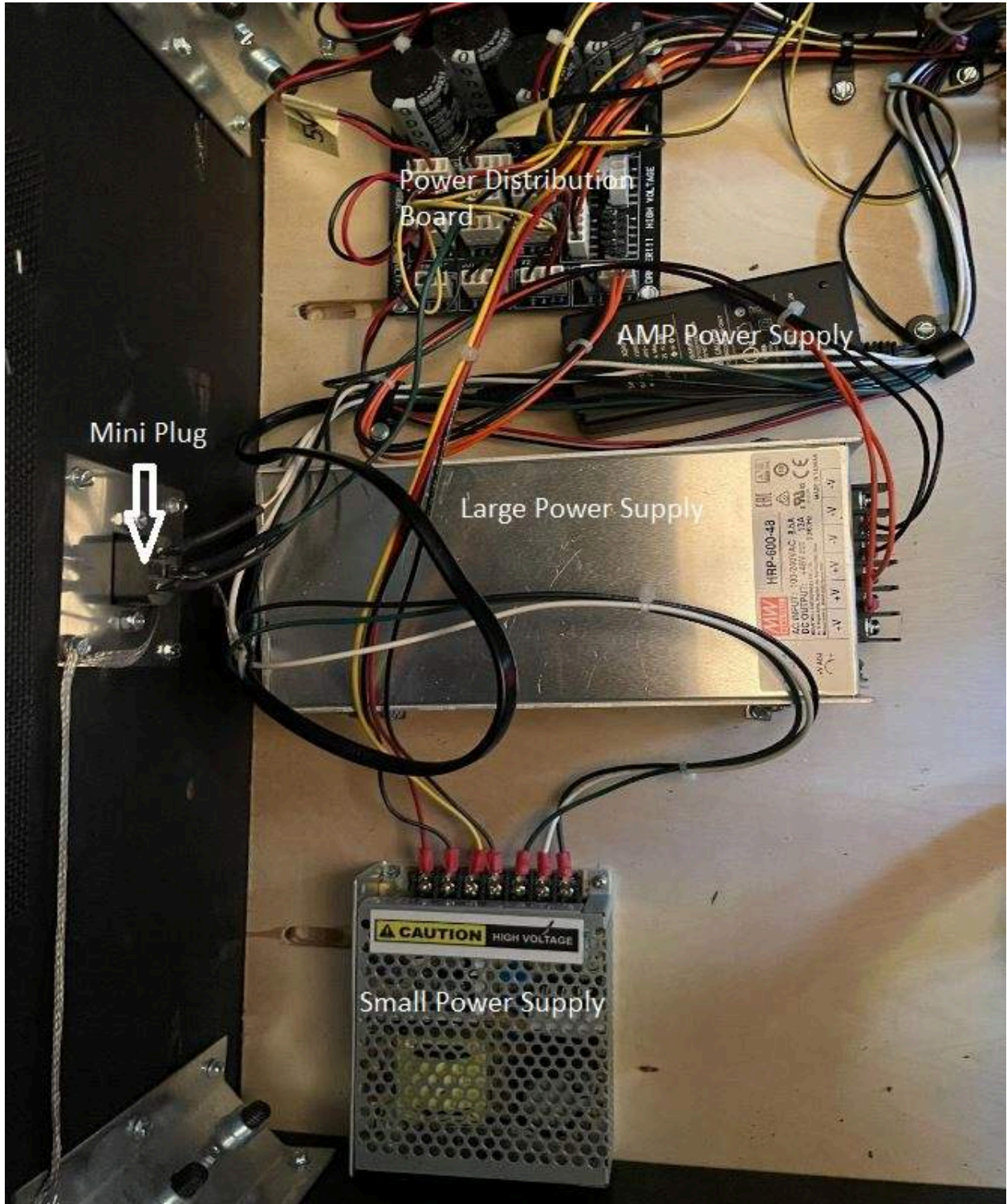   1× Keyboard With Cable
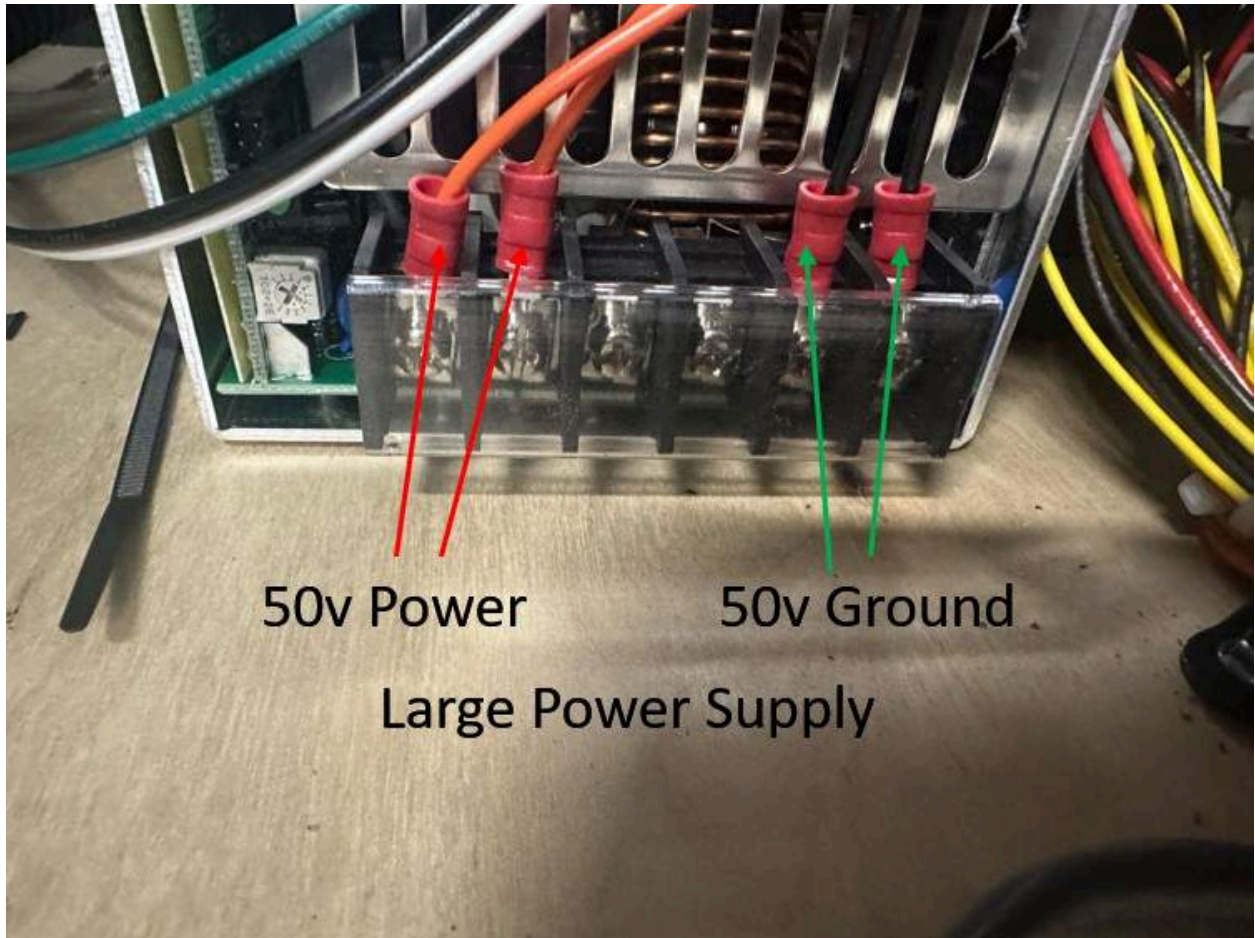   (Please Note There is No Power Adapter in The Packing List.
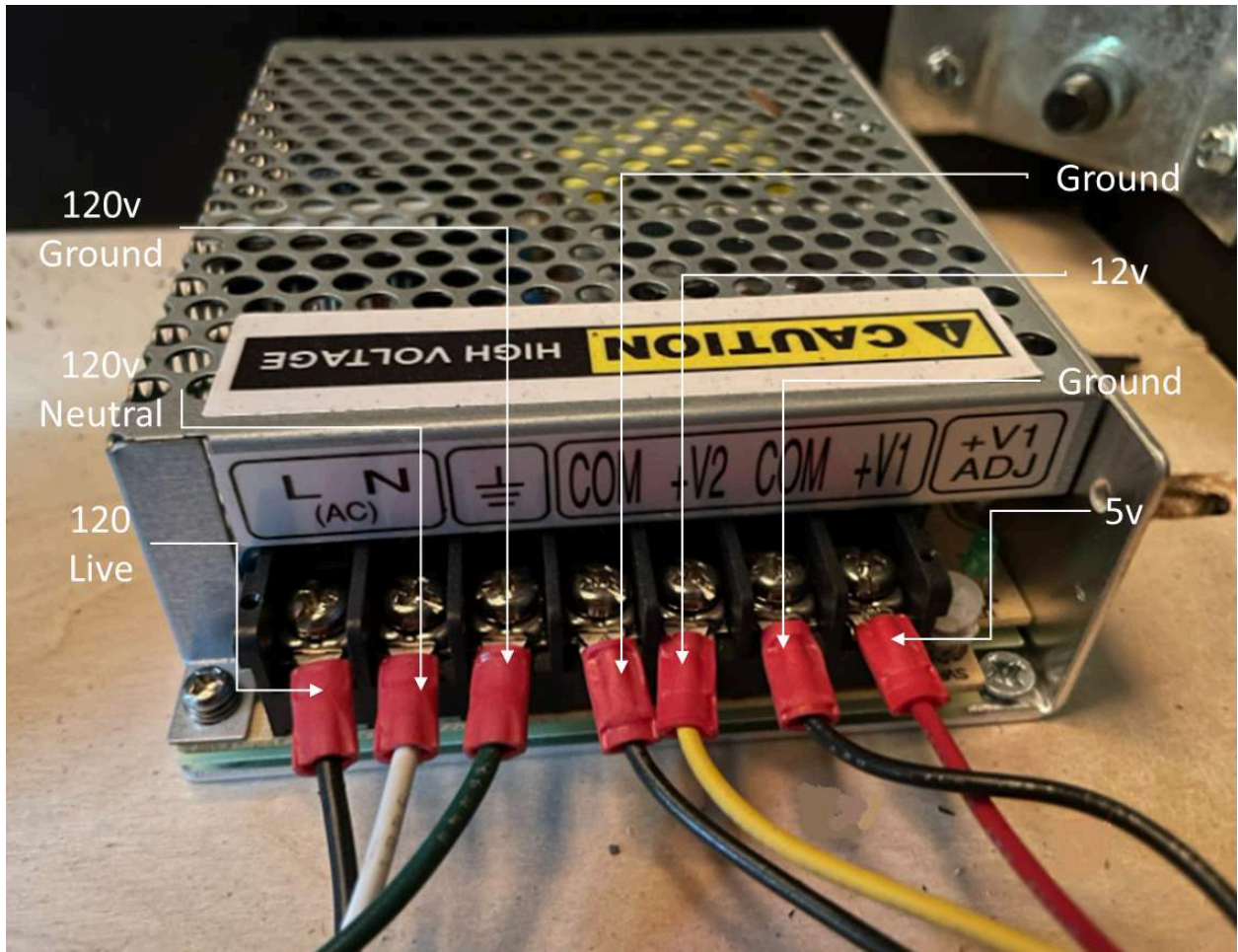
Bottom Cabinet Components:

Bottom Cabinet Back Half

Large Power Supply Picture

50v Power   50v Ground

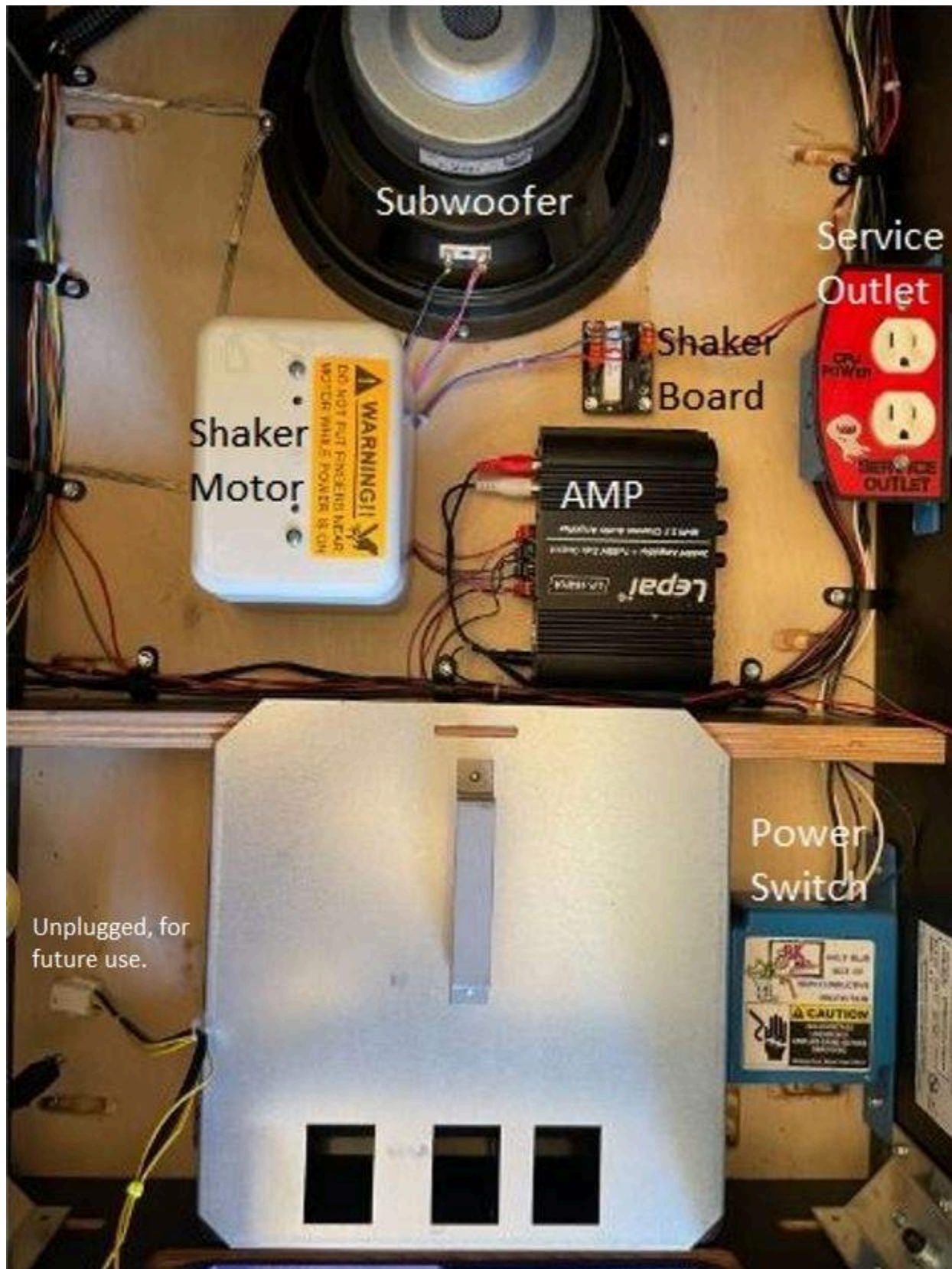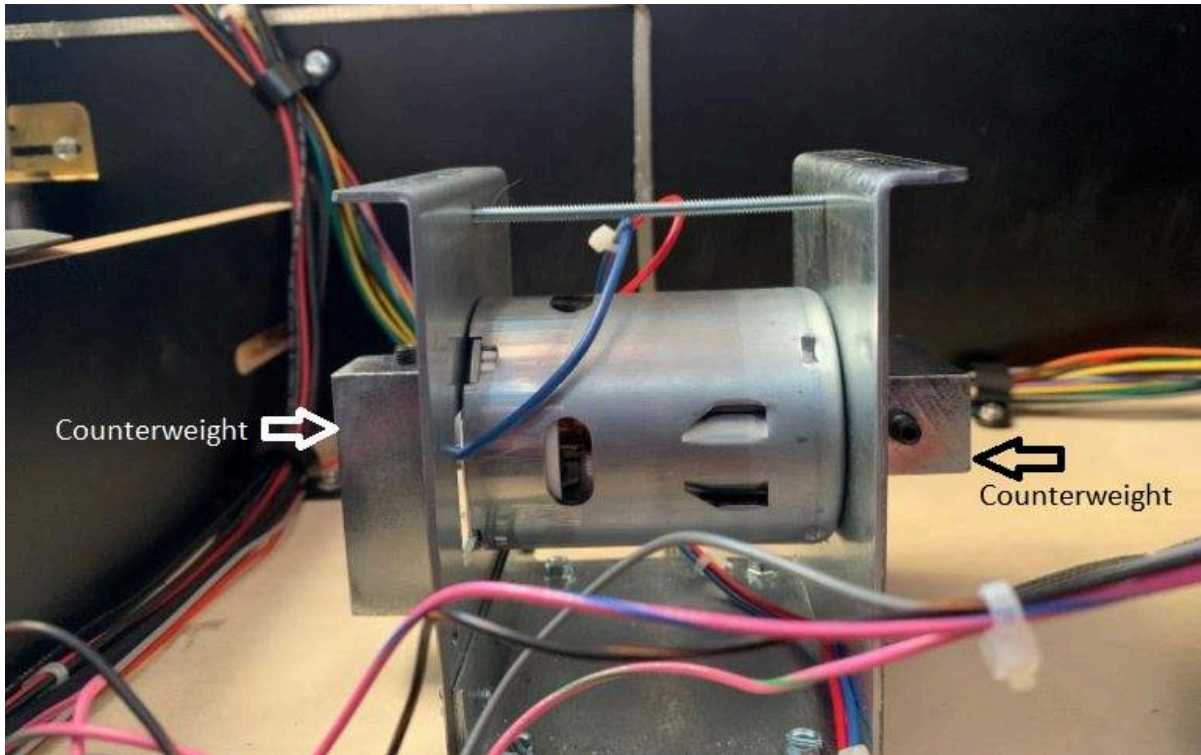Large Power Supply

Small Power Supply

Bottom Cabinet Front Half

Shaker Motor

Shaker Motor Vibration Adjustment:

With the shaker motor cover removed you'll see two counterweights on each side held in place with a 'hex screw'. By loosening the 'hex screw' you'll be able to rotate the counterweight.

Settings:
1. Both weights in same direction = Strong Shake
2. One weight at a 90 degree angle as shown in photo = Medium Shake
3. One weight at 180 degree angle from the other counterweight = Low Shake

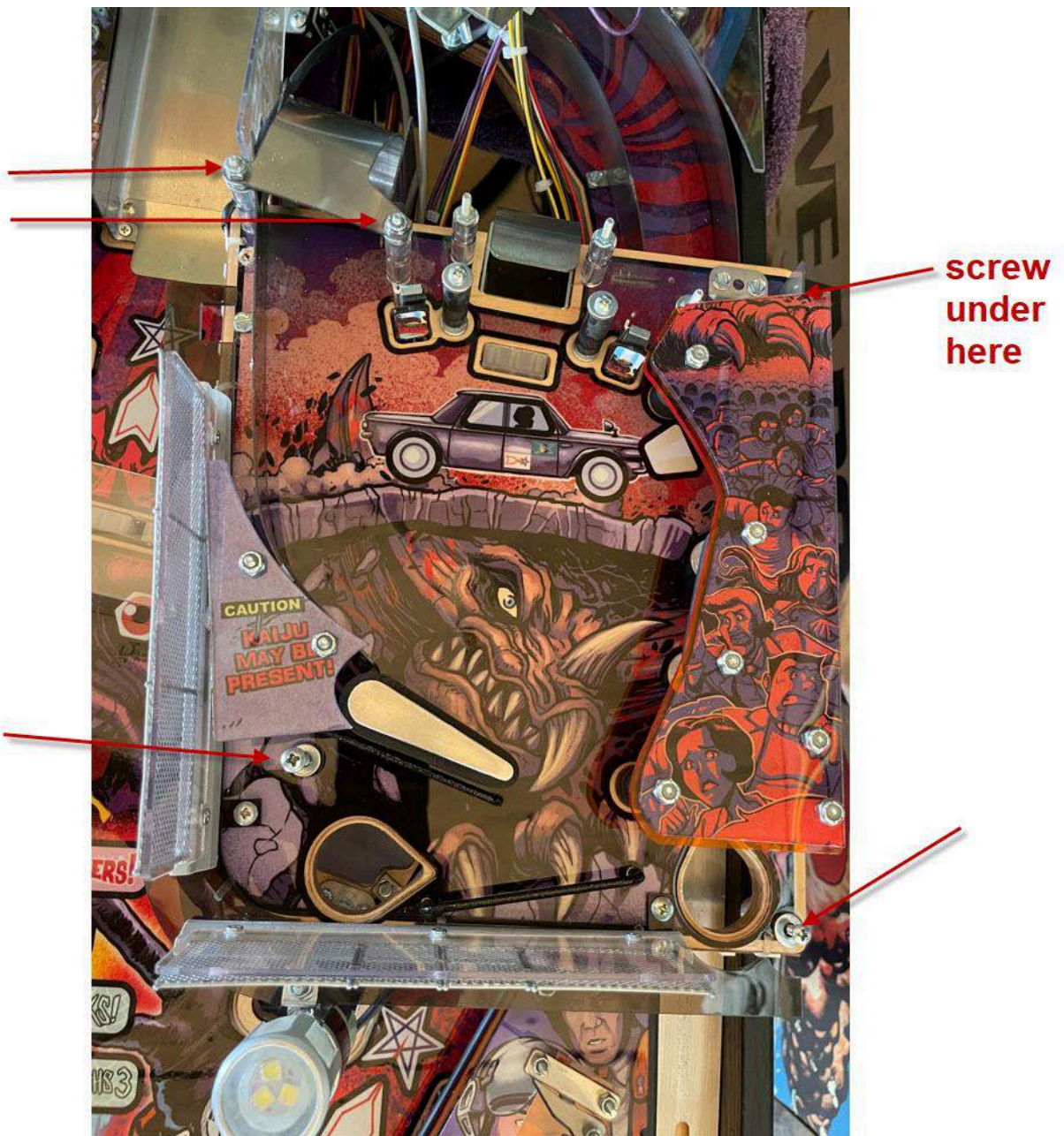Once you've made adjustments, ensure the 'hex screws' are good and tight, replace the protective cover.

Removing Middle Playfields

Remove small screw on Beta Capsule post then unplug from under playfield

Remove the big screw a long way out, approximately an inch.
Remove other screws.

screw under here

Unplug the wire running to the bottom right hand side of drop targets.
Slide forward and sit back on 180.

This light can be damaged from balls leaving the shooter lane. It can be moved to the left to make it safer.

move this light from being attached here

to here
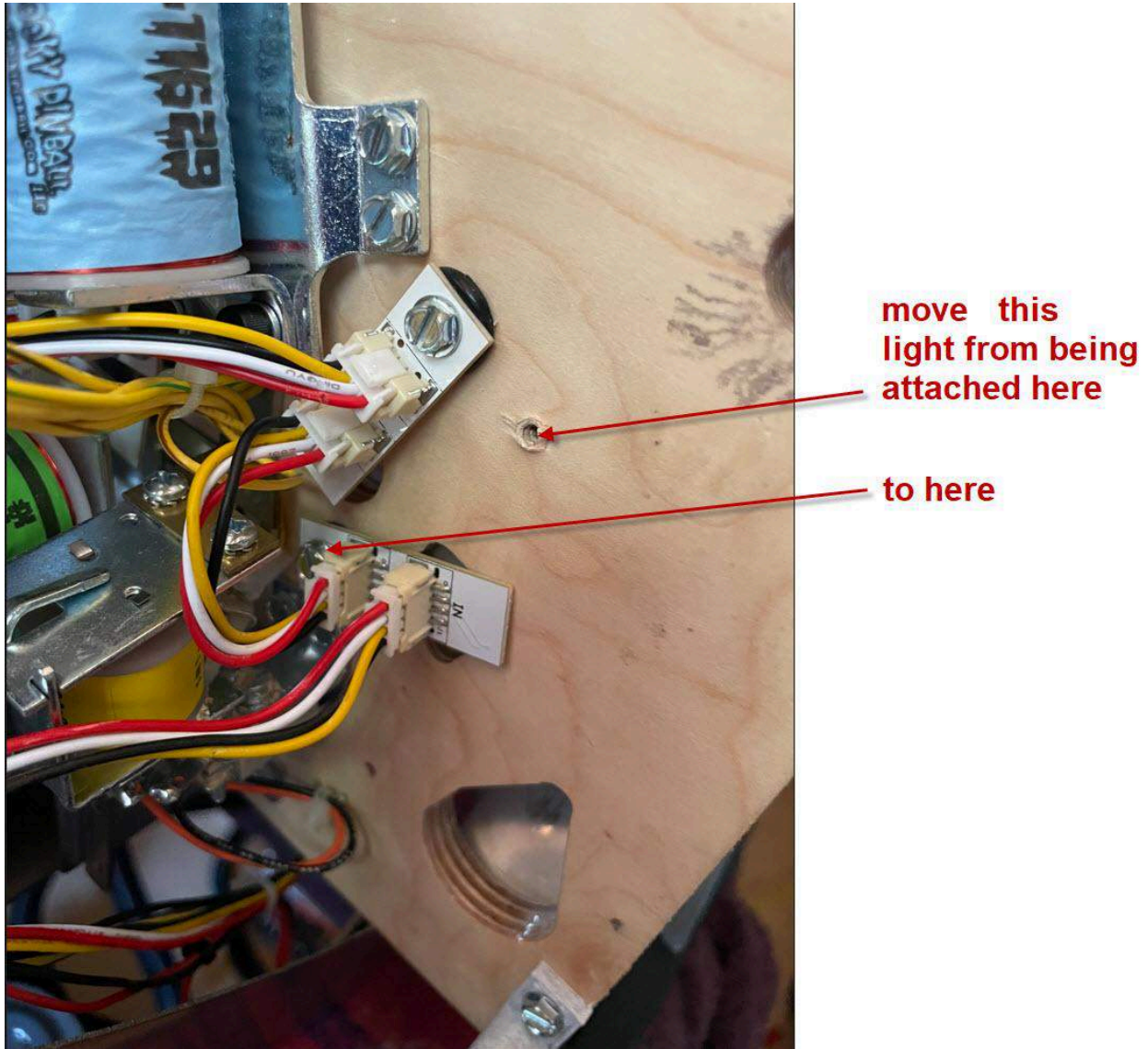
Middle Playfield Installation

Install Beta Capsule with a small screw.
Put the playfield in position.
Install 180 ramp nuts.
Install 3 middle playfield screw
Plug Beta Capsule wire back underneath the playfield.

Removing Upper Playfields

Upper Playfield Removal

Remove LED FLashers
Remove plastic off backboard
Remove long black screw from stand-off tube
Unhook springs on right hand side of drop ramp
Lift playfield and pull away

Install Upper Playfield

Lower into position and slide into the slot on the backboard.
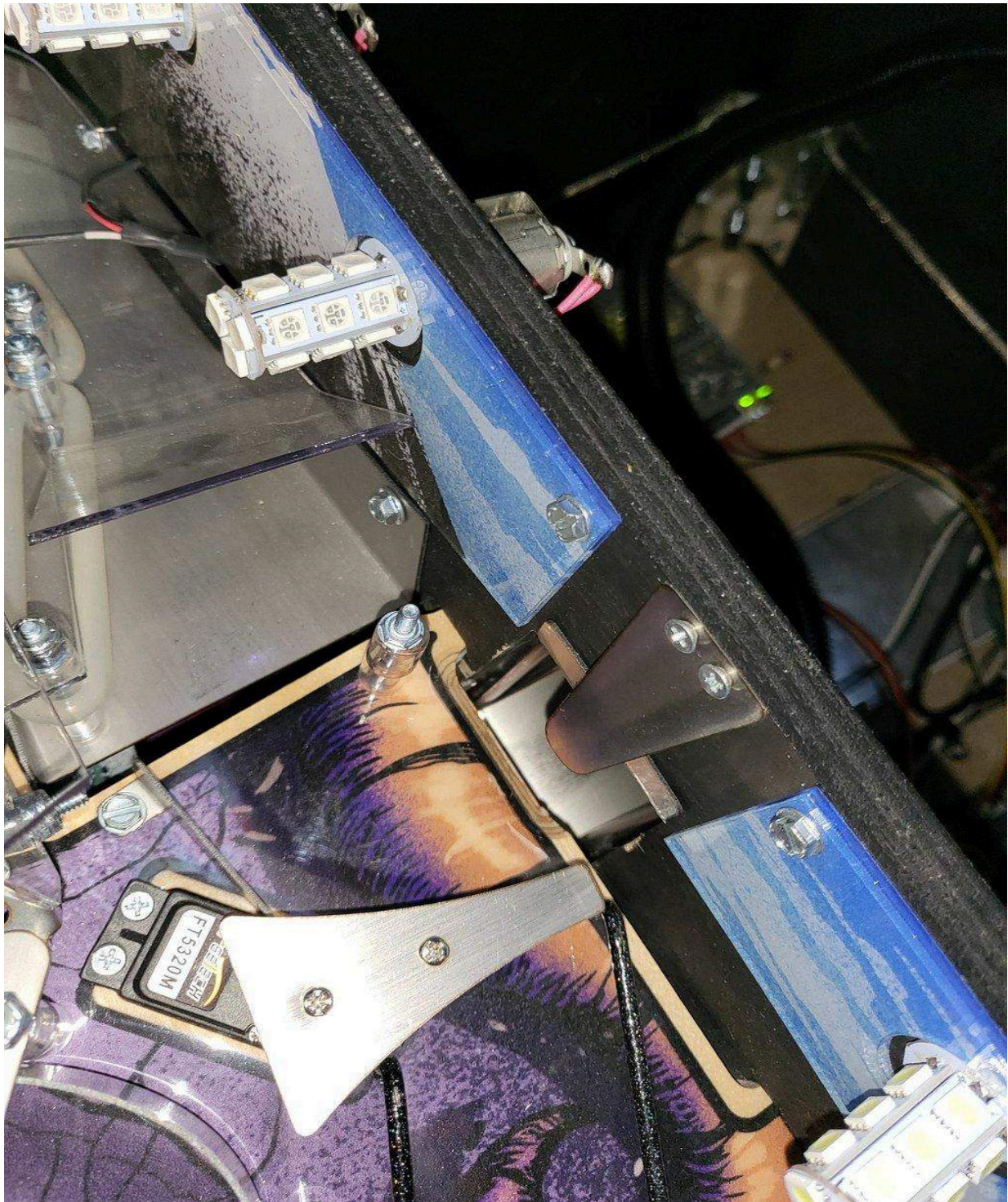Attach springs on the right hand side of the drop ramp.
Install the big black screw into black stand-off tube.
Install two screws into the back bracket.
Reinstall back plastic.
Install flashers

Diverter Photo:

Amp Photo/Description

1) Main Volume - Turn it all the way up and then dial it back a quarter turn.
2) Bass - All the way down and turn it up a quarter turn.
3) Treble - All the way up and turn it down a quarter turn.
4) Crossover (Small Dial) - All the way down and turn it up an eighth of a turn.
5) Subwoofer (Small Dial) - All the way down and turn it up a sixteenth of a turn. A very little bit.

These dials are listed from the back of the cabinet working towards the front. The most obvious issue is setting the subwoofer up to high. From there you can adjust it by ear. You may have to stand up to listen as they sound a bit different if you are ducked down reaching into the machine.

X-Over: An abbreviation for crossover frequency, which refers to the specific frequency at which a crossover will divide the audio signal into separate frequency ranges. Nearly all speaker cabinets used in PA systems or HiFi systems have multiple speakers that are optimized for specific frequencies; the crossover frequency is designed to divide the audio signal at the optimal frequency for the included speaker drivers.

Distribution Board Photo
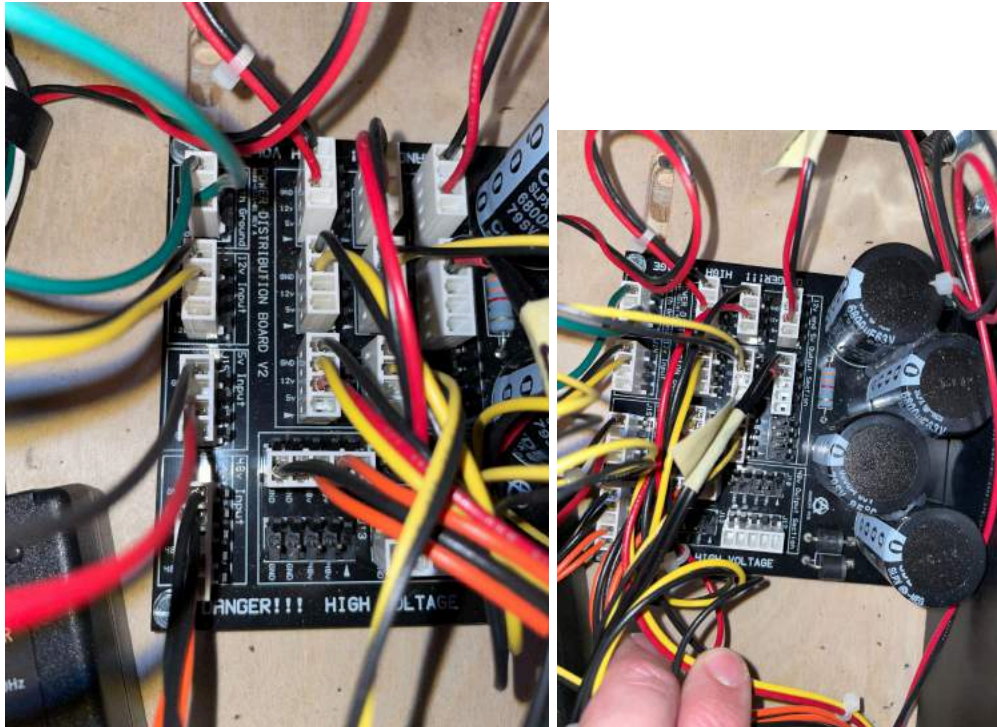
Trough Photo
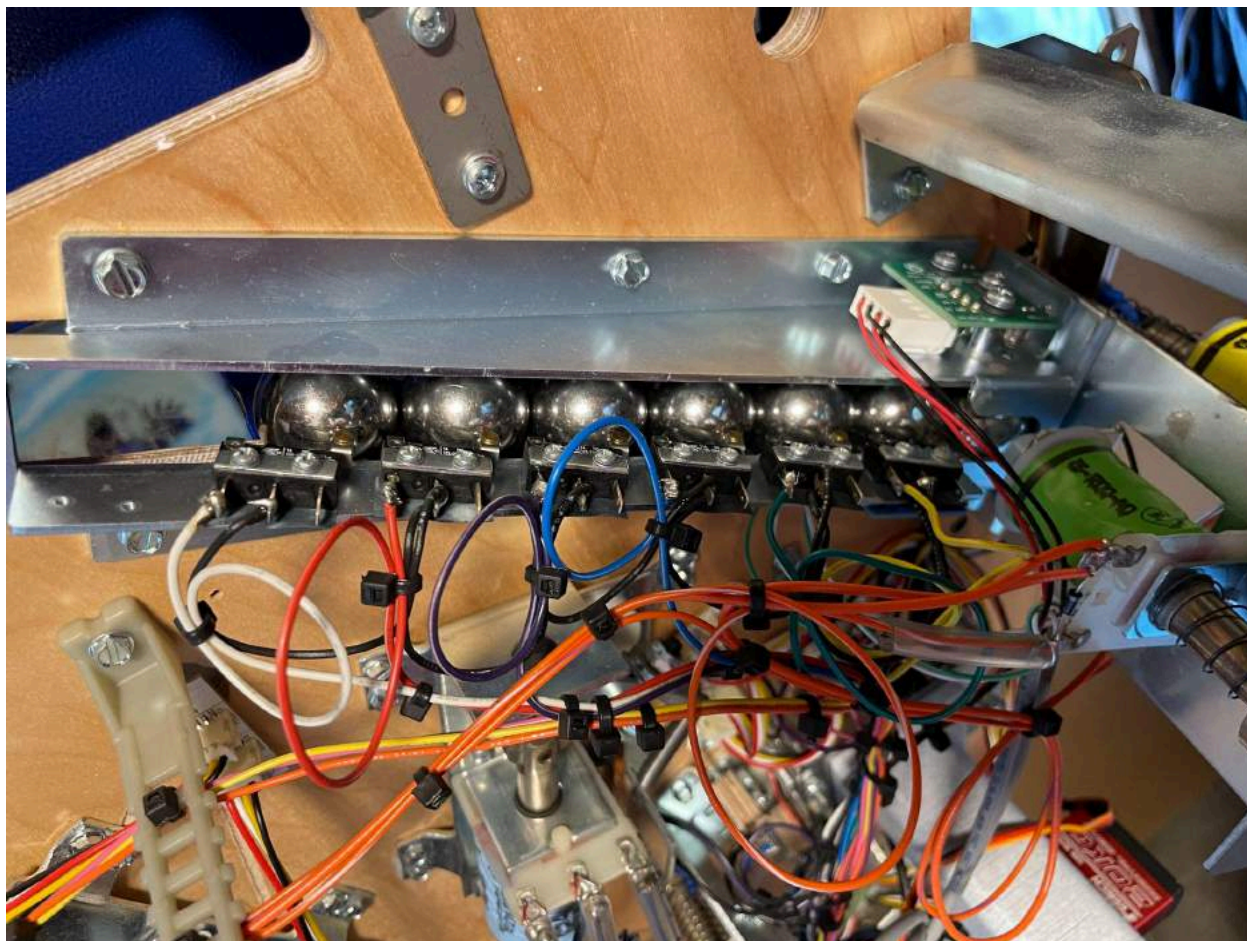
Shaker Board Photo
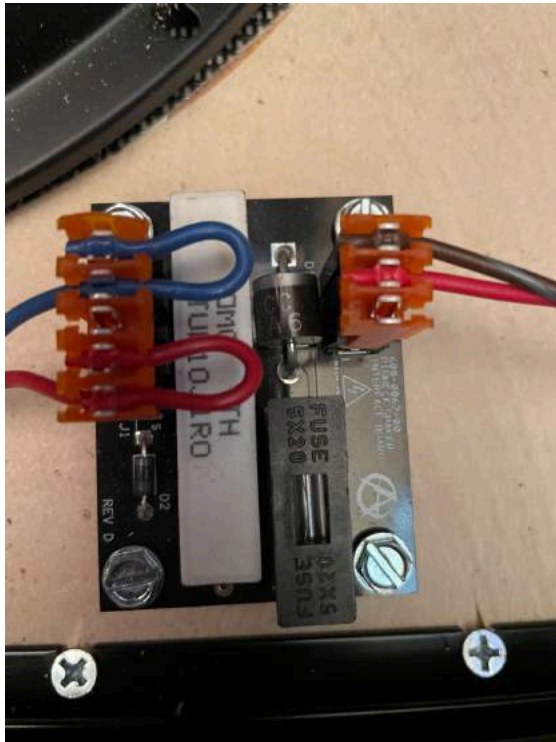
Light Chain Photos

Rubber Rings Location and sizes

F	1 1/2"	
E	3"	
D	1 3/4"	
C	2 1/2"	
B	1 1/4"	
A	2"	

1/2 "Thick

1 1/16" - Rubber Post Sleeve

3/16" OD - Spike Post

1" iMini Flipper

3/8 " and a Thick 1/2"

3/8"

1 1/2" Flipper Rubber

A = 2
B = 2
C = 2
D = 2
E = 1
F = 2
G = 2
H = 7
J = 4
K = 2
L = 2
M = 2

1 1/2"   F
3"   E
1 3/4"   D
2 1/2"   C
1 1/4"   B
2"   A

1/2" Thick

1 1/16" - Rubber Post

3/16" OD - Spike Post

1" iMini Flipper

3/8" and a Thick 1/2"

3/8"

1 1/2" Flipper Rubber

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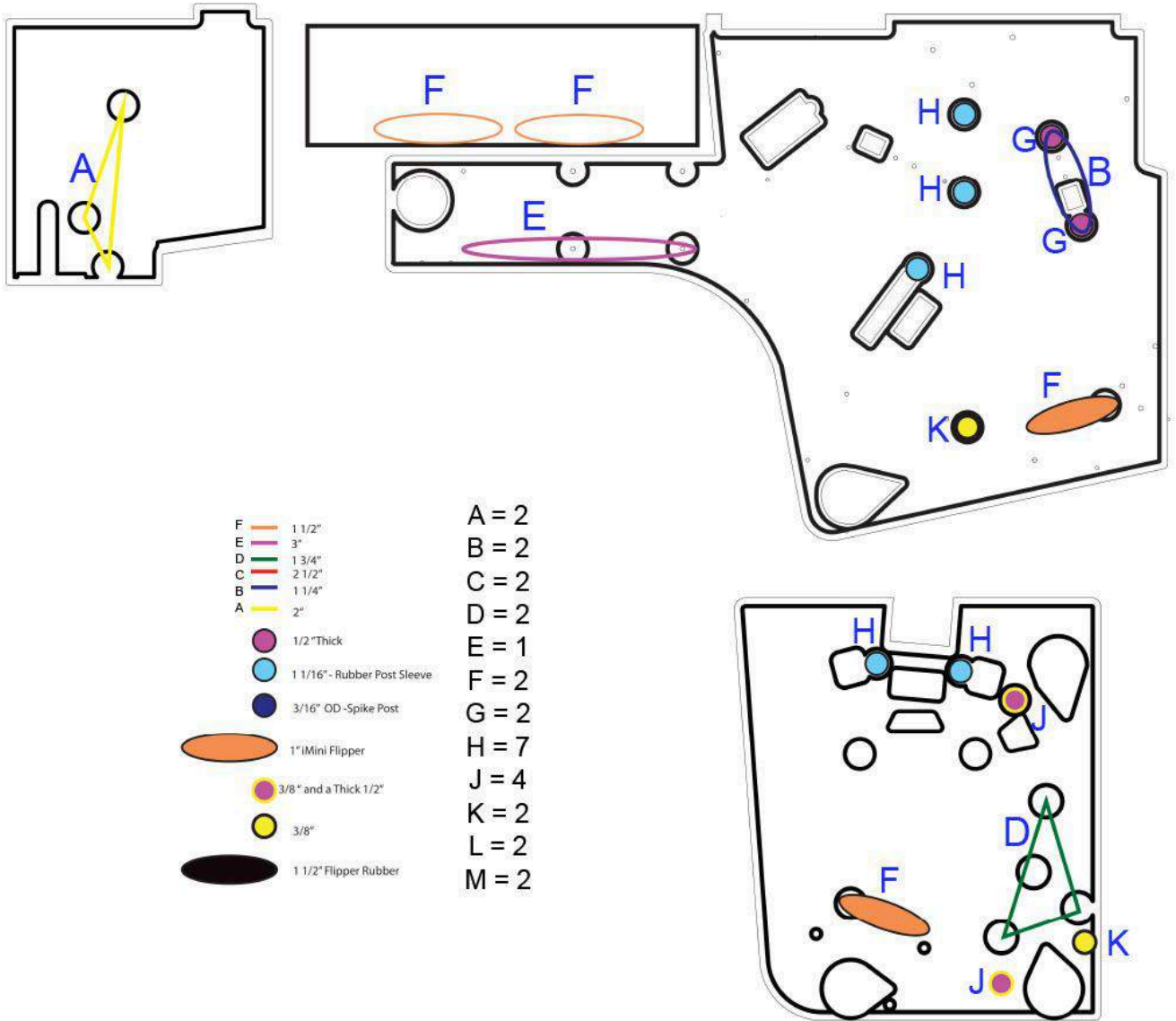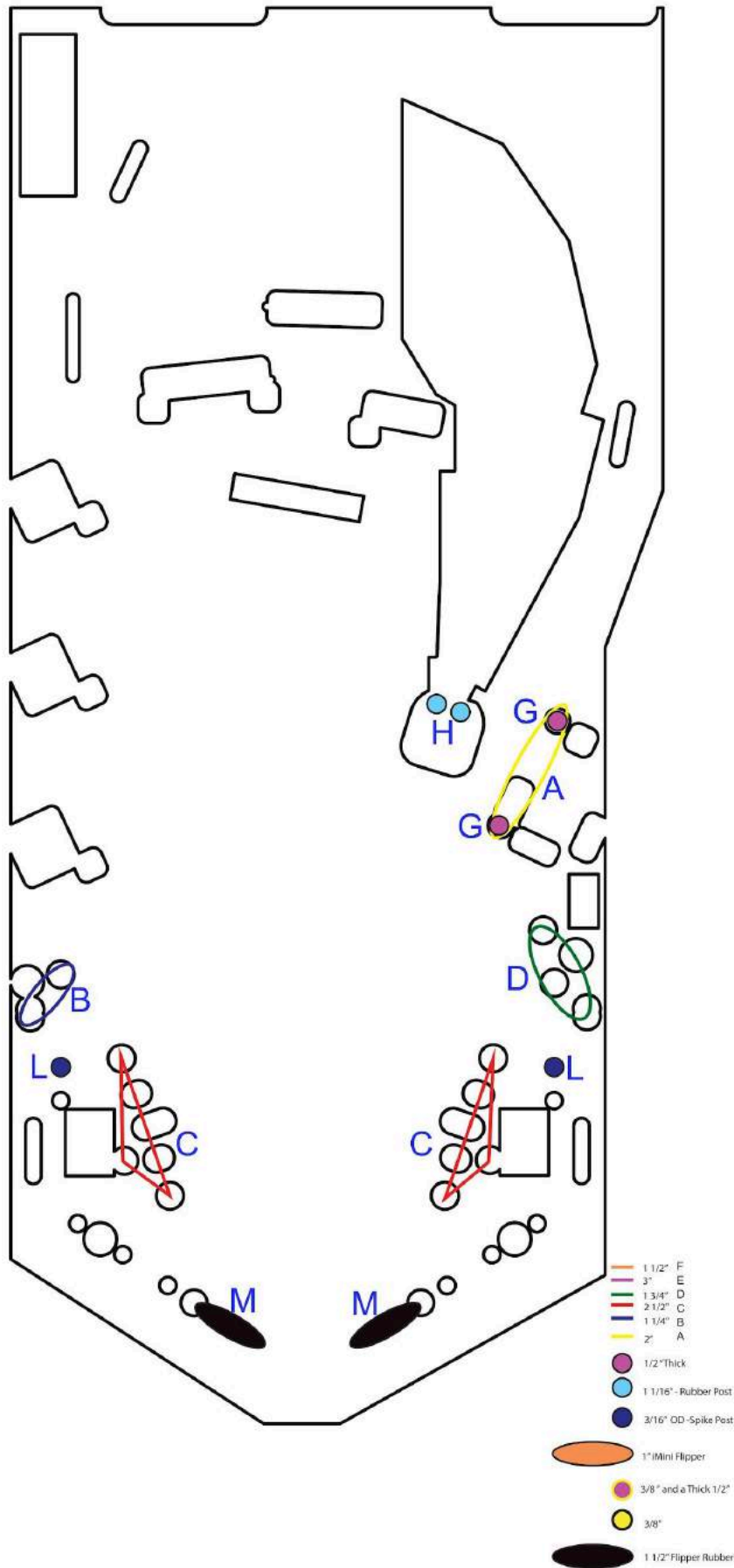
Playfield Switch Locations Photo (UM/HW)

Playfield Switch Description Chart (UM/HW)

Upper Playfield Switches

Number	Description	Switch #
45	Right Spinner	13
46	Upper Entry	14
47	Left Spinner	12
48	Upper Drop	26
49	Mid Ramp Top Lock 2	68
50	Crossover	67
51	Upper Right EOS	15
52	Upper Scoop	6

Middle Playfield Switches

Number	Description	Switch #
39	Balcony Drop	69
40	Upper Left EOS	4
42	Middle Right	7
43	Middle Drop	30
44	Middle Left	5

Lower Playfield Switches

Number	Description	Switch #	Number	Description	Switch #
1	Left Flipper EOS	49	21	Three Drop Middle	27
2	Left Outlane	50	22	Three Drop Right	28
3	Left Sling	51	23	Front Right Scoop	71
4	Left Subway 1	66	24	Placeholder	
5	Left Subway 2	73	25	Lower Right Drop Opto	72
6	Left Subway 3	78	26	Right Drop Target	31
7	Left Subway 4	74	27	Right Sling	37
8	Left Bottom Scoop	76	28	Right Outlane	33
9	Standup 1	52	29	Right Subway Lifter	70
10	Left Middle Scoop	79	30	Shooter Lane	23
11	Standup 2	53	31	Right Flipper EOS	36
12	Left Top Scoop	77	32	Trough Switch 1	65
13	Standup 3	54	33	Trough Switch 2	22
14	Left Ramp Exit	41	34	Trough Switch 3	21
15	Left Orbit	48	35	Trough Switch 4	20
16	Standup 4	55	36	Trough Switch 5	16
17	Standup 5	39	37	Trough Switch 6	19
18	Middle Ramp	75	38	Trough Switch 7	18
19	Standup 6	38	41	Right Orbit	35
20	Three Drop Left	29	52	Upper Scoop	6
			JAM	Trough Jam Switch	64

Halloween Playfield LED Locations Photo

Upper LED Strip 70-104

70

112
111
110
108
109
107
106

Lower LED Strip 118-145

118

115
116
117
114
113

Lower LED Strip 145

Halloween/Ultraman LED Location Chart

CHAIN 1				CHAIN 2			
#	Name	#	Name	#	Name	#	Name
PLUG	ON PINOTAUR			PLUG	ON PINOTAUR		
0	center_ramp_blade	35	asylum_3	70	upper strip - right	108	right_spinner
1	center_ramp_handle	36	house_1	71	upper strip	109	house_spinner_1
2	bank_3	37	house_2	72	upper strip	110	house_spinner_2
3	bank_2	38	house_3	73	upper strip	111	house_spinner_3
4	bank_1	39	house_mode_right	74	upper strip	112	house_spinner_4
5	target_5	40	house_mode_left	75	upper strip	113	super_exit
6	left_ramp_handle	41	sub_wizard	76	upper strip	114	middle_right_target
7	left_ramp_blade	42	wizard_right	77	upper strip	115	middle_drop_target
8	target_4	43	wizard_left	78	upper strip	116	middle_drop_on_target
9	left_orbit_blade	44	pumpkin_state	79	upper strip	117	middle_left_target
10	left_orbit_handle	45	judith_tomb	80	upper strip	118	lower strip - left
11	left_orbit_blood	46	infected_state	81	upper strip	119	lower strip
12	top_mike_blood	47	left_ramp_blood	82	upper strip	120	lower strip
13	top_mike_blade	48	pumpkin_eye_left	83	upper strip	121	lower strip
14	top_mike_handle	49	pumpkin_nose	84	upper strip	122	lower strip
15	mid_mike_blood	50	pumpkin_mouth_1	85	upper strip	123	lower strip
16	mid_mike_blade	51	pumpkin_mouth_2	86	upper strip	124	lower strip
17	mid_mike_handle	52	pumpkin_mouth_3	87	upper strip	125	lower strip
18	low_mike_blood	53	pumkpin_eye_right	88	upper strip	126	lower strip
19	low_mike_blade	54	target_6	89	upper strip	127	lower strip
20	low_mike_handle	55	right_ramp_blade	90	upper strip	128	lower strip
21	left_outlane	56	right_ramp_handle	91	upper strip	129	lower strip
22	inlane_left_top	57	right_ramp_blood	92	upper strip	130	lower strip
23	inlane_left_mid	58	right_subway_scoop	93	upper strip	131	lower strip
24	inlane_left_bottom	59	right_orbit_handle	94	upper strip	132	lower strip
25	save_light	60	right_handle_blood	95	upper strip	133	lower strip
26	hedge_progress_1	61	extra_ball_1	96	upper strip	134	lower strip
27	hedge_progress_2	62	inlane_right_bottom	97	upper strip	135	lower strip
28	hedge_progress_3	63	inlane_right_mid	98	upper strip	136	lower strip
29	hedge_mode_right	64	inlane_right_top	99	upper strip	137	lower strip
30	hedge_mode_left	65	right_outlane	100	upper strip	138	lower strip
31	asylum_1	66	extra_ball_2	101	upper strip	139	lower strip
32	asylum_2	67	extra_ball_3	102	upper strip	140	lower strip
33	asylum_mode_left	68	extra_ball_4	103	upper strip	141	lower strip
34	asylum_mode_right	69	right_orbit_blade	104	upper strip - left	142	lower strip
			END OF CHAIN 1	105	crossover_drop_target	143	lower strip
				106	crossover_blood	144	lower strip
				107	left_spinner	145	lower strip - right
							END OF CHAIN 2

Ultraman Playfield LED Locations Photo

Servos

The game has 6 servos
Small: MG90S servos for the Baltans/Michaels on the left - get these metal gear replacements:
https://www.amazon.com/gp/product/B0874JS7BX

Big: Feetech FT5320M servos that run the ball lifters and the ramp diverter
https://www.amazon.com/FEETECH-Voltage-Waterproof-Digital-Aluminium/dp/B097DGT8G7?th=1

Repositioning

If you need to move a servo physically, take a note of its position, unplug it or do it while the game is off as when they have power they are unable to move and can be damaged if you do so.

Subway lifter: When the arm is in the down position you want the top of the arm as close to the height of the base of the subway as possible, without going above the bottom of the subway (this would create a ball trap).

Troubleshooting

1. **Game acting weird/berserk**
   Bad servos can cause pinotaur to malfunction. Disconnect each one to test (start with the Michaels/Baltans). The game will start operating normally when the improperly working one has been disconnected.

2. **Auto plunger weak**
   Take off the glass and check the metal auto-plunger forks aren't hitting the rubber tip of the manual plunger. The playfield can move left or right a bit to help clear it. I move mine over as far left as I can when I put the playfield back down. You can also loosen the screws that hold the manual plunger to the cabinet and can adjust and re-tighten as well, which is an even better solution.

3. **Ball locked in Judith Tombstone/Science Patrol is released when new ball is being auto-plunged**
   Check all your trough switches carefully. When the new ball is being ejected it can cause the others to jiggle around. The code allows for this to happen for a short time, but if any of your trough switches are sticking, it may seem like an extra ball is in the trough (i.e. what happens when you drain) and so it releases the ball. Make sure you test the switches with balls as well as just finger tests, also try moving the balls over the switches at different speeds. Don't forget that when a ball is locked, and the next one is ejected, there are only 5 balls in the trough at this stage, start the test with this many balls as well as trying other configurations.

4. **Ball locked in Judith Tombstone/Science Patrol, new ball auto-plunged and drains, locked ball not released**
   Check your trough switches, (highest Trough7 especially). These are what tell the machine that you've drained and it should release the ball to continue play. Use the ball trough test and look through the coin door at the switches from underneath. If any of them are sticking (even just sometimes) they will cause this behavior. Causes of sticking might be the trough metal is too tight, the balls may have become magnetized (try some different ones), or switches aren't moving freely.

5. **When a ball is ejected to the shooter lane, it bounces back in**
   Reduce the TROUGH coil strength (just one level at a time and re-test) in the menu settings. This should never happen and will cause an extra ball to sit in the "trough jam" state above the first ball in the trough. This can then cause more problems when the next ball is ejected as it will be trying to eject two at once (only one makes it out - the other one goes back into the jam location and the cycle continues)

6. **At ball start it doesn't successfully eject a ball until try 2 or 3**
   Use the TROUGH TEST to make sure there isn't a ball in TROUGH JAM (clear it if there

is), increase the TROUGH coil strength (just one level at a time and re-test) so it is ejecting correctly

7. **Extra balls being ejected into the shooter lane**
   This is likely an issue with your shooter lane switch. Again, use the TROUGH TEST and check the switch with your finger as well as with a ball and make sure it is always activated when a ball is ejected.

8. **Super Exit shot out of middle playfield not working**
   This is most likely because the ball isn't hitting the right orbit switch when it drops through. Use the SWITCH TEST and drop/send the ball through the super exit at various speeds and make sure the right orbit switch is always being triggered. You can also play a game with the glass off and go into a mode such as Death In The Driver Seat/Ragon where the shot is lit. But there are some things you need to be aware of when testing this way: You must enter the middle playfield via the middle ramp/upper playfield OR you need to hit a middle playfield switch. Then you need to use the flipper to hit it through the Super Exit. This logic is required to differentiate the shot from a normal right orbit.

9. **Lights not working**
   Checking the wiring order above and find the lowest number one in the chain that isn't working, the fault will either be that light or possibly the output plug of the light before.There should be a few extra lights included that you can swap right into here to get back up and running right away!

10. Coils no longer firing, what now?

** Diagnosing Bad MOSFET on Scooby Doo Warden Board **

**** Materials Needed ****

- Multimeter with an ohm setting (preferably set to 20k)

- Chart for reference (see end of document)

- Wire snips

- Insulating tape

- Safety equipment (if necessary)

** **Note**: Ensure safety precautions are taken, and the machine is disconnected from power during this process. Seek professional assistance if you are not comfortable or experienced in working with electronic components. **

**** Step 1: Set Up the Multimeter ****

1a. Set a multimeter to the ohms setting, preferably at 20k. If 20k ohms is not available, use the closest available ohms setting. auto sensing can be used as well.

**** Step 2: Disconnect Coil Chains ****

2a. **Power off and unplug the machine if not already**. Carefully unplug the coil chains from the main Pinotaur board (SOL_Banks 0,1, and 2 connectors) underneath the playfield.
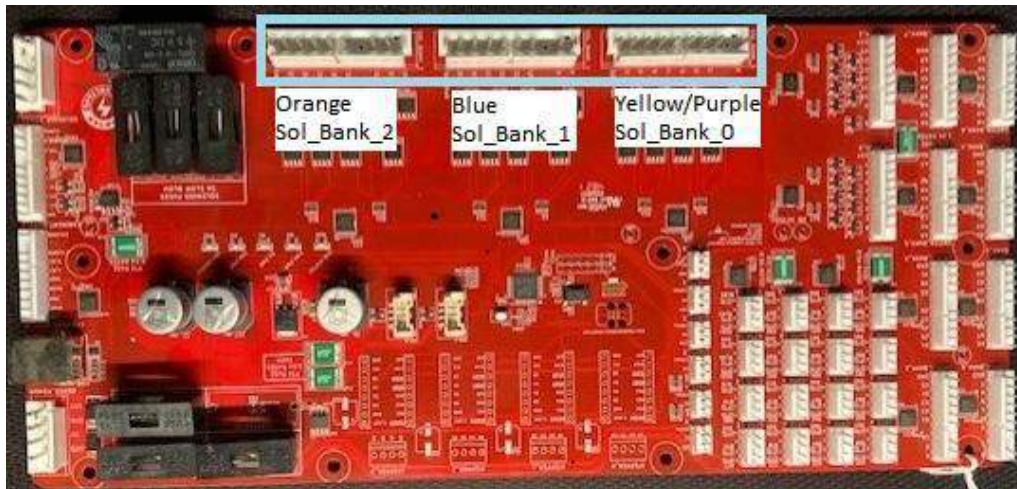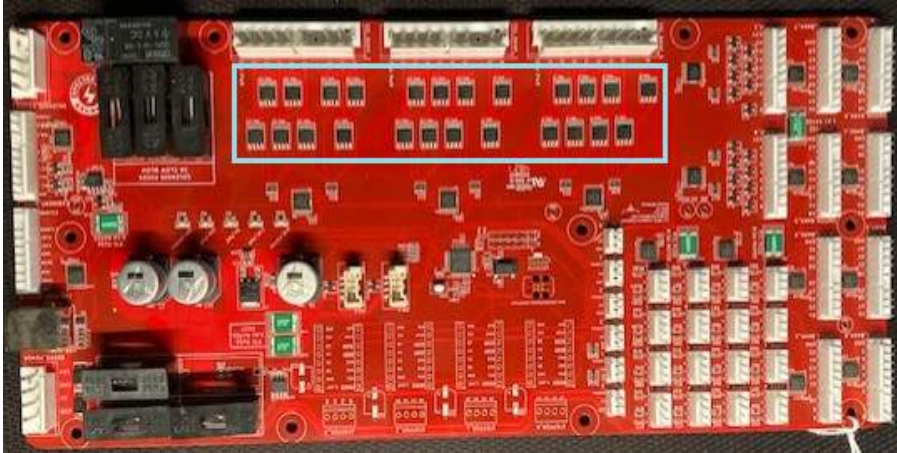

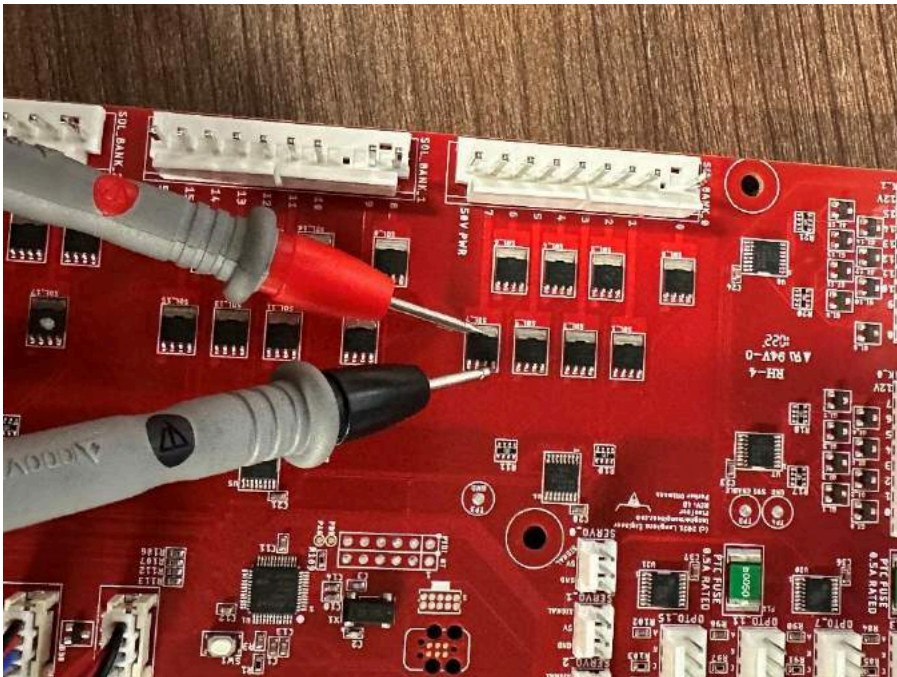**Sol_Bank_0 = Yellow / Purple Chain**

Sol_Bank_1 = Blue Chain

Sol_Bank_2 = Orange

_____

** Step 3: Test the MOSFETs **

3a. Identify the SOL 1-23 MOSFETs on the Pinotaur board.

3b. Place the red prong of the multimeter on the top bar of each MOSFET (SOL 1-23) and the silver prong on the bottom right foot.

3c. A functioning MOSFET should display no resistance reading. If there is any reading, it indicates a faulty component. Test all MOSFETs (SOL 1-23) and note the ones that produce a reading.

** Step 4: Identify the Coil **

4a. Use the provided chart below to correlate the faulty MOSFET to its associated coil.

** Step 5: Isolate the Faulty Coil **

5a. Move the coil plunger associated with the bad MOSFET by hand to ensure full motion. If the plunger is restricted the COIL is BAD too, make note. Check all coils associated with tested bad MOSFETs.

** Spooky Support **

Email: service@spookypinball.com and advise which MOSFETs are bad on your Pinotaur Board causing certain coils not to function. Please let support know if you have restricted coil movement since you'll need those parts too.

11. My lifter keeps going off, what do I check?

If the lifter is in a constant up and down rotation, double check in the switch menu that the opto is properly functioning. Most often one of the optos has stopped working and the machine thinks there is a ball stuck here, thus it's trying to move the lifter to clear the jam. If the opto tests out as bad, go ahead and move that opto with another known good working opto and this will tell you if the opto is the issue or if the board is the problem!

12. My lifter flap is catching the ball, how do I fix this?

Take a ¼ nut driver to the spike post and slightly loosen it up. With the post loosened up, you should be able to push the flap flat, and then re-tighten the spike post. As you do this make sure not to over torque the post as it may make the wrinkle show back up!

13. My upper right flipper doesn't flip when the rest do, why is that?

This flipper is activated when the upper playfield is accessible (several middle ramp shots are required to open this playfield up). If the mode is not active, the flipper will not move to help prevent unnecessary wear and tear on the mech!

14. How do I go about getting game specific replacement parts?

Just a reminder that we here at Spooky will be able to help you locate or be able to provide you with replacements of any game specific parts. Feel free to reach out with your inquiries over at service@spookypinball.com.