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Chapter 1 Game Assembly and Setup

Game Assembly and Setup

Tools Required

You will need the following tools for setup:

- 5/8" socket wrench
- Utility knife
- Wire snips
- Small bubble level (side-to-side and incline)
- Someone to help you

Game Dimensions

- Shipping box (h x w x d) 66 x 32 x 32 in
- Folded (h x w) 55 x 29 in
- Setup with topper (h x w x d) 90 x 29 x 55 in
- Setup without topper (h x w x d) 75 x 29 x 55 in

Parts List

Qty.	Part (s)
1	Set of coin door keys
1	Tilt plum bob
1	Back box (head) bolt
4	Pinball legs
4	Pinball leg levelers with nut
8	5/8" headed pinball leg bolts
4	Pinballs
1	Power cable (line cord) for your country's electrical sys- tem

Rubber Rings

Playfield Rubber Rings							
Qty.	Ring Size						
1	2 1/2 in						
2	3/4 in						
3	3/8 in						
8	3/16 in						
5	3/8 in OD						
10	11/16 in Post Sleeve						

NOTICE

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Assemble your game

1. Locate the coin door keys inside the leg box.

All the pinballs, a power cord, legs, leg bolts, and head bolt & washer, are in the same package.

- 2. Please take a minute to inspect to make sure you have all the parts and that they are not damaged.
- 3. Open the flaps to the game box. Make sure you remove the staples from the flaps so you don't get scratched!

WARNING

DO NOT CUT THE PLASTIC STRAP JUST YET!

A With some assistance, lay the machine flat on the floor on the side that is marked "Truck this side only." Grab the plastic strap and pull the game from the box. After the game has been removed

from the box (and with the assistance of a helper), stand the game back upright on its back. OR,

- B Using your utility knife, carefully cut down the sides of the box that are labeled "Truck this side only," making sure that your knife DOES NOT come in contact with the game cabinet, itself. After both sides are cut you will be able to access the pinball cabinet itself.
- 4. Thread the leg leveler nut onto each of the levelers. After that is complete then you can thread the leg leveler into the bottom of each of the pinball legs. Begin with all of the levelers adjusted to their lowest positions (threaded all the way in).

Install the pinball legs and back box assembly

1. Using 2 of the 5/8" headed pinball legs bolts per leg, start with either of the front legs. Thread the leg bolts into the corresponding holes on the corners of the front of the cabinet.

Using your ratchet or wrench, tighten adequately to make sure the leg is attached to the machine. With the assistance of a friend or helper slowly tip the game forward until the two from legs are resting on the floor.

Now, as a team, pick up the rear of the cabinet and attach the back two legs in the same fashion as the front. You may want to find a stool or other sturdy support system to rest the game on while attempting this. Once the rear legs bolts are inserted and tightened you can set the game down on its legs.

 Using your wire cutters, cut the plastic strap that runs the length of the game. ATTENTION! Be careful there is some tension on this strap and it may release with some force.

After the strap is free, now you can lift the back box into position. Be mindful to make sure none of the wiring gets pinched while lifting the back box. Use the clasp on the back box and the cabinet to temporarily hold the back box upright. This should not be used as a permanent fastener.

Using the keys from the parts box, open the coin door and retrieve the back box keys to unlock the back box lock and pivot down the LCD display panel. Now, using the head bolt and washer provided, secure the back box to the base cabinet. At this time thoroughly check for any loose or disconnected connection(s) in your back box. When you are done, reinstall the back glass and engage the lock. Place the back box key back on the hook in the coin door.

PLEASE USE CAUTION WHEN HANDLING THE PLAYFIELD GLASS!

3. With the coin door open, grasp the lever located at the top right of the door frame and pull it to the left. This will release the mechanism that holds the lock down bar in place. Set the lock down bar aside in order to remove the playfield glass. Now close your coin door to keep it out of the way of the playfield glass. In order to remove the playfield glass, simply slide the glass down the front of the machine. This is tempered glass, so please take care not to hit the edges of it on anything as it may shatter. With the glass safely stored off to the side, you are ready to level the machine

Adjust the pitch and level

- With your small bubble level you can level the side to side action of your game. Placing the level on the playfield itself will give you the most accurate results.
- First level the back of the game. With your helper watching the level, crawl under the machine and rotate the leg leveler counterclockwise to make the leveler "longer." Do this until your bubble is between the two lines on your level. Repeat this process for the bottom of the playfield.

- 3. After that is done, you can use your pitch level to adjust the pitch of the game. The steeper the pitch, the faster the game will play. Spooky recommends a pitch of 6.5°. The pitch can be increased by raising the back of the game. This is accomplished by making the leg levelers on the back legs longer.
- **4.** After the proper pitch is established, recheck the level of the playfield.

Install the balls

- Remove the pinballs from their package. Please take a minute to inspect them for any nicks or scratches. Also, this is a good time to wipe them off before installing them into the game.
- 2. Place the pinballs on the lower playfield, and let them naturally fall into the trough. Please install all balls that come with the game.

Install the tilt bob

The tilt plump bob (hereafter referred to as tilt bob) is a metal cone that when it makes contact with the ring it is inside of, will issue a Tilt Warning. After repeated tilts the machine's coils will shut down and the player will lose their current ball.

- **1.** To install the tilt plump bob open the coin door on the front of the game.
- 2. On the inside left of the base cabinet you will find a long metal rod inside a metal closed hoop. Insert the narrow end of the tilt bob onto the metal rod and then tighten the nut on the side of the tilt bob.

The farther up the metal rod you go, the less movement will be necessary to tilt the machine. After playing a couple of games you can adjust this to your liking.

Power up the game

1. Using the line cord from your supplied parts, plug the female end into the receptacle on the back of the base cabinet, and the male end into your outlet.

- 2. Turn the switch on (under the bottom of the cabinet, right front side). Please take this moment to check for proper function for the basics of the machine.
- If the machine does not seem to function properly refer the troubleshooting section in this manual, or contact service@spookypinball.com

A CAUTION

YOU ARE WORKING WITH SENSITIVE ELECTRONIC MATERIALS. PLEASE USE CAUTION!

Update Instructions

SPOOKY PINBALL SOFTWARE UPDATE INSTRUCTIONS

- **1.** Retrieve the latest code package from the link on the Spooky Support page.
- **2.** Load the file onto a USB flash drive (do not place it inside any folders on the drive).
- 3. Safely eject the drive, and insert it into the pinball machine, using either the USB port behind the coin door, or plugging directly into the PC in the head.
- 4. With the game booted and on the attract screen, enter the service menu (green button inside coin door), and navigate to SYSTEM > UPDATE SOFTWARE > (choose your code version).

If you do not see your code version there, try unplugging and re-plugging the USB drive, and hit REFRESH in the service menu.

When you select the desired version, the game will begin updating, and the play field lights illuminate in yellow.

When the update is complete, the play field lights turn green.

5. Power the game off for a moment. When you turn it back on, the game will take a few minutes to make backups and finalize the update. Allow the game to

fully boot into attract mode, otherwise the game will revert back to the previous code version the next time it turns on.

Note: You may keep several versions of code on the USB drive and choose in the menu which to install.

Update The Base Image

Sometimes things go really bad; your game won't load, and the screen remains black, or displays an error, or you'll see a gray BIOS screen, or another issue. This can be a problem with the mini PC, but it might also just be a problem with the software.

This can be fixed by "re-imaging" your mini-pc, which gets you back to a working state so that you can update to the latest code.

To upate the base image

- Download the base image from the link on the Spooky Support page.
- 2. Unzip the contents of your download and copy to a new, or freshly formatted USB drive.
- **3.** Safely eject the USB drive after the file transfer completes.
- 4. Plug the USB into your game (direct into mini pc or into coin door USB extension is fine) while it is off and turn it on to start the process. It should automatically start.
- You'll see "Clonezilla" and can take several minutes, so please be patient. Finally you'll see a reboot menu with three options (Power off, Reboot, and CMD). Turn your game off, unplug the USB, and turn the game on again.
- 6. It should load the base image and only the service menu will be accessible. You can then download the latest game software version online, and install the update following the normal update procedure in this manual.

Maintaining Your Pinball Machine

Spooky Pinball recommends that you regularly perform select maintenance routines. These maintenance routines focus on the important areas within your machine.

Routine Maintenance

- Remove the glass to visually inspect the playfield for loose connectors, warn rubbers, cracked plastics, and debris that may have collected.
- Eject the pinballs and inspect for ball damage. Replace pinballs, if necessary. Coil dust at the bottom of the cabinet suggests coil stop damage.
- Examine the inside of the cabinet for bulbs and other loose parts.
- Use a pinball to check all playfield switches.
- Review the game audits.
- Run the diagnostics.
- Adjust the tilt bob, if necessary.
- Verify that the latest software version is installed.
- Replace worn or dirty rubber parts.
- Use an ammonia-free glass cleaner to clean the playfield glass.
- Use a non abrasive cleaner (like NOVUS 1: Clean & Shine) to clean the plastics.

NOTICE

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Chapter 2 Layouts and Schematics

1 Cabinet Bottom











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: 1920 x 1080 Display Brand: VSDISPLAY Connectivity Technology: VGA, DVI, HDMI Display Type: LCD About This Item: Compatible 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-120200U jhdapo24u-120200ba-a , Fit for All Types of VSDISPLAY LCD Controller Board)

Goes into Standby Mode When No Input Signal Standby Mode power usage <1W.

Display 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 **Note:** There is No Power Adapter in the Display Packing List.









To Adjust Shaker Motor Vibration

- With the shaker motor cover removed, locate the two counterweights on each side held in place with a hex screw.
- 2. Loosen the hex screw. You will be able to rotate the counterweight.

Shaker Motor Settings:

- Both weights in same direction = Strong Shake
- One weight at a 90 degree angle as shown in photo = Medium Shake
- One weight at 180 degree angle from the other counterweight = Low Shake
- **3.** After you have made the adjustments, ensure the hex screws are good and tight.
- **4.** Replace the protective cover.











13 Right Flipper Button

















20 Amplifier Rear View





22 HH-0040_STEPPER_DRIVER

































38 SPKY-0024_ED_CENTER_ARROWS













42 HH-oooo Warden LED Out













47 ED Board Fuse Locations



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Chapter 3

Diagnose a Bad MOSFET on the Warden Board

Tools Required

The materials you will need to d iagnose a bad MOSFET on the Warden Board:

- Multimeter with an ohms setting (preferably set to 20k)
- Chart for reference (see end of document)
- Wire snips
- Insulating tape

A CAUTION

YOU ARE WORKING WITH SENSITIVE ELECTRONIC MATERIALS. PLEASE USE CAUSTION!

To diagnose a bad MOSFET

1. Set the multimeter to 20k ohms. If 20k ohms is not available, use the closest available ohms setting.

- Power off and unplug the machine. Carefully unplug all of the coil chains from the main Warden board (Blue, Green, and Red connectors). The connectors are located:
- underneath the playfield
- below the drop target mechanism
- on the left hand side of the playfield

Figure 3-1. Main ED Board With Connectors



3. To test the MOSFETs, identify the Q8-Q30 MOSFETs on the main Warden board.

Figure 3-2. Main ED Board - Q8-Q30 MOSFETS



a Place the red prong of the multimeter on the top bar of each MOSFET (Q8-Q30) and the black prong on the bottom right foot.

Figure 3-3. Main ED Board with Multimeter



- b A functioning MOSFET should display no resistance reading. If there is any reading, it indicates a faulty component. Test all MOSFETs (Q8-Q30) and note the ones that produce a reading.
- **4.** To identify the coil, use the supplied coil chart to identify the faulty MOSFET to its corresponding coil.
- 5. To isolate the faulty coil, move the coil plunger that is associated with the bad MOSFET by hand to ensure it has full motion. If the plunger is restricted the coil is bad, too. Check all coils associated with tested bad MOSFETs.

Note: ONLY continue if you have determined that there is a bad/restricted movement coil from Step 5.

AWARNING

If a bad MOSFET is associated with any of the other coils in the machine, stop here and do not continue.

Email: service@spookypinball.com and advise which MOSFETs are bad on your Warden Board causing certain coils not to function.

Please let support know if you have restricted movement coils since you'll need those parts, too.

- a Take good pictures of the associated coil wire connections before cutting wires in Step 5c.
- **b** Cut the return wire connected to the identified faulty restricted coil associated with the bad MOSFET.

Be careful to cut the return wire only and not the serial power daisy chain wire (Blue, Green, or Red) connecting other coils.

- c Immediately tape over the cut wire to prevent accidental short circuiting.
- 6. To test the device, power on the machine. It should now function properly, except for the cutout coil that caused the issue.
- 7. Locate any remaining faulty MOSFETs.

- 8. If the machine continues not to function correctly, you may have overlooked one faulty MOSFET.
- **9.** Repeat Steps 3 thru 5 for any remaining MOSFETs to identify and isolate the problematic coil.

Spooky Support for Parts

Opt ion #1: Email service@spookypinball.com Opt ion #2: If you don't receive a reply within 2 business days, call Spooky Support (815-541-4940) to get the parts you need.

The Evil Dead Coil Chart

ED Board									
	Red Chain			Green Chain			Blue Chain		
Wire	Coil	MOSFET #	Wire	Coil	MOSFET #	Wire	Coil	MOSFET #	
o Purple	Lower Playfield Flip- per High	Q8	8 Purple	Right Front VUK	Q9	16 Purple	Upper Drop Knockdown	Q10	
1 White	Left Lower Flipper High	Q29	9 White	Lower Right Flipper High	Q30	17 White	Upper Drop Reset	Q31	
2 Black	Left Lower Flipper Low	Q11	10 Black	Upper Right Flipper Low	Q12	18 Black	Lower Drop Reset	Q13	
3 Yellow	Lower Playfield Flip- per Low	Q26	11 Yellow	Upper Right Flipper High	Q27	19Yellow	Knocker*	Q28	
4 Brown	Left Sling	Q14	12 Brown	Lower Right Flipper Low	Q15	20 Brown	Lower Drop Knockdown	Q16	
5 Orange	Lower Playfield Auto-Launches	Q23	13 Orange	Left Auto Launch	Q24	21 Orange	Shaker*	Q25	
6 Pink	Upper 3 Drop Bank	Q17	14 Pink	Right Auto Launch	Q18	22 Pink	Back Right VUK	Q19	
7 Grey	Lower 3 Drop Bank	Q20	15 Grey	Trough Eject	Q21	23 Grey	Right Middle VUK	Q22	

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.

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Chapter 4 Switch and Coil Charts

The Evil Dead Switch Chart

Switch Bank for Main Playfield								
	Switch Bank 1 Switch Bank 2 Switch Ban		Switch Bank 3					
0	NONE	Grey	8	Trough 7	Grey	16	NONE	Grey
1	NONE	White	9	Trough 6	White	17	Lower PF EOS	White
2	NONE	Red	10	Trough 5	Red	18	Lower - Lock and Load	Red
3	NONE	Purple	11	Trough 4	Purple	19	Lower - Book Target	Purple
4	NONE	Blue	12	Trough 3	Blue	20	Sling Flipper EOS	Blue
5	NONE	Green	13	Trough 2	Green	21	Right Flipper EOS	Green
6	Topper Down	Yellow	14	Left Shooter Lane	Yellow	22	Right Inlane	Yellow
7	Spinner	Orange	15	Right Shooter Lane	Orange	23	Right Outlane	Orange
Ground	Ground	Black	Ground	Ground	Black	Ground	Ground	Black
	Switch Bank 4		Switch Bank 5			Switch Bank 6		
24	None	Grey	32	Right VUK	Grey	40	Shotgun Right	Grey
25	None	White	33	Necklace Right	White	41	Shotgun Left	White
26	Hand Hit	Red	34	Necklace Center	Red	42	Left Deadite EOS	Red
27	Cabin VUK	Purple	35	Right Deadite Bash	Purple	43	Mouse Trap Target	Purple
28	Cabin Front Drop	Blue	36	Right Deadite EOS	Blue	44	Groovy Drop 1_G	Blue
29	Cabin Back Drop	Green	37	Lift Bank Left	Green	45	Groovy Drop 2_R	Green
30	Right Ramp Scoop	Yellow	38	Lift Bank Middle	Yellow	46	Groovy Drop 3_0	Yellow
31	Necklace Left	Orange	39	Lift Bank Rlght	Orange	47	Mouse Trap Target	Orange
Ground	Ground	Black	Ground	Ground	Black	Ground	Ground	Black
Switch Bank 7				Switch Bank 8				
48	Groovy Drop 4_0	Grey	56	Captive Ball	Grey			
49	Groovy Drop 5_V	White	57	Middle VUK	White			
50	Groovy Drop 6_Y	Red	58	Upper Pop	Red			
51	Left Sling	Purple	59	Middle Pop Target	Purple			
52	Left Flipper EOS	Blue	60	Top Pop Target	Blue			

					[]			
53	Left Inlane	Green	61	Lower Pop	Green			
54	Left Midlane	Yellow	62	Lower Pop Target	Yellow			
55	Left Outlane	Orange	63	Middle Pop	Orange			
Ground	Ground	Black	Ground	Ground	Black			
Upper	Board (Playfield Exp	ander)		Lower Board		Upper Board		
64 H	Trough Jam	Grey	72 H	Power	Grey		5v Power	NONE
65 G	NONE	White	73 G	Left Ramp	White	8o H	Lower Right Flip- per	Grey
66 F	Trough 1	Red	74 F	Rear Orbit Opto	Red	81 G	Action	White
67 E	Lower Playfield Loop	Purple	75 E	Left Orbit	Purple	82 F	Upper Right Flip- per	Red
68 D	Lower Playfield Drain	Blue	76 D	Cabin Entry	Blue	83 E	Upper Left Flipper	Purple
69 C	Lower Playfield Launch Lane	Green	77 C	Right Ramp	Green	84 D	Tilt	Blue
70 B	Inner Orbit Left	Yellow	78 B	Right Orbit	Yellow	85 C	Launch	Green
71 A	NONE	Orange	79 A	Middle Ramp	Orange	86 B	Lower Left Flip- per Button	Yellow
Ground	Subway	Black	Ground	Ground	Black	87 A	Start	Orange
						Ground	Ground	Black
	Servo Board							
0	Tape Player							
1	Diverter							
2	Linda							
3	Middle Flap							
4	Right Ramp							
5	Swing							
6	Target Bank							

The Evil Dead Coil Chart

Warden Board									
Red Chain				Green Chain			Blue Chain		
Wire	Coil	MOSFET #	Wire	Coil	MOSFET #	Wire	Coil	MOSFET #	
o Purple	Lower Playfield Flipper High	Q8	8 Purple	Right Front VUK	Qg	16 Purple	Upper Drop Knockdown	Q10	
1 White	Left Lower Flipper High	Q29	9 White	Lower Right Flipper High	Q30	17 White	Upper Drop Reset	Q31	
2 Black	Left Lower Flipper Low	Q11	10 Black	Upper Right Flipper Low	Q12	18 Black	Lower Drop Reset	Q13	
3 Yellow	Lower Playfield Flipper Low	Q26	11 Yellow	Upper Right Flipper High	Q27	19 Yellow	Knocker*	Q28	
4 Brown	Left Sling	Q14	12 Brown	Lower Right Flipper Low	Q15	20 Brown	Lower Drop Knockdown	Q16	
5 Orange	Lower Playfield Auto-Launches	Q23	13 Orange	Left Auto Launch	Q24	21 Orange	Shaker*	Q25	
6 Pink	Upper 3 Drop Bank	Q17	14 Pink	Right Auto Launch	Q18	22 Pink	Back Right VUK	Q19	
7 Grey	Lower 3 Drop Bank	Q20	15 Grey	Trough Eject	Q21	23 Grey	Right Middle VUK	Q22	
	GI Cha	ain							
Wire	Coil #	Coil	Light Color						
1 White	24	Right Pop	White						
2 Red	25	Left Pop	White						
3 Purple	26	Tape Deck	White						
4 Blue	27	Hand	Red						
5 Green	28	Launcher	Orange						
6Yellow	29	Cabin	White						
7 Orange	30	Topper Motor	Motor						
8 Gray	31	Upper Pop	White						

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.

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Coil Expander Board									
	Red Chain	2	Blue Chain 2						
Wire	Coil	MOSFET #	Wire	MOSFET #					
48 Purple	NONE	Qı	56 Purple	Upper Pop	Qg				
49 White	Right Troll High	Q8	57 White	Left Troll High	Q16				
50 Black	Magnet	Q2	58 Black	Left Troll Low	Q10				
51Yellow	Middle Playfield VUK	Q7	59 Yellow	Shotgun Reset	Q15				
52 Brown	NONE	Q ₃	6o Brown	Right Pop	Q11				
53 Orange	NONE	Q6	61 Orange	Left Pop	Q14				
54 Pink	Right Troll Low	Q4	62 Pink	NONE	Q12				
55 Grey	NONE	Q5	63 Grey	NONE	Q13				