



# Hot Wheels Shop Manual



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**WARNING!**

**STOP AND READ – UNPLUGGING BOARD CONNECTORS WHILE THE MACHINE IS POWERED ON CAN, AND MOST LIKELY WILL, DESTROY THE BOARD! THIS IS NOT COVERED UNDER AMERICAN PINBALL'S WARRANTY AND YOU WILL BE RESPONSIBLE FOR ALL ASSOCIATED REPAIR COSTS. NO EXCEPTIONS.**

# Hot Wheels Shop Manual

**[WWW.AMERICAN-PINBALL.COM](http://WWW.AMERICAN-PINBALL.COM)**

**PART NUMBER: DOC0010-01**

## LIMITED WARRANTY

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American Pinball Inc. (“Seller”) warrants only the original purchaser of its products that the items listed below are free of defects in material & workmanship under normal use and service for the specified warranty period. Warranties are non-transferable.

### COVERAGE

The limited warranty covers defective workmanship and materials as follows:

1. All parts of the pinball machine, excluding standard plastic, bumper post, rubber rings and wear and tear parts for **90 days** from the date of invoice or shipment by distributor.
2. The LCD monitor for 1 year from the date of invoice or shipment by distributor.

### CONDITIONS

The original purchaser must register the Limited Warranty by completing the Product Registration Form on the American Pinball Website within 15 days of receipt. In the event of a warranty for the above coverage to apply, the Original Purchaser must open a Service Ticket at [www.americanpinball.com/support/service/](http://www.americanpinball.com/support/service/) or call 1-833-API-HELP.

Service-related questions can be sent via e-mail to [service@american-pinball.com](mailto:service@american-pinball.com).

Defective parts need to be sent to American Pinball at the purchaser’s expense, if the defective parts cannot be removed, the entire Pinball Machine will need to be returned to the Distributor for repair or replacement. All parts must be properly packaged with an RMA tag/Trouble ticket and returned freight prepaid to the Sellers facility.

### EXCLUSIONS

The Limited Warranty does not cover service, labor or shipping and handling. Damage, wear and or breakage not caused by defective materials or workmanship shall not be covered by the warranty. Damage incurred during shipping and handling shall not be covered by the warranty.

### DISCLAIMER OF IMPLIED WARRANTY

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.

## DISCLAIMER OF DAMAGE

This warranty does not apply to any parts damaged to improper handling or due to improper installation, usage or alteration. In no event shall the Seller be held liable for any anticipated profits, loss of profits, loss of use, accidental or consequential damages or any other losses incurred by the customer regarding the purchase of an AMERICAN PINBALL, INC. product.

The Hot Wheels cars are held with industrial strength Velcro, 3M Dual Lock, that will securely hold the cars on the brackets. Games are also shipped with wire ties around the cars to secure the cars for transport. Operators can choose to leave the ties in place to ensure the cars don't come off from ball strikes. Home users may choose to remove for aesthetics.

Extra pieces of Dual Lock have been included in the goody bag so you can replace the cars with ones from your collection! The cars you choose should have a flat and clean surface to provide enough adhesion for the Dual Lock. API is not responsible for improper installation resulting in damage to your game.

## CAUTIONS, WARNINGS & NOTICES

.....

***CAUTION!*** FOR SAFETY AND RELIABILITY, DO NOT SUBSTITUTE PARTS, EQUIPMENT OR ADD GAME CIRCUITRY MODIFICATIONS. SUCH MODIFICATIONS MAY ADVERSELY AFFECT GAME PLAY OR CAUSE INJURIES AND MAY RESULT IN VOIDING OF THE WARRANTY. ALWAYS TRANSPORT PINBALL GAMES WITH THE HINGED BACKBOX IN THE FOLDED POSITION. CONTACT AUTHORIZED SERVICE PERSONNEL BEFORE PERFORMING ANY REPAIR. ANY SUCH REPAIRS SHOULD BE DONE WITH THE LINE VOLTAGE DISCONNECTED. FOR SERVICING TIPS, REFERENCE THE USER MANUAL OR CONTACT AMERICAN PINBALL INC. TECHNICAL SUPPORT. SUBSTITUTION OF PARTS AND EQUIPMENT MAY VOID FCC TYPE ACCEPTANCE.

***WARNING!*** EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A "CLASS A" COMPUTING DEVICE. PURSUANT TO SUBPART J OF PART 15 OF THE FCC RULES AND REGULATIONS. FCC RULES ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST RF ENERGY WHEN OPERATED IN A COMMERCIAL ENVIRONMENT. OPERATION IN A PRIVATE RESIDENTIAL AREA IS LIKELY TO CAUSE INTERFERENCE IN WHICH CASE THE USER AT ITS OWN EXPENSE WOULD BE REQUIRED TO TAKE WHATEVER MEASURES TO CORRECT SUCH INTERFERENCE.

**WARNING!**      **OPENING THE COIN DOOR EXPOSES HIGH VOLTAGE PARTS IN THE GAME, AND DIRECT CONTACT TO THESE HIGH VOLTAGE PARTS CAN LEAD TO SERIOUS OR FATAL INJURIES. THIS EQUIPMENT IS TO BE SERVICED BY TRAINED PROFESSIONALS ONLY.**



## **NOTICES**

Cable harness placement and ground strap routing in the game have been designed to keep RF radiation and conduction within levels accepted by the FCC rules. To maintain these levels, reposition harnesses and reconnect grounds to their original placements, if they become disconnected or removed for servicing.

## **COMPLIANCE, LEGAL AND WARNINGS**

### **RF INTERFERENCE NOTICE**

CABLE HARNESS PLACEMENT AND GROUND STRAP ROUTING have been designed to keep RF radiation and conduction within levels accepted by FCC rules.

DO NOT ALTER WIRING OR GROUND STRAPPING. Position wiring and ground strap back to their original position if they become loose or are removed for service.

### **LEGAL**

Hot Wheels and all related characters are trademarks of Mattel, Inc.  
Hot Wheels Pinball are trademarks of American Pinball. MAGICGLASS and this manual are trademarks of American Pinball. Any reproductions or modifications are illegal.

### **WARNINGS**

Only American Pinball authorized parts are to be used. Using ANY unauthorized parts will void all warranties and may cause injury to persons or property.

All servicing of equipment must be completed by competent personnel. Pinball machines are complex and present an electrical shock hazard. Not following these guidelines can be fatal.

## DOCUMENT REVISION HISTORY

100-1002	May 2020	Initial Release of Document
	July 2020	Update
	Oktober 2021	Final Release of Document

All information in this manual is accurate at time of release and is subject to change without notice. Check <https://www.american-pinball.com/support/> for any and all updates to this manual.

### API Tech Tip Videos

[https://www.youtube.com/channel/UC9\\_k0XRo6lbeyeOuQy4Hseg/videos](https://www.youtube.com/channel/UC9_k0XRo6lbeyeOuQy4Hseg/videos)



## REGIONAL CONTACTS

### American Pinball Inc.

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General questions

[info@americanpinball.com](mailto:info@americanpinball.com)

Service or Warranty requests

[Service@americanpinball.com](mailto:Service@americanpinball.com)

833-API-HELP

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# OVERVIEW

## ABOUT THE MANUAL

This manual details the integral aspects of the Hot Wheels pinball machine. The following chapters are included in this manual.

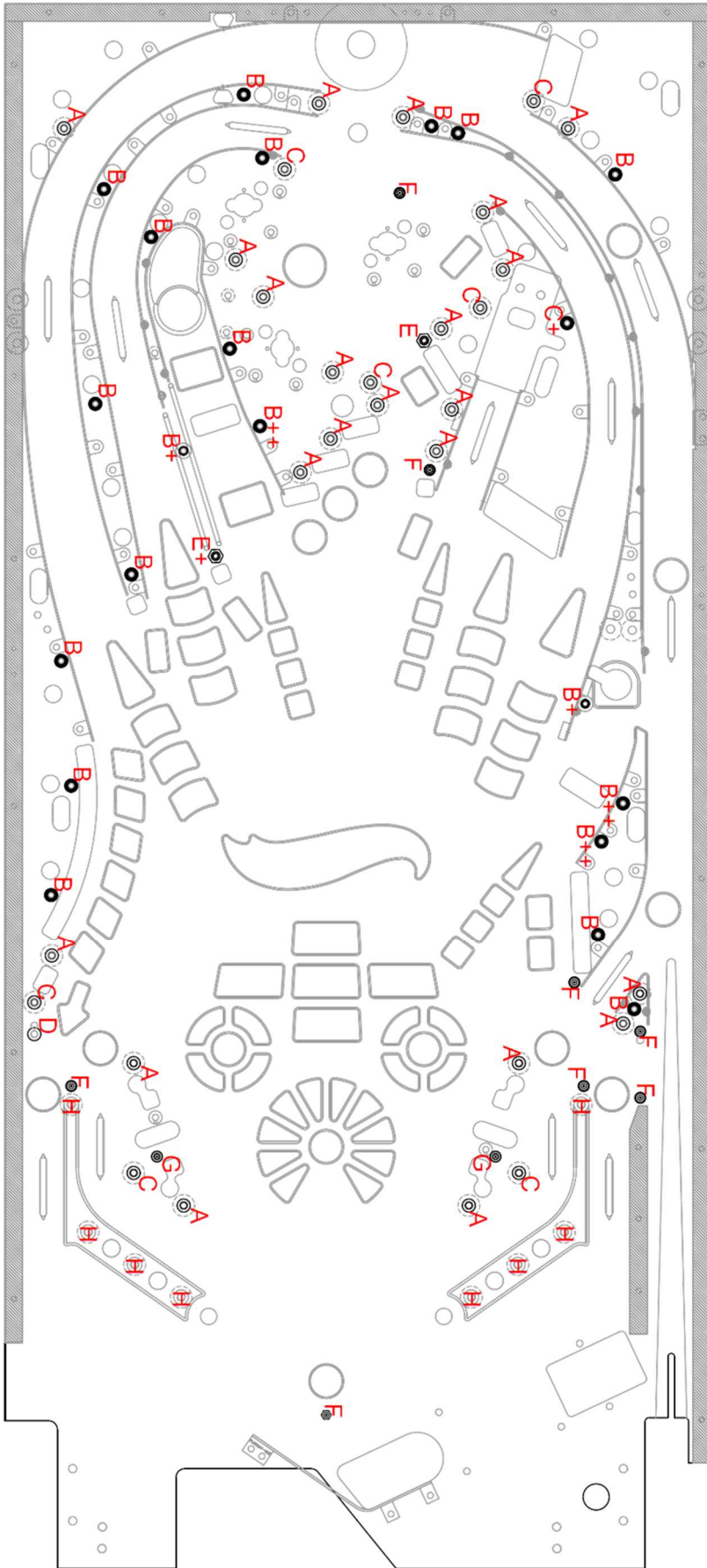
Chapter	Title
Chapter 1	Overview
Chapter 2	Unpacking Instructions
Chapter 3	API Cockpit / Service Information
Chapter 4	Code Update / Game Logs / USB
Chapter 5	Game Rules

**Table 1-1** Commonly used terms in the Hot Wheels Service Manual documentation.

Term	Description
ADJ	Abbreviation for the adjustment menu, when certain settings are adjusted/configured.
AUD	Abbreviation for the audit menu, where audits can be run for the machine.
DIAG	Abbreviation for the diagnostic menu, where diagnostics can be run for the machine.
Plumb Bob Tilt	Weighted tilt assembly.
P3-ROC Board	Designed to control all the real-time signaling on a pinball machine. Note: The documentation for the P3-ROC Boards is available at <a href="http://American-pinball.com/support">American-pinball.com/support</a> .
UTIL	Abbreviation for the utility menu, where utilities can be run for the machine.

Figure 1-1

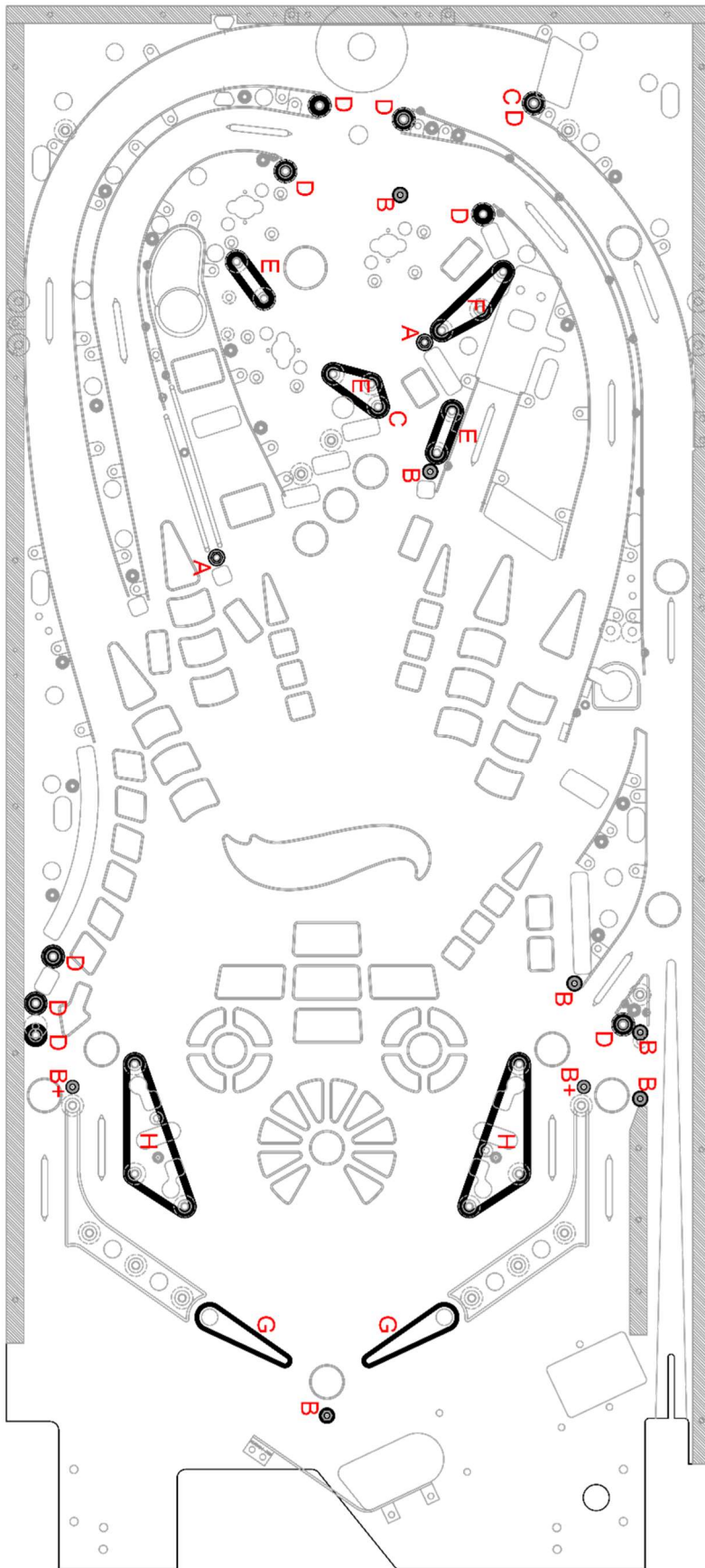
Post Locations



POST DESCRIPTIONS AND LOCATIONS

- A** (22X) PST0001-00 CLEAR POST  
PST0003-00 POST FASTENING SCREW (STD MTG)
- B** (15X) PST0001-00 CLEAR POST  
PST0003-02 POST FASTENING SCREW (WOOD)
- B+** (2X) PLS0102-00 #8X1.13" NYLON SPACER Ø.25" OD  
WAS0006-00 #6 WASHER
- B++** (3X) PST0001-00 CLEAR POST  
PST0003-02 POST FASTENING SCREW (WOOD)  
WAS0008-00 #8 WASHER (2X)
- C** (7X) PST0001-00 CLEAR POST  
MAS0008-24 8-32 X 1 1/2 PPH MS
- C+** (1X) PST0001-00 CLEAR POST  
SMS0008-24 #8 X 1 1/2 SMS
- D** (1X) PST0001-00 CLEAR POST  
MAS0008-32 8-32 X 2 PPH MS  
WAS0008-00 #8 WASHER  
NUT0008-00 8-32 NYLON LOCK NUT - LOW PROFILE
- E** (1X) PST0004-00 5/16 HEX SLEEVE POST (PLAIN)
- E+** (1X) PST0004-03 5/16 HEX SLEEVE POST (8-32 TAP)
- F** (8X) PST0002-00 10-32 MINIPOST (FULL THREAD)
- G** (2X) PST0002-02 MINIPOST (WOOD)
- H** (8X) PST0003-00 POST FASTENING SCREW (STD MTG)

**Figure 1-2 Rubber Ring Location**



**RUBBER RING DESCRIPTIONS AND LOCATIONS**

- A** (2X) RBR0005-01 POST SLEEVE RUBBER - BLACK
- B** (6X) RBR0003-01 7/16" OD MINI-POST RUBBER - BLACK
- B+** (2X) RBR0003-00 3/8" OD MINI-POST RUBBER - BLACK
- C** (2X) RBR0013-00 HALF POST SLEEVE RUBBER - BLACK
- D** (9X) RBR0001-02 3/16" ID RUBBER RING - BLACK
- E** (3X) RBR0001-05 3/4" ID RUBBER RING - BLACK
- F** (1X) RBR0001-07 1 1/4" ID RUBBER RING - BLACK
- G** (2X) RBR0002-01 FLIPPER RUBBER RING - BLACK
- H** (2X) RBR0001-12 2 1/2" ID RUBBER RING - BLACK

# UNPACKING INSTRUCTIONS

---

## UNPACKING HOT WHEELS

---

In order to fully enjoy Hot Wheels in the manner it was designed, please adhere to the following unpacking instructions.

**CAUTION!** HOT WHEELS WEIGHS IN EXCESS OF 250 LBS. AT LEAST TWO PEOPLE ARE REQUIRED TO UNPACK AND MANEUVER THE MACHINE.

### TOOLS REQUIRED FOR UNPACKING

A pair of scissors or a utility knife is all that you will need to unpack Hot Wheels.

#### To unpack Hot Wheels

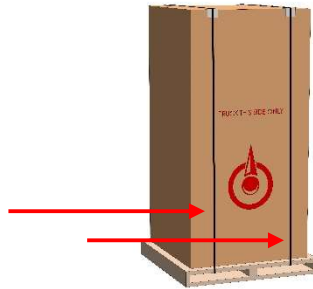
Your Hot Wheels machine should appear in the following carton.

**Figure 2-1** Authorized American Pinball Box.

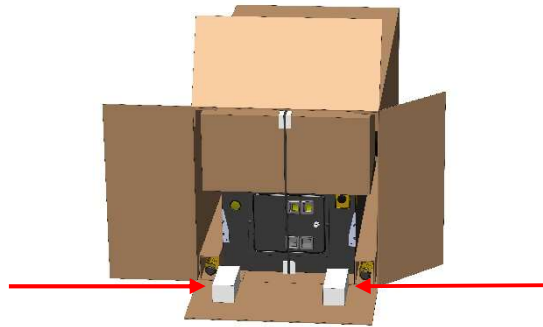


## UNPACKING HOT WHEELS CONTINUED

Using a pair of scissors, carefully cut the bands highlighted with the red arrows.

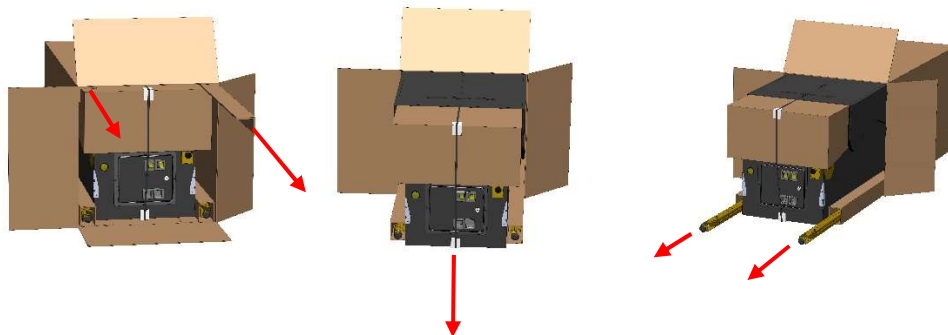


Lay the box down on the “TRUCK THIS SIDE ONLY” side. Remove the 2 pieces of Styrofoam and fold the flap under or cut the whole flap off the box.



Remove the 2 top corner protectors highlighted in the picture (left) and pull out the game by the center strap (center). Next remove the 4 legs from the bottom corner protectors (right).

**DO NOT CUT THE CENTER STRAP AROUND THE GAME YET**

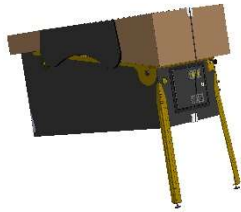


## UNPACKING HOT WHEELS CONTINUED

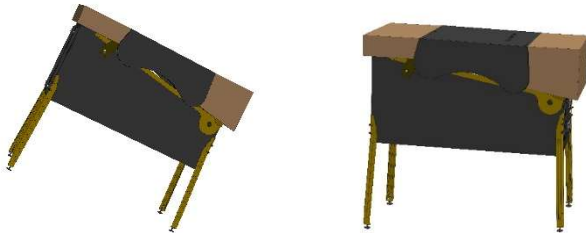
Slide the game completely out of the box (left), and carefully stand the game up (center). Cut the shrink wrap by the front legs and install the legs with the supplied hardware (right).



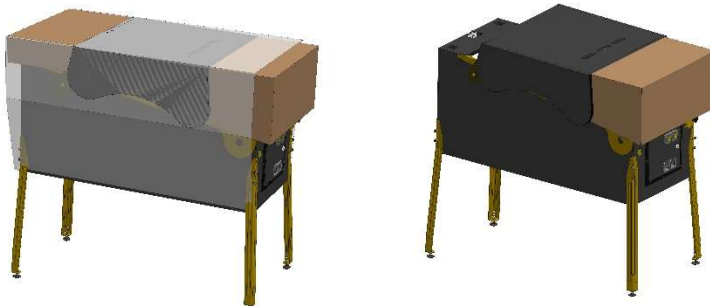
Lay the game down and cut away the shrink wrap covering the rear leg mounting area.



Carefully lift the game up. Install the 2 rear legs with the included hardware. Stand the game up on all 4 legs once rear legs are installed.



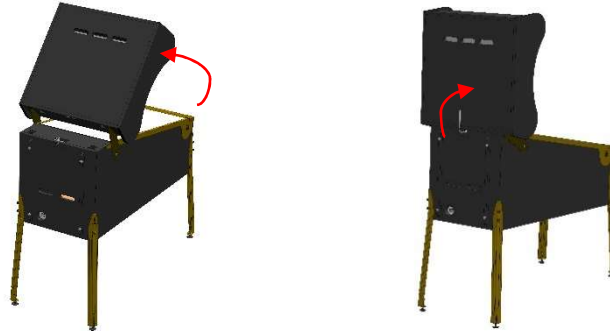
Cut and remove the center band, all the stretch wrap as well as the 2 cardboard protectors for the front and back.



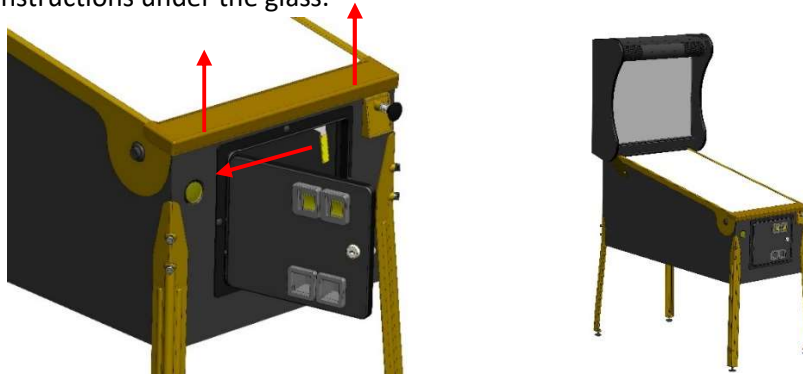


## UNPACKING HOT WHEELS CONTINUED

Lift the head and insert the supplied hex wrench into the lock mechanism and turn clockwise to lock.



Remove the keys from the ball shooter. One set is for the back box, the other set is for the front coin door. Open the coin door and move the lockbar handle to the left and pull up on the lockbar. Remove the lockbar from the clear protector. Pull the glass off and follow the instructions under the glass.



## LEVELING YOUR AMERICAN PINBALL MACHINE

Your game is designed to sit at **6 degrees**. However, depending on the floor, you may have to adjust Hot Wheels so that the game is properly leveled left to right and or at the proper pitch. With the leg levelers all the way in (no threads showing below the leg) the game will sit at 6 degrees.

### Phone Applications for leveling:

iPhone: PinGuy <https://apps.apple.com/de/app/pinguy/id782973821>

 Video showing how to use: <https://www.youtube.com/watch?v=SiM7aMloCjc>

Android: Pinball Leveler

[https://play.google.com/store/apps/details?id=com.nottud.pinballleveller&hl=en\\_US&gl=US](https://play.google.com/store/apps/details?id=com.nottud.pinballleveller&hl=en_US&gl=US)



# Service Menu

## HOT WHEELS SERVICE MENU


<https://www.youtube.com/watch?v=nKcwKNGhCw>



This chapter includes service menu settings. The service menu accesses the following settings for optimal play and maintenance.

- Tests
- Settings
- Statistics
- Utilities
- Health Meter

### Before You Begin

- Have you unpacked your Hot Wheels machine and set it up according to the instructions in the manual?
- Have you downloaded the most current code from American Pinball's Support site? 



- Have you registered your game? <https://www.american-pinball.com/support/register/>   
*Games must be registered prior to receiving warranty parts or support*



**Note:** Settings are occasionally updated. Please refer to American Pinball's Support site for the most current documentation.



Hot Wheels Quick Reference Guide:

<http://s4.american-pinball.com/img/support/2021-6/Hot-Wheels--Quick-Reference-Guide.pdf>




## API COCKPIT

Hot Wheels service menu contains tests for all the electrical and mechanical functions within the game.





Figure 3-1 Service Menu



Table 3-1 Service Menu Icons

Tests		<p><u>This includes tests in the following areas</u></p> <ul style="list-style-type: none"> <li>• Switches</li> <li>• Coils</li> <li>• LEDs</li> <li>• Displays</li> <li>• Cabinet</li> <li>• Spin Car</li> </ul>
Settings		<p><u>This includes adjustments in the following settings</u></p> <ul style="list-style-type: none"> <li>• Standard Adjustment Settings</li> <li>• Replay Adjustment Settings</li> <li>• Coil Adjustment Settings</li> <li>• Sound Adjustment Settings</li> <li>• Feature Adjustment Settings</li> <li>• Pricing Adjustment Settings</li> <li>• Presets</li> </ul>
Statistics		<p><u>This includes audits for the following statistics</u></p> <ul style="list-style-type: none"> <li>• Basic Statistics</li> <li>• Feature Statistics</li> <li>• Standard Statistics</li> <li>• Game Time Statistics</li> <li>• Earning Statistics</li> <li>• Score Breakdown Statistics</li> </ul>

**Table 3-1** Service Menu Continued





<p><b>Utilities</b></p>		<p><u>This includes information for the following utilities</u></p> <ul style="list-style-type: none"> <li>• Hot Wheels Balls</li> <li>• Statistic Clear</li> <li>• Date and Time Set</li> <li>• Restoration of Default Settings</li> </ul>
<p><b>Health Meter Green</b></p>		<p><u>The Health Meter Provides a Quick Analysis of the Overall State of Hot Wheels</u></p> <p>Hot Wheels has no issues</p>
<p><b>Health Meter Yellow</b></p>		<p>Hot Wheels may have switch issues. If the game hasn't seen a switch hit in 30 games, it will call attention to it. Go to TESTS-SWITCH TEST</p>
<p><b>Health Meter Red</b></p>		<p>Hot Wheels may have missing balls</p>

## TESTS

The test menu includes several diagnostic tests for assuring that your machine is operating properly. The Test Menu provides tests for the following items.

- Switches
- Coils
- LEDs
- Display & Sound

**Table 3-2** Test Menu Icons

Switches	 A circular icon with a gold border and a black background. Inside, a white switch lever is shown in the 'up' position, with a red dot at its tip and a grey base.
Coils	 A circular icon with a gold border and a black background. Inside, a blue cylindrical coil is shown at an angle, with a white terminal on the left and a grey base on the right.
LEDs	 A circular icon with a gold border and a black background. Inside, a glowing yellow light bulb is shown with several short lines radiating from it to indicate light.
Display and Sound	 A circular icon with a gold border and a black background. Inside, a blue rectangular display screen is shown above a yellow speaker icon with sound waves.

### To Access Hot Wheels Test Menu

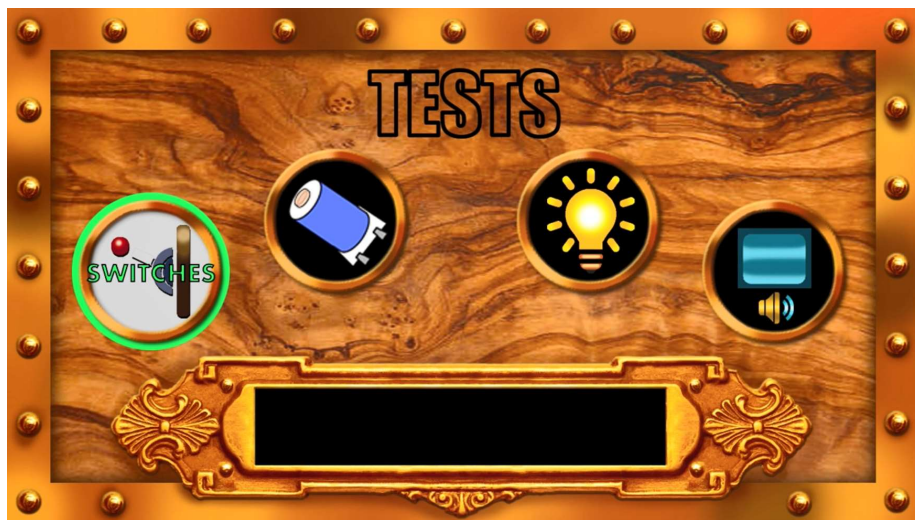
1. Power on the machine.
2. Open the coin door.
3. Press the MENU SELECT button to access the service mode.

Figure 3-2 Service Menu Navigation Buttons



4. Press the red +/- buttons to select the test icon.
5. Press the MENU SELECT button to enter test.

Figure 3-3 Test Menu



6. Use either the flipper buttons or the red +/- coin door buttons to navigate the tests.

**Table 3-3 API Cockpit Navigation**

API Cockpit Button	Flipper Button Equivalent	Functionality
Green	Press right and left flipper button simultaneously	<ul style="list-style-type: none"> <li>• Back one level</li> <li>• Exit</li> </ul>
Red (+)	Right flipper	<ul style="list-style-type: none"> <li>• Increases through menu by one</li> <li>• Advance to the right or down</li> </ul>
Red (-)	Left flipper	<ul style="list-style-type: none"> <li>• Decrease through menu by one</li> <li>• Advance to the left or up</li> </ul>
Black	Start	<ul style="list-style-type: none"> <li>• Menu Enter</li> <li>• Select current choice</li> </ul>

## SWITCH TESTING

The Switch Test screen shows all the switches, grouped by their boards, there are 16 individual switches per board and are displayed in columns. That means all the switches in one column are all on the same switch board. Each switch board has 2 groups of 8 switches and each group of 8 switches will all share the same primary wire color. Opto switches do not share a primary wire color. All contact switches (micro, standup and rollover) will have a brown background when open. This background color will change to light green when made. Opto switches will be dark green when they are open, and the background will change to light green when detecting a ball. A switch with a red background indicates a switch that has not been made in a while and should be checked to ensure it is working properly.

**Figure 3-4** Switch Testing Menu



**Note** For a more extensive description of each switch on Hot Wheels, refer to the switch location chapter.

Figure 3-5 PLAYFIELD SWITCH MAP

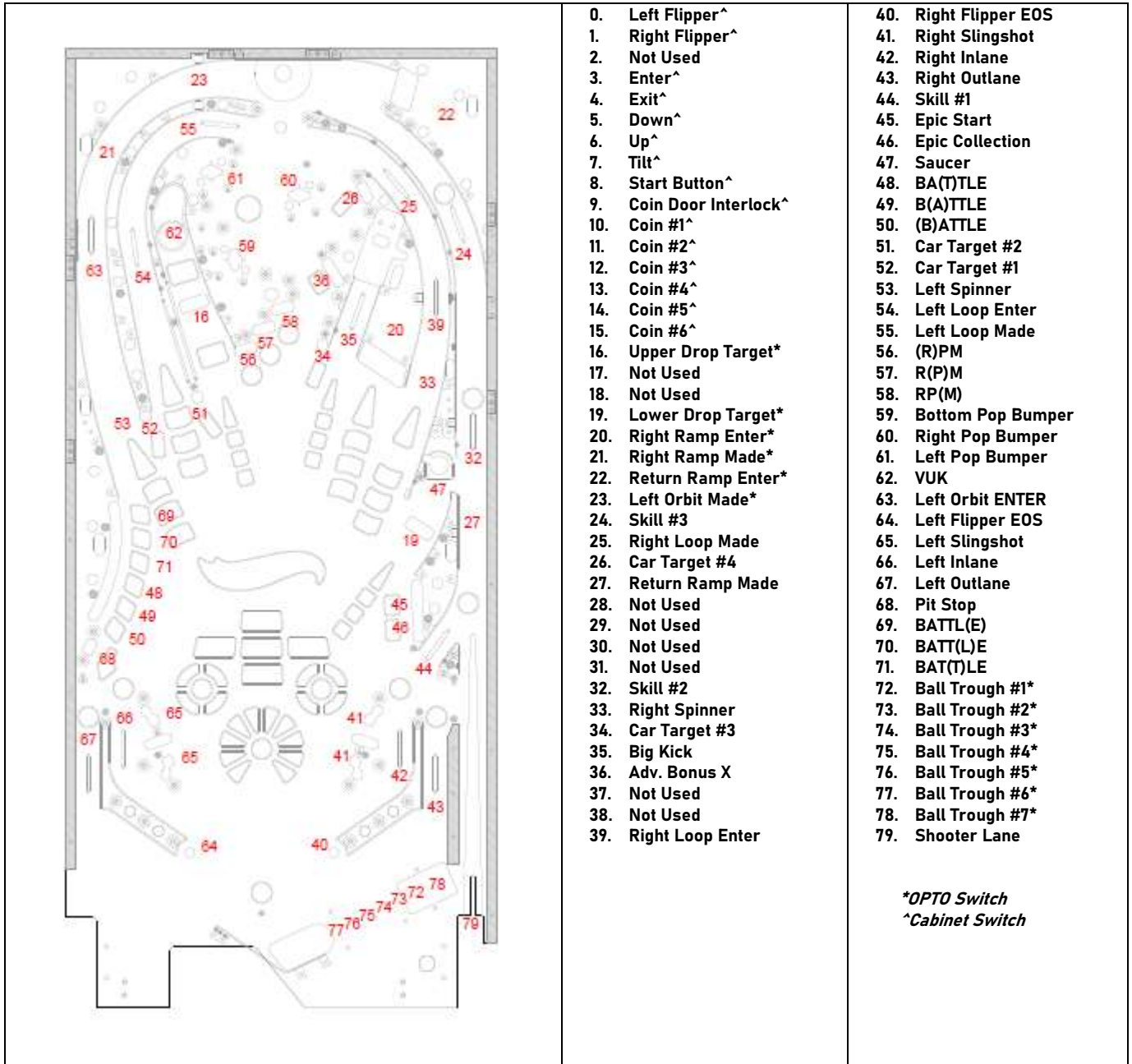
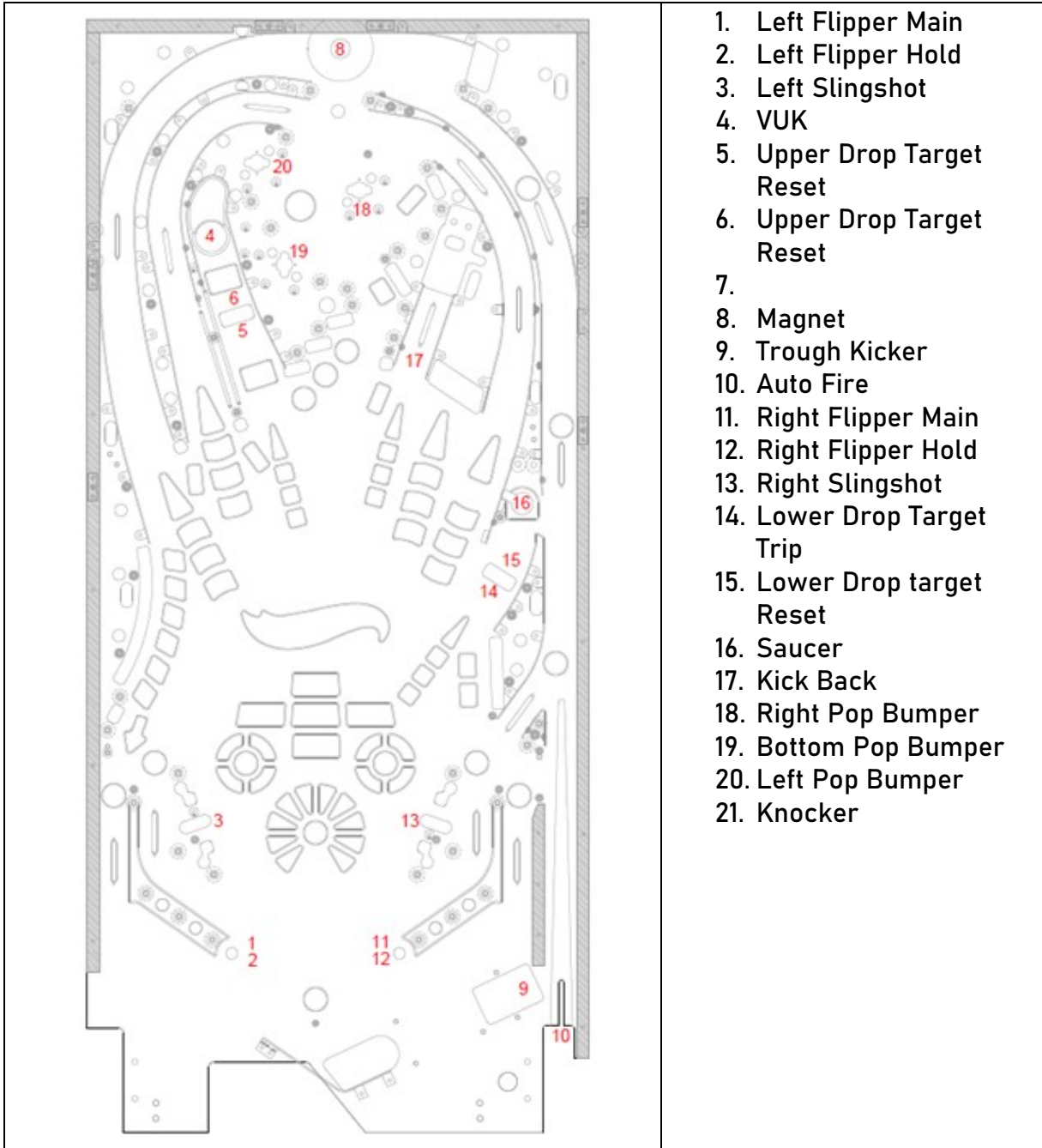




Figure 3-6

## PLAYFIELD COIL MAP





**Table 3-4 Fuse Table**

**Quick Reference Guide:**

<http://s4.american-pinball.com/img/support/2021-6/Hot-Wheels--Quick-Reference-Guide.pdf>

Fuse Name	Fuse Rating	Voltage	Type	Fuse Voltage
Coil Driver	6.3 Amp	48 VDC	5x20 Slow Blow	250 Volt
	6.3 Amp	48 VDC	5x20 Slow Blow	250 Volt
Main Fuse	6 Amp (US) 3 Amp (EU)	120 VAC OR 230 VAC	3AG Slow Blow	250 Volt
Add On Board F1	4 Amp	12 VDC	5x20 Slow Blow	250 Volt
Add On Board F2	5 Amp	48 VDC	5x20 Slow Blow	250 Volt
RGB Back Panel	2 Amp	5 VDC	5x20 Slow Blow	250 Volt

## COIL TESTING

To test the coils, you must close the coin door to activate the High-Power Interlock switch or pull out on the interlock switch. Press the start button to disable or enable Coil Testing.

## LED TESTING

When first entering LED Test, all LED's flash on the playfield, rotating through red, green, blue and white.

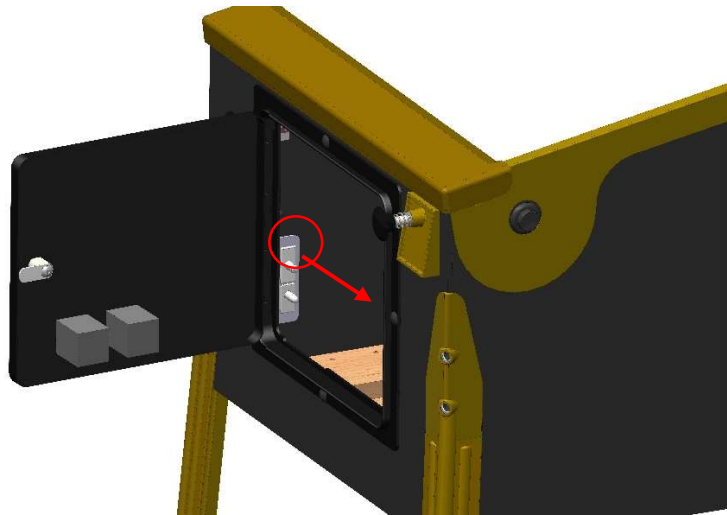
You also can walk through the LED's one-by-one. LED testing is designed to follow the playfield in a logical sequence.

## DISPLAY & SOUND TEST

The main display proceeds through a series of colors (red, green and blue) and a test pattern. The test also exercises the stereo speaker system at the same time.

### ATTENTION....

THIS GAME IS EQUIPPED WITH AN INTERLOCK SWITCH FOR THE COIL VOLTAGE. THE INTERLOCK SWITCH DISABLES THE COIL VOLTAGE WHEN THE DOOR IS OPEN. INTERLOCK SWITCH NEEDS TO BE PULLED OUT TO ENGAGE COIL VOLTAGE WHEN DOOR IS OPEN FOR COILS TO WORK.



## COIL ADJUSTMENT SETTINGS

Coil settings allow you to control the “strength” of the various mechanisms on the playfield.

### To access Hot Wheels Coil settings



1. Power on the machine.
2. Open the coin door.
3. Press the MENU SELECT button to access the service mode.
4. Press the red +/- button to select the settings icon.
5. Press the MENU SELECT button to enter the settings section.
6. Use the red +/- buttons to page through the different settings to the coil settings.
7. Press the green BACK EXIT button to return to the previous menu.

#### HOT WHEELS COIL SETUP

Individual coil strength can be adjusted to enhance game play.

**CAUTION!** *Increasing coil strength can create undesirable results such as broken plastics as well as expedited playfield wear. Increased coil strength wear and tear is not covered under our warranty. Keep coil strength as low as possible.*

**Table 3-5** Coil Adjustment Settings

**Note:** all default settings are highlighted **green**. They turn white when changed

Name	Range	Factory Default
Trough Kicker	options: [1-35]	default: 18
Auto Fire	options: [1-35]	default: 10
Right Flipper Main	options: [1-46]	default: 25
Right Slingshot	options: [1-35]	default: 10
Left Flipper Main	options: [1-46]	default: 25
Left Slingshot	options: [1-35]	default: 10
Bottom Pop Bumper	options: [1-35]	default: 22
Right Pop Bumper	options: [1-35]	default: 22
Left Pop Bumper	options: [1-35]	default: 22
Vertical Up Kicker (VUK)	options: [1-35]	default: 10
Saucer	options: [1-35]	default: 8
Big Kick	options: [1-35]	default: 12
Upper Drop Target Reset	options: [1-31]	default: 14
Upper Drop Target Trip	options: [1-31]	default: 14
Lower Drop Target Reset	options: [1-31]	default: 14
Lower Drop Target Trip	options: [1,31]	default: 14

## FEATURE ADJUSTMENT SETTINGS

Feature settings address conditions that are specific to the game.

### To access Hot Wheels Feature settings



1. Power on the machine.
2. Open the coin door.
3. Press the MENU SELECT button to access the service mode.
4. Press the red +/- button to select the settings icon.
5. Press the MENU SELECT button to enter the settings section.
6. Use the red +/- buttons to page through the different settings to the feature settings.
7. Press the green BACK EXIT button to return to the previous menu.

**Table 3-6** Feature Adjustment Settings

Name	Options	Factory Default
Battle Start Difficulty	options: ['Extra Easy', 'Easy', 'Medium', 'Hard', 'Extra Hard']	default: 'Medium'
Battle Target Difficulty	options: ['Extra Easy', 'Easy', 'Medium', 'Hard', 'Extra Hard']	default: 'Medium'
Boost Scoring Difficulty	options: ['Extra Easy', 'Easy', 'Medium', 'Hard', 'Extra Hard']	default: 'Medium'
Boost Scoring Time	options: [5-35]	default: 15
Car Chaos Ball Saver Time	options: [0-31]	default: 15
Car Chaos Start Difficulty	options: ['Extra Easy', 'Easy', 'Medium', 'Hard', 'Extra Hard']	default: 'Medium'
Car Collects for Extra Ball	options: [0-251]	default: 40 0=off
Cobra Battle Initial Time	options: [25-125]	default: 90
Cobra Shot Time	options: [20-61]	default: 30
Epic Cars to Collect	options: [1-51]	default: 8
Epic Loops to Collect	options: [1-51]	default: 5
Epic Pops to Collect	options: [1-101]	default: 20
Epic Ramps to Collect	options: [1-51]	default: 5
Epic Playfield to Collect	options: [1-101]	default: 40
Epic Target Difficulty	options: ["Easy" - "Hard"]	default: "Hard"
Gorilla Battle Difficulty	options: ["Easy" - "Hard"]	default: "Hard"
Gorilla Battle Initial Time	options: [25-125]	default: 90
Hero Cars for Extra Ball	options: [0-6]	default: 2 0=off

Hero Cars for Special	options: [0-6]	default: 5 0=off
Initial Loops for Multiball	options: [2-15]	default: 6
Initial Spins for Spinner Multiplier	options: [5-51]	default: 20
Loop Multiball Ball Save Time	options: [5-31]	default: 15
Loop Multiball Pops for Super Jackpot	options: [5-31]	default: 10
Loop Shots	options: ["Full", "Partial"]	default: "Partial"
Maximum Loops for Multiball	options: [4-21]	default: 12
Multiball Add Ball Difficulty	options: ["Easy", "Medium", "Hard"]	default: "Easy"
Pit Stop Difficulty	options: ['Extra Easy', 'Easy', 'Medium', 'Hard', 'Extra Hard']	default: 'Medium'
Race Position Start	options: [2-13]	default: 12
Skill Outlane Save	options: ['On', 'Off']	default: 'On'
Spinning Car	options: ['On', 'Off']	default: 'On'
Spinning Car Idle Game Time Max	options: [3-123]	default: 15
T-Rex Battle Initial Time	options: [25-125]	default: 90
Track Multiball Ball Lock Time	options: [5-31]	default: 15
Track Multiball Ball Save Time	options: [5-31]	default: 15
Track Multiball Mega Jackpot Time	options: [5-31]	default: 15
Triceratops Battle Initial Time	options: [25-125]	default: 90
Triceratops Shots to Win	options: [1-6]	default: 4

## COIN DOOR INFORMATION

### Dollar Bill Acceptor (DBA)



More details for operators here: <http://s4.american-pinball.com/img/support/2021-7/12v-DC-and-120v-AC-Dollar-Bill-Acceptor-connector-7-12-21.pdf>

Any standard up stacker DBA with a bill cassette of 500 or less, operating at 12 Volts DC can be used.

### Coin Door

US Coin Door	PUR0001-00
European Coin Door (*not included w/ door)	PUR0007-00
*European Coin Door Cable	WCA0036-00
*European Interface Board	PCB0024-00

**Coin door lights are 12 volts.**

## PRICING ADJUSTMENT SETTINGS

Pricing adjustment settings address settings related to game unit value, free play and currency management.

Pricing establishes the game unit of value, which should be the lowest denomination of currency based on coin door configuration.

### To access Hot Wheels Pricing settings



1. Power on the machine.
2. Open the coin door.
3. Press the MENU SELECT button to access the service mode.
4. Press the red +/- button to select the Setting icon.
5. Press the MENU SELECT button to enter the setting selection.
6. Use the flipper buttons to page through the different settings to the pricing settings.
7. Press the green BACK EXIT button to return to the previous menu.

**The “Unit Value” must be set to the lowest denomination that Hot Wheels will accept.**

Table 3-7 Price Table

Desired Coinage	Set “Pricing Plan”
25 cents per game	1 unit = 1 credit
25 cents per game or 2 games for 75 cents	1 unit for 1 credit, 2 for 3
50 cents per game	2 units for 1 credit
50 cents per game or 5 games for 2 dollars	2 units for 1 credit, 4 for 3
50 cents per game or 5 games for 3 dollars	2 units for 1 credit, 5 for 3
50 cents per game or 5 games for 2 dollars	2 units for 1 credit, 8 for 5
75 cents per game or 3 games for 2 dollars	3 units for 1 credit, 8 for 3
75 cents per game	3 units for 1 credit
1 dollar per game (default setting)	4 units for 1 credit
1 dollar per game or 3 games for 2 dollars	4 units for 1 credit, 8 for 3
1 swipe per game	1 swipe for 1 credit
Overseas Options	Set “Pricing Plan”
	10 units for 1 credit
	15 units for 1 credit
	20 units for 1 credit
	10 units for 1 credit, 20 for 3
	10 units for 1 credit, 40 for 5

**Table 3-8 Pricing Adjustment Settings**

Name	Option	Factory Default
Free Play	options: ['On','Off']	default: 'Off'
Unit Value	options: [.1, .2, .25, .5, 1]	default: .25
Pricing Plan	options: 1 Unit = 1 Credit 2 Units for 1 Credit 3 Units for 1 Credit 4 Units for 1 Credit 2 Units for 1 Credit, 4 for 3 2 Units for 1 Credit, 8 for 5	
	4 Units for 1 Credit, 8 for 3 1 Unit for 1 Credit, 2 for 3 10 Units for 1 Credit 10 Units for 1 Credit, 20 for 3 10 Units for 1 Credit, 40 for 5	default: '4 Units for 1 Credit'
	15 Units for 1 Credit 20 Units for 1 Credit 2 Units for 1 Credit, 5 for 3 4 Units for 1 Credit, 20 for 6 1 Swipe for 1 Credit	
Currency	options: ['Dollar', 'Euro', 'Pound', 'Kroner']	default: 'Dollar'
Coin Slot 1 Units	options: [1-21]	default: 1
Coin Slot 2 Units	options: [1-21]	default: 1
Bill Changer	options: [1-21]	default: 1
Coin Slot 4 Units	options: [1-21]	default: 1
Coin Slot 5 Units	options: [1-21]	default: 1
Credits	options: [0-99]	default: 0
Max Service Credits	options: [0-99]	default: 30



## REPLAY ADJUSTMENT SETTINGS

### To access Hot Wheels Replay Settings



1. Power on the machine.
2. Open the coin door.
3. Press the MENU SELECT button to access the service mode.
4. Press the red +/- button to select the settings icon.
5. Press the MENU SELECT button to enter the settings section.
6. Use the red +/- buttons to page through the different settings to the replay setting.
7. Press the green BACK EXIT button to return to the previous menu.

**Table 3-9**      Replay Adjustment Settings

Name	Description	Value
Replay Award Type	Specifies the type of replay awarded to the player.	Options: Free Game, Extra Ball, Points, Off Default: Extra Ball
Automatic Replay Percentaging	Whether the game software should periodically adjust Replay Award Level 1 to maintain replays at the frequency specified by Replay Percentage. Requires "Replay Levels" to be set to 1.	Options: On/Off Default: On
Replay Levels	Specifies how many replay levels are active	Options: 1-5 Default: 1
Replay Percentage	Specifies the percentage of games that award the player a replay if using replay type.	Options: 0-51 Default: 5
Replay Boost	Specifies the amount of points that each replay value will be increased. After each game in which a replay is earned, all replay levels are increased by the defined replay boost amount. For any game in which a replay was not won, the amount is reduced by the boost amount. For example, if three games in a row earn a replay, each replay amount is set to the original value + (3* boost value). If on the next game the replay is not earned, it drops to original value+ (2* boost value).	Options: 10k, 50k Increments: 10k Default: 50k
Replay Award Level 1	Specifies the point total required to receive an award that is defined in Replay Award Type	Options: 10K, 5M Increments: 10K Default: 100K
Replay Award Level 2	Specifies the point total required to receive an award that is defined in Replay Award Type	Options: 10K, 10M Increments: 10K Default: 250K
Replay Award Level 3	Specifies the point total required to receive an award that is defined in Replay Award Type	Options: 10K, 10M Increments: 10K Default: 500K
Replay Award Level 4	Specifies the point total required to receive an award that is defined in Replay Award Type	Options: 10K, 10M Increments: 10K Default: 1M

## SOUND ADJUSTMENT SETTINGS

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Sound settings allow you to control the volume level in the game.

### To access Hot Wheels Sound Settings



1. Power on the machine.
2. Open the coin door.
3. Press the MENU SELECT button to access the service mode.
4. Press the red +/- button to select the settings icon.
5. Press the MENU SELECT button to enter the settings section
6. Use the flipper buttons to page through the different settings to the sound setting.
7. Press the green BACK EXIT button to return to the previous menu.

**Table 3-10** Sound Adjustment Settings

Name	Description	Value
Initial Volume	Specifies the initial volume	Options: 1 to 11 Default: 5

### Amplifier settings

The amplifier is located within the backbox and should not need adjustment.

Reference Settings:

Sub volume = 1/8 clockwise turn

Cross Over = Full clockwise turn

Treble = 3/4 turn

Bass = 3/4 turn

Volume = Full clockwise turn




**Note:** if you hear a slight hum from the speakers with the game in attract mode, turn down the treble.

## HOW TO CREATE A CUSTOM MESSAGE

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 *Video showing how to create a custom message for the attract screen:* <https://youtu.be/8fpDKsQIHA4>

1. Create a PNG image, 1366x768 with whatever you want on it.  
Name the file *custom\_message.png* and put that file on a USB stick (with no game code) see the section “Oktoberfest Code Update” for information on how to format your USB stick.
2. go into Settings->Standard and set ‘Custom Message’ to ‘On’.
3. Insert the USB stick into the USB extension cable inside the coin door on the right side, after several seconds you will get a screen with green type that says, “Audits copied, Power Cycle Game”.
4. After you power cycle, use the flipper buttons to cycle through the screens to see the message.
5. If the image didn’t take and all of the above steps have been followed, try step 3 again.

## STANDARD ADJUSTMENTS SETTINGS

Standard adjustments address global options, such as the number of balls per game, tilt settings and replay award settings.

### To access Hot Wheels Standard Adjustment Settings



1. Power on the machine.
2. Open the coin door.
3. Press the MENU SELECT button to access the service mode.
4. Press the red +/- button to select the settings icon.
5. Press the MENU SELECT button to enter the settings section.
6. Use the red +/- buttons to page through the different settings to the standard adjustment.
7. Press the green BACK EXIT button to return to the previous menu.

**Table 3-11 Standard Adjustments**

Name	Options	Factory Default
Balls Per Game	options: [1-6]	default: 3
Ball Save Timer	options: [0-61]	default: 12
Chase Ball	options: ['On', 'Off']	default: 'On'
Multiple Ball Saves Allowed	options: ['Yes', 'No']	default: 'No'
Clear Shooter Lane After 60 Seconds	options: ['On', 'Off']	default: 'Off'
Attract Mode Sounds	options: ['On','Off']	default: 'Off'
Attract Mode Music	options: ['On','Off']	default: 'Off'
Backglass Brightness	options: [0-11]	default: 5
Coin Door Ball Saver	options: ['On', 'Off']	default: 'On'
Custom Message	options: ['On','Off']	default: 'Off'
Feature Insert Brightness	options: [1-11]	default: 8
Flipper Hold Boost	options: ['On', 'Off']	default: 'Off'
Lightshow Brightness	options: [1-11]	default: 10
Limit High Score to 3 Characters	options: ['On', 'Off']	default: 'Off'
Tilt Warnings	options: [0-9]	default: 2
Tilt Bob Settle Time	options: [0-8]	default: 1
Max Number of Extra Balls	options: [0-10]	default: 4
Shaker Intensity	options: [1-9]	default: 4
Shaker Usage	options: ['Off', 'Low', 'Medium', 'High']	default: 'Medium'

Show Game Time in Last Scores	options: ['On', 'Off']	default: 'On'
Match Feature	options: ['On', 'Off']	default: 'On'
Match Percentage	options: [0,51]	default: 5
Match Award	options: ['Credit', 'Off']	default: 'Credit'
Special Award	options: ["Free Game", "Extra Ball", "Points", "Off"]	default: "Free Game"
Knocker	options: ['Off', 'Audio High Volume', 'Audio Low Volume', 'Mechanical']	default: 'Audio High Volume'
Knocker Usage	options: ['Off', 'Low', 'Medium', 'High']	default: 'Medium'
Tournament Mode	options: ['On','Off']	default: 'Off'

## PRESETS

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The Preset feature allows you to load a profile setting. There are 8 presets available.

**Note:** Presets are subject to change. Refer to American Pinball's Support page for the most current listings of Presets.

### To access Hot Wheels Presets



1. Power on the machine.
2. Open the coin door.
3. Press the MENU SELECT button to access the service mode.
4. Press the red +/- button to access the settings icon.
5. Press the MENU SELECT button to enter settings selection.
6. Use the flipper buttons to page through the different settings to the preset settings.
7. Press the green BACK EXIT button to return to the previous menu.

**Table 3-12 Presets**

	Preset: Extra Easy	Preset: Easy	Preset: Medium	Preset: Hard	Preset: Extra Hard	Preset: Competition	Preset: Home	Preset: Location
<b>STANDARD:</b>								
Ball Save Timer	18	15	12	9	6			
Chase Ball						Off		
Clear Shooter Lane After 60 Seconds	Off	Off	Off	Off	Off	Off	Off	On
Max Number of Extra Balls	6	5	4	3	2	0		
Match Feature						Off	Off	
Multiple Ball Saves Allowed	Yes	Yes	No	No	No			
Tilt Warnings	3	3	2	1	1			
Tilt Bob Settle Time	1.25	3	3	3	2			
Tournament Mode						On		
<b>PRICING:</b>								
Free Play							On	Off
<b>REPLAY:</b>								
Replay Award Type						Off	Extra Ball	
<b>FEATURES:</b>								
Battle Start Difficulty	Extra Easy	Easy	Medium	Hard	Extra Hard			
Battle Target Difficulty	Extra Easy	Easy	Medium	Hard	Extra Hard			
Boost Scoring Difficulty	Extra Easy	Easy	Medium	Hard	Extra Hard			
Boost Scoring Time	15	15	15	15	15			
Car Chaos Ball Saver Time	21	18	15	12	9			
Car Chaos Start Difficulty	Extra Easy	Easy	Medium	Hard	Extra Hard			
Car Collects for Extra Ball	20	30	40	50	60			
Cobra Battle Initial Time	110	100	90	80	70			
Cobra Shot Time	50	40	30	25	20			
Epic Cars to Collect	5	6	8	10	12			
Epic Loops to Collect	3	4	5	6	7			
Epic Playfield to Collect	20	30	40	50	60			
Epic Pops to Collect	10	15	20	25	30			
Epic Ramps to Collect	3	4	5	6	7			
Epic Target Difficulty	Easy	Easy	Hard	Hard	Hard			
Gorilla Battle Difficulty	Easy	Easy	Hard	Hard	Hard			
Gorilla Battle Initial Time	110	100	90	80	70			
Hero Cars for Extra Ball	1	1	2	3	3			
Hero Cars for Special	3	4	5	5	5			
Initial Loops for Multiball	4	5	6	8	9			
Initial Spins for Spinner Multiplier	10	15	20	25	30			
Loop Multiball Ball Save Time	21	18	15	12	9			
Loop Multiball Pops for Super Jackpot	8	8	10	12	14			
Loop Shots	Partial	Partial	Partial	Partial	Full			
Maximum Loops for Multiball	10	11	12	12	12			
Multiball Add Ball Difficulty	Easy	Easy	Easy	Medium	Hard			
Pit Stop Difficulty	Extra Easy	Easy	Medium	Hard	Extra Hard			
Race Position Start	12	12	12	12	12			
Skill Outlane Save								
T-Rex Battle Initial Time	110	100	90	80	70			
Track Multiball Ball Lock Time	21	18	15	12	9			
Track Multiball Ball Save Time	21	18	15	12	9			
Track Multiball Mega Jackpot Time	21	18	15	12	9			
Triceratops Battle Initial Time	110	100	90	80	70			
Triceratops Shots to Win	3	3	4	4	4			
Victory Lap Multiball Ball Save Time	21	18	15	12	9			



**Table 3-13 Switch Table**

**Quick Reference Guide:**

<http://s4.american-pinball.com/img/support/2021-6/Hot-Wheels--Quick-Reference-Guide.pdf>

SW NUM	Switch Name / Type	Control Color	Board Pin Number
0	Left Flipper Button / Leaf	White / Black	2
1	Right Flipper Button / Leaf	White / Brown	3
2	Not Used	White / Red	4
3	Enter / Push Button	White / Orange	5
4	Exit / Push Button	White / Yellow	6
5	Down / Push Button	White / Green	7
6	Up / Push Button	White / Blue	8
7	Tilt / Plumb Bob	White / Violet	9
	Switch Ground	Black	10

SW NUM	Switch Name / Type	Control Color	Board Pin Number
8	Start Button / Push Button	Gray / Black	2
9	Coin Door Open / Interlock	Gray / Brown	3
10	Coin #1 / Micro	Gray / Red	4
11	Coin #2 / Micro	Gray / Orange	5
12	Coin # 3 (DBA / Bill Validator)	Gray / Yellow	6
13	Coin #4 / Programable Coin Mech	Gray / Green	7
14	Coin #5 / Programable Coin Mech	Gray / Blue	8
15	Coin #6/ Programable Coin Mech	Gray / Violet	9
	Switch Ground	Black	10

SW NUM	Switch Name --> ALL OPTO	Control Color	Board Pin Number
16	Upper Drop Target	Yellow / Black	2
17	Not Used	Yellow / Brown	3
18	Not Used	Yellow / Red	4
19	Lower Drop Target	Yellow / Orange	5
20	Right Ramp Enter	Yellow / Gray	6
21	Right Ramp Made	Yellow / Green	7
22	Return Ramp Enter	Yellow / Blue	8
23	Left Orbit Made	Yellow / Violet	9
	Switch Ground	Black	10





**Table 3-13 Switch Table Continued**

**Quick Reference Guide:**

<http://s4.american-pinball.com/img/support/2021-6/Hot-Wheels--Quick-Reference-Guide.pdf>

SW NUM	Switch Name / Type	Control Color	Board Pin Number
24	Skill 3 / Micro	Violet / Black	2
25	Right Loop Made / Micro	Violet / Brown	3
26	Car Target 4 / Standup	Violet / Red	4
27	Return Ramp Made / OPTO	Violet Orange	5
28	Not Used	Violet / Yellow	6
29	Not Used	Violet / Green	7
30	Not Used	Violet / Blue	8
31	Not Used	Violet / Gray	9
	Switch Ground	Black	10

SW NUM	Switch Name / Type	Control Color	Board Pin Number
32	Skill 2 / Micro	Brown / Black	2
33	Right Spinner / Spinner	Brown / Gray	3
34	Car Target 3 / Micro	Brown / Red	4
35	Big Kick / Micro	Brown / Orange	5
36	Advance Bonus X / Standup	Brown / Yellow	6
37	Not Used	Brown / Green	7
38	Not Used	Brown / Blue	8
39	Right Loop Enter / Micro	Brown / Violet	9
	Switch Ground	Black	10

SW NUM	Switch Name / Type	Control Color	Board Pin Number
40	Right Flipper EOS / Leaf	Red / Black	2
41	Right Slingshot / Leaf	Red / Brown	3
42	Right Inlane / Micro	Red / Gray	4
43	Right Outlane / Micro	Red / Orange	5
44	Skill 1 / Micro	Red / Yellow	6
45	Epic Start / Standup	Red / Green	7
46	Epic Collect / Standup	Red / Blue	8
47	Saucer / Micro	Red / Violet	9
	Switch Ground	Black	10



**Table 3-13 Switch Table Continued**

**Quick Reference Guide:**

<http://s4.american-pinball.com/img/support/2021-6/Hot-Wheels--Quick-Reference-Guide.pdf>

SW NUM	Switch Name / Type	Control Color	Board Pin Number
48	BA(T)TLE / Standup	Orange / Black	2
49	B(A)TTLE / Standup	Orange / Brown	3
50	(B)ATTLE / Standup	Orange / Red	4
51	CAR TARGET 2 / Standup	Orange / Gray	5
52	CAR TARGET 1 / Standup	Orange / Yellow	6
53	Left Spinner / Spinner	Orange / Green	7
54	Left Loop Enter / Micro	Orange / Blue	8
55	Left Loop Made / Micro	Orange / Violet	9
	Switch Ground	Black	10

SW NUM	Switch Name / Type	Control Color	Board Pin Number
56	(R)PM	Green / Black	2
57	R(P)M	Green / Brown	3
58	RP(M)	Green / Red	4
59	Bottom Pop Bumper / Leaf	Green / Orange	5
60	Right Pop Bumper / Leaf	Green / Yellow	6
61	Left Pop Bumper / Leaf	Green / Gray	7
62	VUK / Micro	Green / Blue	8
63	Left Orbit Enter / Micro	Green / Violet	9
	Switch Ground	Black	10

Switch No.	Switch Name / TYPE	Control Color	Board Pin Number
64	Left Flipper EOS / Leaf	Black / Gray	2
65	Left Slingshot / Leaf	Black / Brown	3
66	Left Inlane / Micro	Black / Red	4
67	Left Outlane / Micro	Black / Orange	5
68	Pit Stop / Standup	Black / Yellow	6
69	BATT(L)E / Standup	Black / Green	7
70	BATT(L)E / Standup	Black / Blue	8
71	BAT(T)LE / Standup	Black / Violet	9
	Switch Ground	Black	10

**Table 3-13 Switch Table Continued**

SW NUM	Switch Name / Type	Control Color	Board Pin Number
72	Ball Trough 1 / Opto	Blue / Black	2
73	Ball Trough 2 / Opto	Blue / Brown	3
74	Ball Trough 3 / Opto	Blue / Red	4
75	Ball Trough 4 / Opto	Blue / Orange	5
76	Ball Trough 5 / Opto	Blue / Yellow	6
77	Ball Trough 6 / Opto	Blue / Green	7
78	Ball Trough 7 (Jam) / Opto	Blue / Gray	8
79	Shooter Lane / Micro	Blue / Violet	9
	Switch Ground	Black	10

## Switch Theory

### Mechanical Switch

All mechanical switch lines are “Active Low” 0 VDC (Logic Ground) when active (Made). Normally open state (12 VDC) (Not Made).

### Optos

All opto switch lines are “Active High” (12 VDC) when active (Made). Normally open state 0 VDC (Logic Ground) (Not Made).

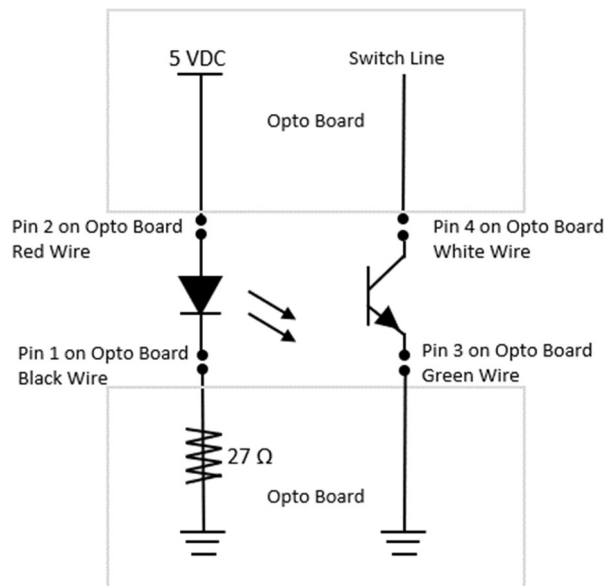




Table 3-14 Coil Table

Quick Reference Guide:

<http://s4.american-pinball.com/img/support/2021-6/Hot-Wheels--Quick-Reference-Guide.pdf>

Coils RED Group 48 Volt Coil	Coil Number Transistor	Transistor Control Color	Driver Board Pin	Coil / Part Number
Left Flipper Main	1 - Q1	Red / Black	1	FL11629 / COI0003-00
Left Flipper Hold	2 - Q2	Red/ Brown	3	FL11629 / COI0003-00
Left Slingshot	3 - Q3	Red / Gray	4	26-1200 / COI0005-00
VUK	4 - Q4	Red / Orange	5	23-800 / COI0001-01
Upper Drop Target Reset	5 - Q5	Red / Yellow	6	23-800 / COI0001-01
Upper Drop Target Trip	6 - Q6	Red / Green	7	32-1800 / COI0013-00
Magnet	8 - Q8	Red / Violet	9	Magnet Coil / COI0002-00

Coils BROWN Group 48 Volt Coil	Coil Number Transistor	Transistor Control Color	Driver Board Pin	Coil / Part Number
Trough Kicker	9 - Q9	Brown / Black	1	26-1200 / COI0005-00
Auto Fire	10 - Q10	Brown / Gray	2	26-1200 / COI0005-00
Right Flipper Main	11 - Q11	Brown / Red	4	11629 / COI0003-00
Right Flipper Hold	12 - Q12	Brown / Orange	5	11629 / COI0003-00
Right Sling	13 - Q13	Brown / Yellow	6	26-1200 / COI0005-00
Lower Drop Target Trip	14 - Q14	Brown / Green	7	32-1800 / COI0013-00
Lower Drop Target Reset	15 - Q15	Brown / Blue	8	23-800 / COI0001-01
Saucer	16 - Q16	Brown / Violet	9	26-1200 / COI0005-00

Add On Board 48 Volt Coil	Coil Number Transistor	Transistor Control Color	Connector - Pin	Coil / Part Number
Knocker	21 - Q9	Brown	J10-3	23-800 / COI0001-01
Kick Back	17 - Q12	Blue / Black	J11-3	23-800 / COI0001-01
Right Pop Bumper	18 - Q13	Blue / Brown	J11-4	26-1200 / COI0005-00
Bottom Pop Bumper	19 - Q14	Blue / Red	J11-5	26-1200 / COI0005-00
Left Pop Bumper	20 - Q15	Black / Purple	J11-6	26-1200 / COI0005-00

*All Transistors (Q) are IRL540N MOSFET N Channel type.*

Reference Figure 3-6 for Coil Location by Coil Number

# BACKBOX PCB CABLE AND DIP SWITCH POSITION

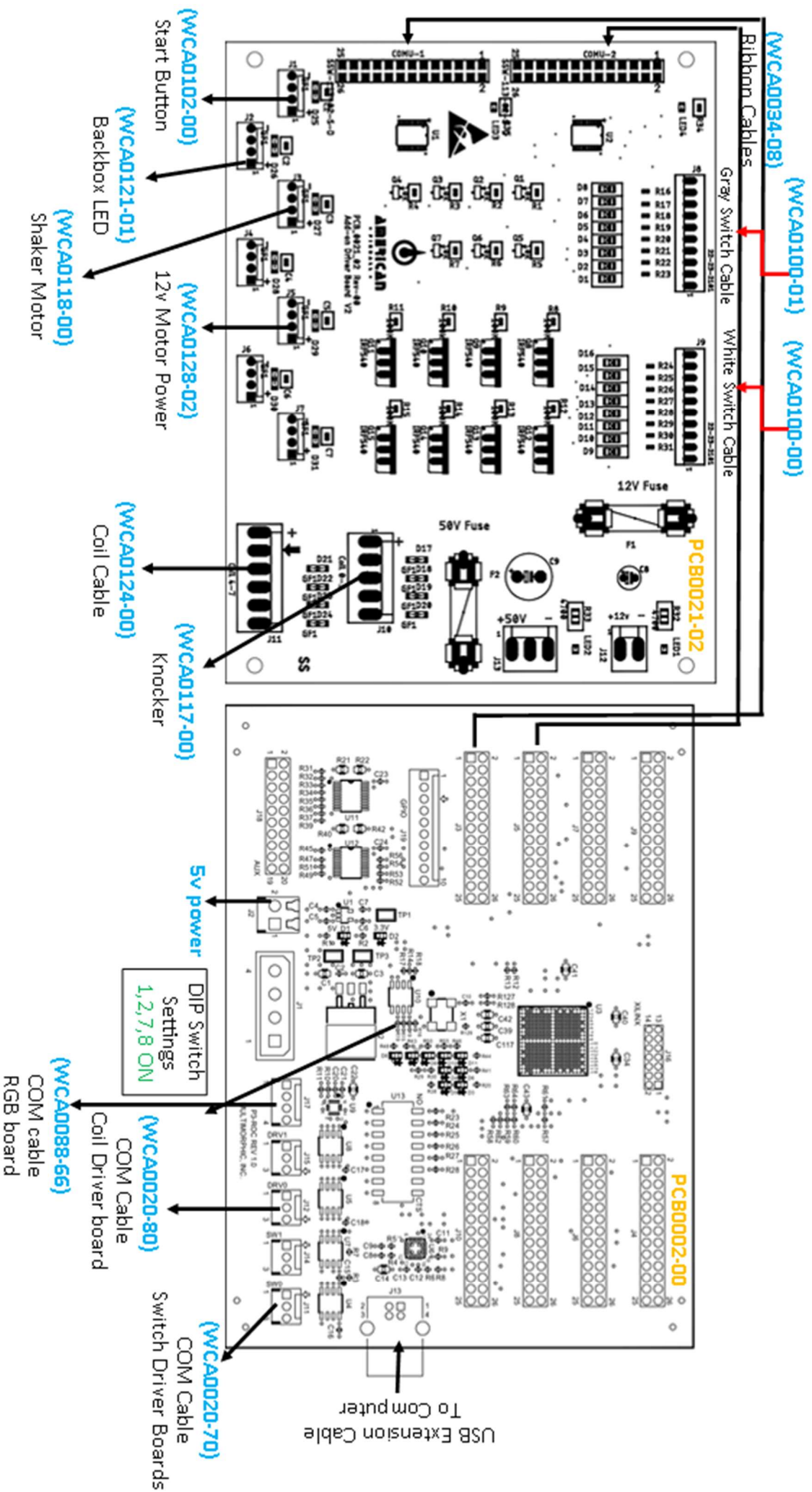


Fig 3-7

Fig 3-8

Dip Switch and Bottom Playfield PCB's

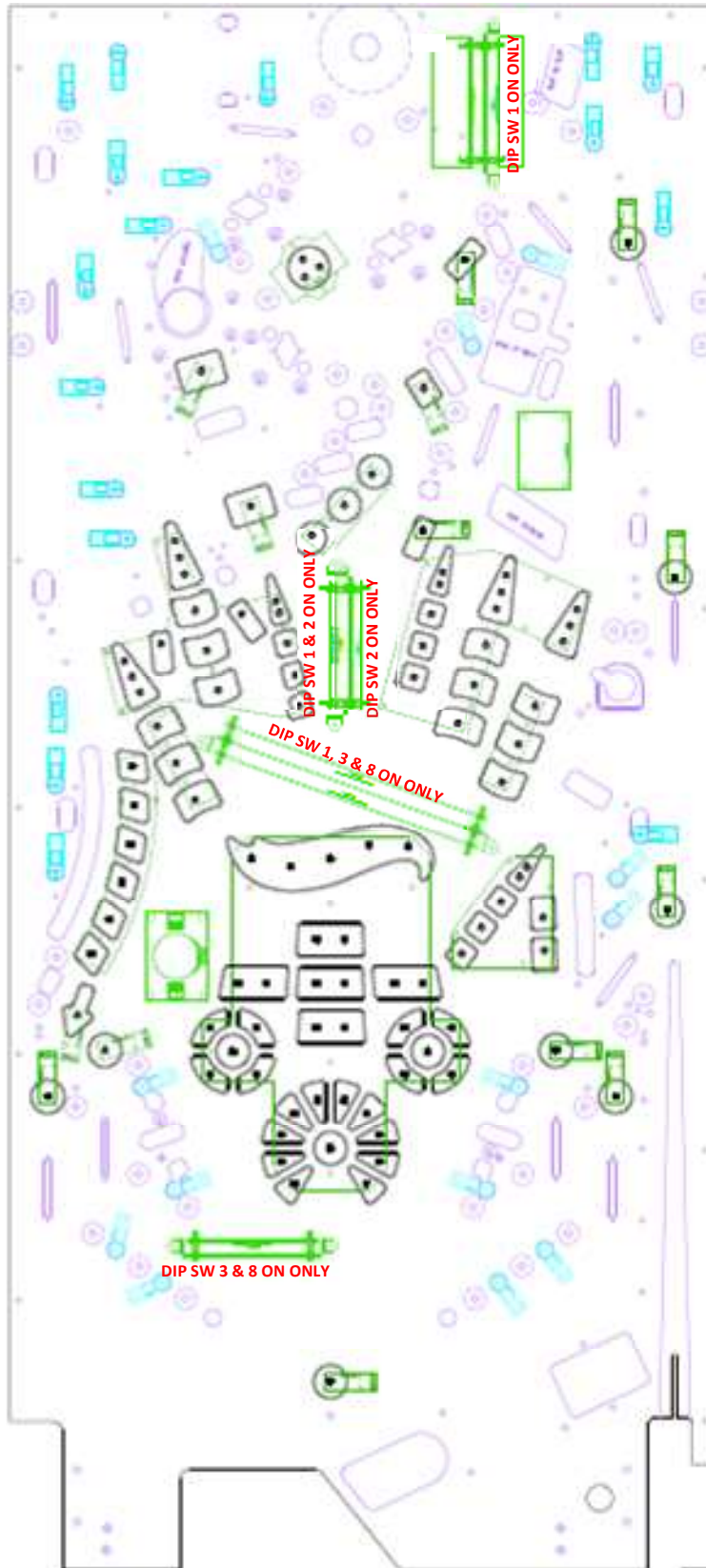


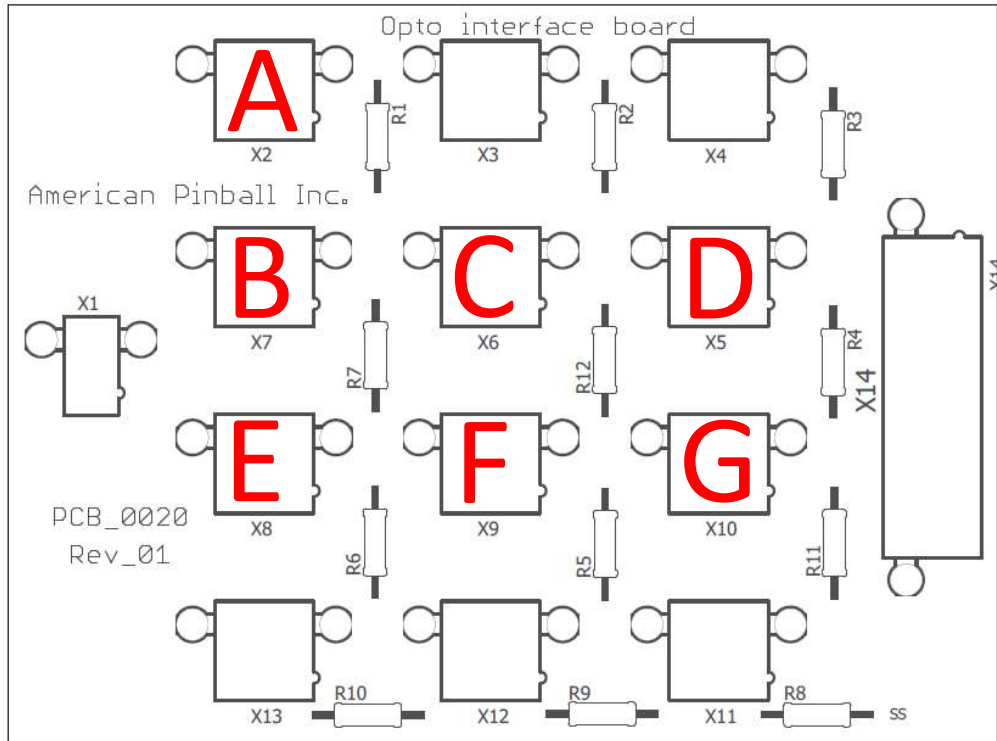
Fig 3-9

Opto Board Connector

Quick Reference Guide:



<http://s4.american-pinball.com/img/support/2021-6/Hot-Wheels--Quick-Reference-Guide.pdf>



<b>A</b>	X2	Upper Drop Target
<b>B</b>	X7	Right Ramp Exit
<b>C</b>	X6	Right Ramp Enter
<b>D</b>	X5	Lower Drop Target
<b>E</b>	X8	Return Ramp Enter
<b>F</b>	X9	Left Orbit Exit
<b>G</b>	X10	Return Ramp Exit

See Fig 3-5 For More Details on Switch Location

Fig 3-10 Opto Board Schematic

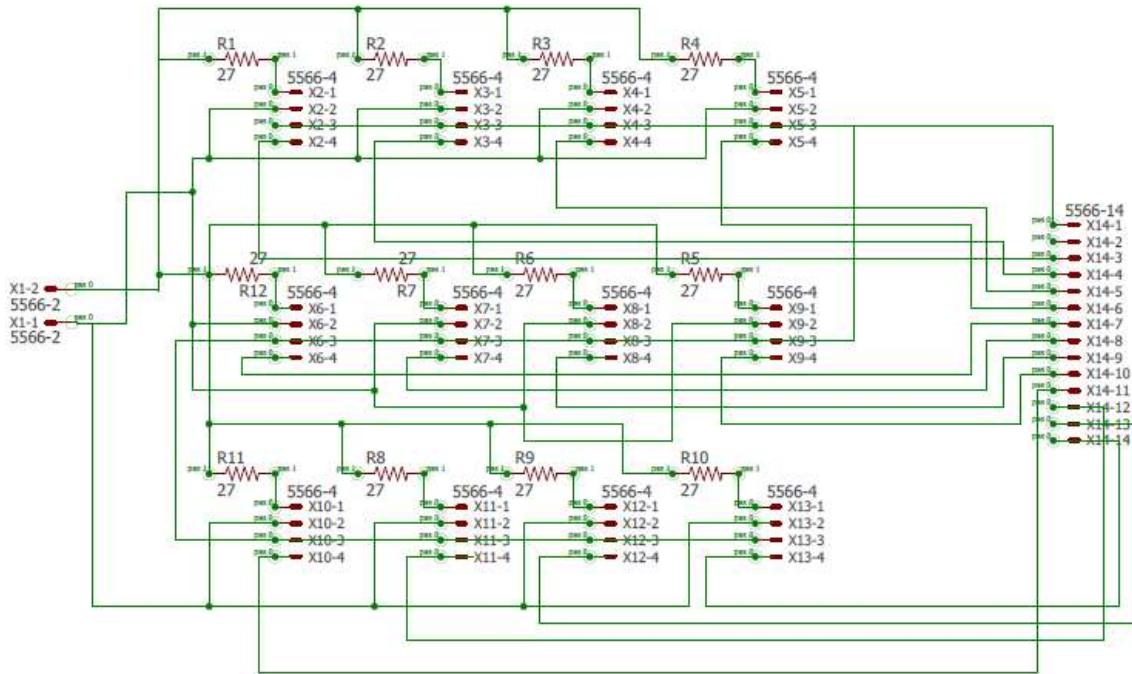


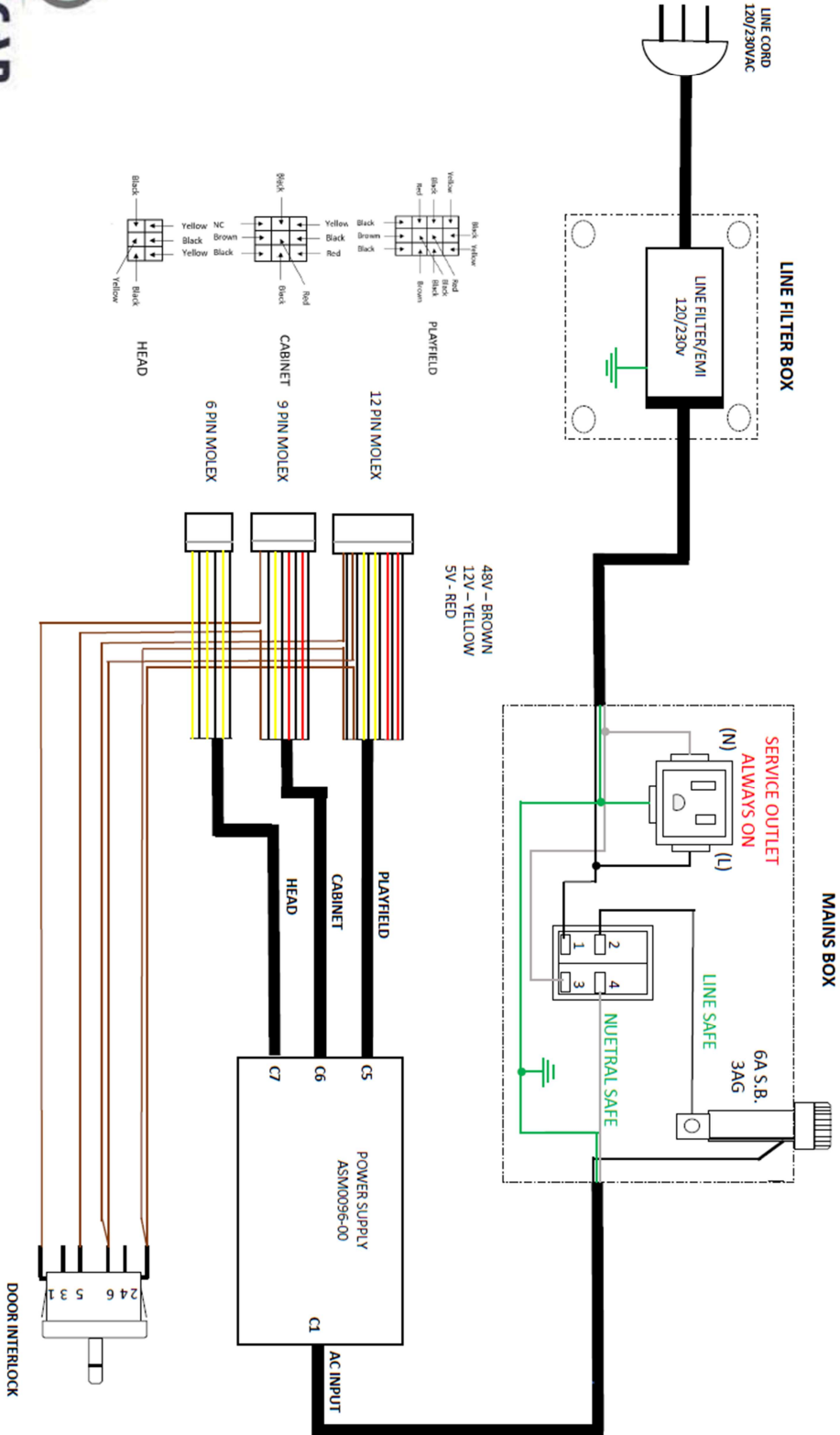


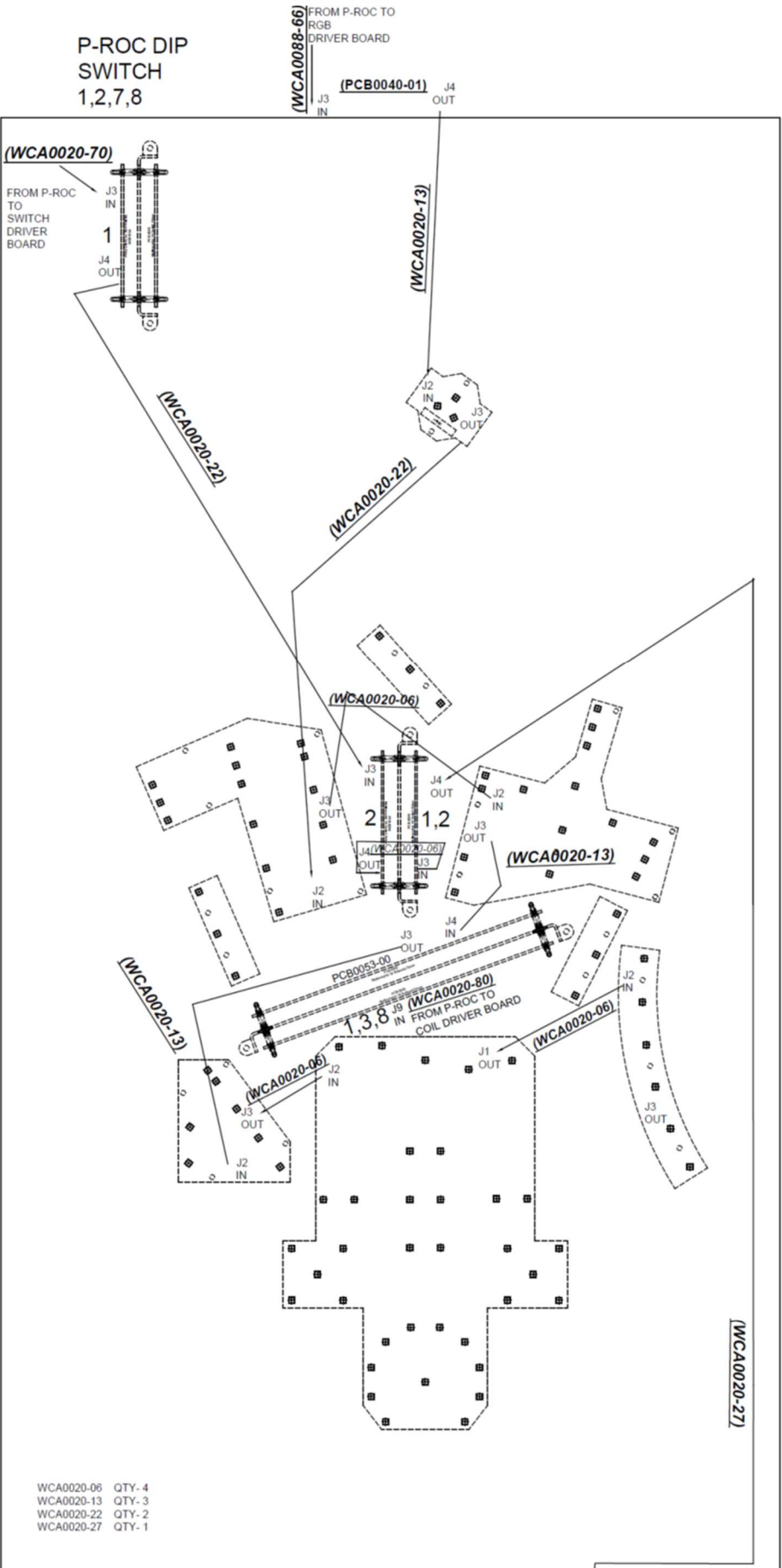
Fig 3-11

Power Distribution



Pinball Power System Diagram V1.02





P-ROC DIP SWITCH  
1,2,7,8

(WCA0088-66) FROM P-ROC TO RGB DRIVER BOARD  
J3 IN

(PCB0040-01) J4 OUT

(WCA0020-70)

FROM P-ROC TO SWITCH DRIVER BOARD  
J3 IN  
J4 OUT

(WCA0020-22)

(WCA0020-22)

(WCA0020-13)

(WCA0020-06)

(WCA0020-13)

(WCA0020-13)

(WCA0020-06)

(WCA0020-80)

(WCA0020-06)

(WCA0020-27)

- WCA0020-06 QTY-4
- WCA0020-13 QTY-3
- WCA0020-22 QTY-2
- WCA0020-27 QTY-1

G3 COM CABLE POSITION ASSEMBLY



# Hot Wheels Code Update



**CODE UPDATE PROCEDURE** <https://youtu.be/n4-7ZSH3UE>

Please have the following items available before performing a code update:

- A FAT 32 formatted 2.0 USB drive with at least 8 GB of storage
- Latest version of Hot Wheels code, which can be downloaded from <https://www.american-pinball.com/support/updates/> your computer.

**WARNING!** OPENING THE COIN DOOR EXPOSES HIGH VOLTAGE PARTS IN THE GAME, AND DIRECT CONTACT TO THESE HIGH VOLTAGE PARTS CAN LEAD TO SERIOUS OR FATAL INJURIES. THIS EQUIPMENT IS TO BE SERVICED BY TRAINED PROFESSIONALS ONLY.



### To download Hot Wheels code to a Microsoft Windows PC

1. Go to [www.american-pinball.com/support/updates/](http://www.american-pinball.com/support/updates/)
2. Compare the game version on your machine to the most current Hot Wheels version available on the site.
3. If your machine is running the most current version of code, enjoy your game! Otherwise, proceed to the next step.
4. Insert a formatted USB drive with at least 8GB of storage into your computer.
5. From File Explorer, right click on the USB drive.
6. Select Format Drive FAT 32.

### To download Hot Wheels Code to a MAC

1. Go to [www.american-pinball.com/support/updates/](http://www.american-pinball.com/support/updates/)
2. Compare the game version on your machine to the most current Hot Wheels version available on the site.
3. If your machine is running the most current version of code, enjoy your game! Otherwise, proceed to the next step.
4. Insert a formatted USB drive with at least 8GB of storage into your computer.
5. Open Disk Utility.
6. Select USB Drive.
7. Select Erase.
8. Select Format FAT 32.

### To update Hot Wheels code

1. Copy the Hot Wheels update package (.pkg) code file to the USB drive.
2. Open the coin door and locate the provided USB extension cable on the right-hand side of the coin door below the flipper switch.
3. Insert the USB drive with the code update package into the USB extension cable.
4. If Hot Wheels is powered off, turn on (USB can be inserted with power on). Hot Wheels will recognize the USB drive and will provide a message on the monitor stating that you have 5 seconds to remove the USB drive or the machine will begin the update process.
5. When the code update process is complete an "Update Complete" message appears. Remove the USB drive from the USB extension cable.
6. Power cycle the game.
7. Enjoy your updated game!

Note: The code version is available on the main menu page of the service mode.

## HOT WHEELS LOG COPY

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To assist in game development and troubleshooting, American Pinball may ask for a copy of the game logs.

### To copy game logs

1. Open the coin door and locate the USB extension cable on the inside-side of the cabinet below the flipper switch.
2. Insert a **blank** USB drive into the USB extension cable.
3. If the game power is turned off, turn on.
4. Wait for the completion screen on the monitor and remove the USB drive.
5. Power cycle the game.
6. Email the files to [service@americanpinball.com](mailto:service@americanpinball.com), include the date and time of the error along with a detailed description of what's going on.

## HOT WHEELS GAME RULES

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### Rules and Code

Programmers Josh Kugler and Joe Schober will continue to adjust the rules and content.

### Main Objective

The teeming metropolis of Hot Wheels City is under attack! Your mission is clear. With help and guidance from the Sheriff, daredevil brothers Chase and Elliot, and the local Newscaster, defend Hot Wheels City by battling the villainous Draven and his army of relentless Creatures who are wreaking havoc to no end, while also racing, track-building, and car-collecting your way to become a Hot Wheels Legend!

### Overview of Gameplay

Gameplay is all about having fun with Hot Wheels cars:

Collecting Cars, Racing them, Crashing them, Building Tracks, Battling Creatures, and much more! You earn Hero Cars as you master various game objectives. Collect all 5 Hero Cars to become a Hot Wheels Legend!

### SKILL SHOTS

How to adjust the skill shot plunge



There are several skill shots available. For the main skill shot, launch the ball, aiming for the '3' zone without overshooting into the pops or the orbit. After a successful skill shot, immediately shoot the left orbit for a Super Skill Shot Bonus. There are some other skill shot secrets waiting to be discovered!

## TACHOMETER

The TACH is the central scoring feature, as all playfield scoring is based on the RPM levels of the TACH. **The higher the Tach, the higher the scoring.**

The 'stepped' RPM targets in the center of the playfield help rev the TACH faster. Make fast shots to rev the Tachometer for bigger scoring.

Advance the TACH from 1 all the way to 10 to "Redline it" to start the exhilarating and frenzied mode REDLINE MANIA (details in Multiball section below).

## CREATURE BATTLES

Spell BATTLE by hitting the corresponding B-A-T-T-L-E Stand-Up targets to light a Battle mode with a Creature.

After all BATTLE letters are lit, shooting either spinner will rotate which Creature Mode is selected. Start the lit Battle by shooting a saucer. Creature Battles are timed. Defeat each Creature quickly for a valuable Fuel Bonus! Defeat all four Creatures to challenge the main protagonist, Draven, the demented mad scientist!

## CAR COLLECTING

Hitting the Car Stand-Up Targets adds cars to your Collecting Case. Fill a Case to qualify awards that are collected at the lower saucer, including Car Chaos Multiball! There are hundreds of popular Hot Wheels cars waiting to be collected!

## HERO CARS

HERO CARS are awarded by completing specific game achievements. Collecting all 5 HERO CARS qualifies the Wizard Mode, Legend Multiball.

- Twin Mill (1960s era) – "Car Chaos!" – awarded for playing Car Chaos Multiball.
- Rodger Dodger (1970s era) – "Battle Draven!" – awarded for defeating the mad scientist Draven!
- Sharkruiser (1980s era) – "Multiball Master!" – awarded for playing Loop Crash Multiball, Track Multiball, and Victory Lap Multiball.
- Bone Shaker (2000s era) – "Be Epic!" – awarded for playing a set of 5 EPIC Features.
- Rip Rod (2010s era) – "Redline!" – awarded for Redlining the Tach

## **TURBO BOOST**

Pop bumpers build up the TURBO BOOST. Once lit, you can activate TURBO BOOST at the player-facing KICKER, which will then increase the TACH value to 10X-scoring for a brief period of time, so use it wisely.

## **EPIC FEATURES**

Light E-P-I-C at the lower lanes to qualify Epic RAMPS, LOOPS, CARS, POPS, or PLAYFIELD. You can qualify several EPIC features before starting at the EPIC START target.

More features at once builds higher EPIC Jackpots, but become more challenging to collect. Collect the EPIC Jackpot before you drain, or it will be an EPIC Fail!

## **BONUS MULTIPLIER**

Increased by shooting the lit "ADVANCE BONUS X" TARGET, which is qualified via hitting all four distinct Car Stand-Up Targets. Bonus Multiplier can also be awarded via Mystery.

## **Multiball Modes**

Six multiball modes are featured in Hot Wheels pinball:

## **TRACK MULTIBALL**

Shots to the Track Builder lane build increasingly more complex tracks. Build a complete track to start Track Multiball. This is the easiest multiball to achieve, as it only takes four shots to start it (the first time). Track Multiball starts as a 2-ball multiball, but if you shoot the right saucer in time, it becomes a more lucrative 3-ball multiball.



## **VICTORY LAP MULTIBALL**

Race your way from 13th place to 1st place and it's off to the races for Victory Lap Multiball. Build the Super Jackpot all the way up before collecting it for some seriously lucrative points!

There are four main shots used to advance through the race, each with an arrow insert and three race position inserts. The value of each of the four shots increases as each shot is made; 3X, 4X, 5X, 6X, and adds that value to the Super Jackpot. The Super Jackpot has its own multiplier, which is based on the highest shot level each by all four of the main shots, so if you have made two shots on each main shot, then the Super Jackpot multiplier is 4X. Complete the next on each, and the Super Jackpot multiplier is 5X.

One unique feature is that the main game music soundtrack is tied to racing. As you advance race positions, the music advances with you, and additional musical elements of the soundtrack are added, making for a more dramatic and suspenseful gameplay experience – a very nice touch!

## **REDLINE MANIA**

A heart-pumping timed 4-ball multiball with unlimited ball save time in which the goal is to complete all lit mode shots before the timer expires. When Redline Mania ends, your car will shift up a gear, increasing the value of the Tach for the remainder of the game. The color of the Tach inserts reflects the gear (white, green, yellow, orange, red).

## **LOOP CRASH MULTIBALL**

Make lots of loop shots to start this multiball, which grabs the ball with the magnet when the Super Jackpot is ready. CRASH into that ball before the magnet lets go to collect the Super Jackpot. Loop Crash Multiball and Victory Lap Multiball can be stacked – but only if you start them at the same time! All multiballs can be stacked with Creature Battles and EPIC Features.

## **CAR CHAOS**

Car Chaos is one of the many Car Collecting Case Awards. Shoot flashing Car targets to increase the value of loop and ramp Jackpots. Collect enough Jackpots to light Super Jackpot on the high-speed kicker.

## **Wizard Mode**

Become a Legend in Hot Wheels Pinball!!

### **LEGEND MULTIBALL**

This final Wizard Mode is qualified when all 5 Hero Cars have been collected. In this timed finale, more balls will be added as you keep playing, culminating in 6 balls of multiball madness. Shoot every lit shot on the game before time runs out for the ultimate Legend Jackpot. Become a Hot Wheels Legend!



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