



USA Ticket  
Dave & Buster

Produced by:  
**Harry Levy Amusement Contractor Ltd**

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1. **COMMISSIONING**

1.1 **Receipt Of Machine**

Upon receipt of machine carefully remove all protective packaging and establish machine on a flat and level floor. Take care to protect the machine from sudden shocks etc. when lifting or manhandling.

The machine should only be situated indoors, and should not be subjected to any other environments. Ensure all ventilation grills have at least 4" (100mm) clearance from other surfaces to permit adequate cooling.

1.2 **Electrical Connection**

The Casino Lights machine should be connected to the mains supply via a suitable mains cable to suit your installation requirements. A suitable 110v cable is supplied with the machine.

Mains wiring:            Live (Hot)    Black  
                                  Neutral        White  
                                  Earth         Green

**THIS MACHINE MUST BE EARTHED**

<b>Harry Levy Amusement Contractor</b>					
Machine	<b>Casino Lights</b>				
Voltage:	<b>110</b>	VAC	Freq:	<b>60</b>	Hz
Power:	<b>1050</b>	W	Amps:	<b>10</b>	A
Overall weight					
Kg	Lbs				

1.3 **Electrical Supply Entry**

This machine may have the electrical supply connected either at the base or at the very top, as best suits the location in which the machine is situated. The base feed entry socket is located in the base skirt of the machine below section 1 cash box door. The top feed entry socket is located in the top roof section of the machine.

The On/Off switch for the machine is located in section 1 lower cabinet on the right. The switch is a three-position switch, with the central position being 'Off'. Up and down of this position are 'On - Top Feed' and 'On - Bottom Feed' respectively.

## 1.4 **Initial Operation**

Connect the mains supply and switch ON.

The following lamps will illuminate:

Top sign

Coin entry area

Playfield Spot Lamps

Corner rope lights will flash

The playfield hoppers will run to clear any stray coins, and will run periodically when not being played.

Prime the payout hoppers with some coins to begin.

### Pusher game.

Inserting coins makes the pusher game 'live' and it will remain live for 25 seconds to let the pusher action take place. Each coin resets the 25 second timer. The count hopper runs continuously while the game is live.

All coins pushed from the front of the playfield are collected in the count hopper, which counts the coins out to the payout hopper (swipe) or cash box (non-swipe). Tickets are dispensed for every coin won. See switch settings

### Feature game:

The coin runs down the pin Perspex to the pusher game. If the coin passes through a channel labelled 'SPIN', the reels spin. The spin outcomes are:

2 Aces

2 Kings – triggers the feature Led spin to win from 1 to 5 times award table amount.

2 Zeroes – a re-spin is given.

Any other – no award.

The award table is printed on the artwork panels.

The 2 Aces win is accompanied by a fanfare, and the section spot lamps flash.

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### Tilt

The 'slam-tilt' alarm feature may be tested by thumping on a lower cabinet door. The alarm should sound and the Top Sign lights go out. The operation of the tilt or slam tilt alarm stops all games in progress, and causes the count hopper of each section to 'run to empty', but does not make any award to the pay cup. This lasts approximately 10 seconds, or until the hoppers are empty.

### Motor jammed cut-out.

A safety feature is incorporated, which will stop the pusher drive motor should a jam or restriction occur. Simply holding back an advancing pusher box may test this. The response of this feature is adjustable (see motor control section in this manual). This operation may be reset by pressing the reset switch located under the paycup door on the left of No.1 section.

## 2.1 **Access To Machine**

### **WARNING - DANGEROUS VOLTAGES EXIST WITHIN THIS MACHINE**

#### **Playfield**

Release the lock at the top of the glass and hinge backward far enough to get a firm handhold either side. Lift clear of the machine and store safely.

#### **Coin-Entry**

Release the locks at the top of the door and hinge backwards.

#### **Lower Cabinet**

Release the locks, hinge outward and lift clear.

#### **Cashbox**

Release the lock and pull out. The cashbox is inside.

#### **Top-Sign**

Remove the screws securing the Perspex top covers and remove.

## 3. **GAME OPERATION**

### 3.1 **The Game**

#### **Attract Mode**

When not in active play, the machine lighting and pusher box mechanism operate continuously. The swinging chutes are not in motion.

#### **Play Mode**

When coins are inserted into a coin slot, they pass an opto sensor that signals to the logic to make the game live. Coins of the incorrect type are rejected. The opto sensor is a twin device, and the coin must pass the sensors in the right order for the coin to be validated.

After valid coin entry, a player section remains enabled for approximately 25 seconds, allowing the player the full benefits from the effects of his coin.

The centre swinging chute can be activated by pushing the flashing button on the coin entry door. This is the skill element in the game.

The feature is a reel mech game, triggered by a coin passing down one of the two chutes labelled 'SPIN' on the pin Perspex.

A further feature is the centre display panel below the reels. This has a ring of Leds around the perimeter which 'Spin' when two Kings show. They multiply the declared win by up to 5. A twin 7-segment display counts down tickets as they are paid out.

### 3.2 **Priming The Playfields With Coins.**

Each player section requires approximately 800 coins, of which the first 750 may be hand placed on the pusher box, letting the pusher box spread them out on the playfield. The final 50 for each section should be played in to the machine via the coin entry in order to achieve the best possible visual appearance of the playfield area. The payout hopper in each player section should be initially filled. This is then topped up during normal play by coins from the count hopper. Empty the cash boxes on completion and record the coin counter readings for your records.

### 3.3 **General Maintenance & Care**

The Casino Lights machine is a robust and reliable machine, which looked after will give years of profitable service. Regular cleaning is the key to optimum condition and performance.

To maintain all visible surfaces in an 'as new condition':

3. Plastic and Glass Fibre - use a general purpose (non aggressive) water based detergent and finish with a quality furniture polish.
2. Laminated Cabinet trims - clean with an all purpose non-aggressive cleaner and finish to a high gloss using a furniture polish.
3. Glass and Chrome - clean with a quality window cleaning solution.

***Do not use caustic or abrasive cleaners. Always use cleaning products in accordance with the manufacturers instructions.***

The Casino Lights machine utilises 'sealed for life' type bearings and high quality mechanical components that do not require regular greasing or regular servicing.

It is recommended an initial inspection be carried out after approximately two months usage, to check for any signs of wear on the moving parts. Adjust as required, and thereafter inspect annually.

## 4 **Electrical Systems**

### 4.1 **Circuit Breakers**

#### Mains Supply Circuit Breaker

The Mains Supply is protected by a 16A thermally operated circuit breaker, which can be manually reset. This circuit breaker is located in a metal enclosure together with the mains supply switch, located in No1 section lower cabinet on the right.

Should this device trip, firstly ascertain the cause of the fault and rectify. To reset the device, simply depress the centre back in to the body of the circuit breaker.

#### Motor Fuse

The Motor fuse is located on the motor control PCB (see section ). This fuse is designed to protect the motor control circuitry and must only be replaced with an identical item. Failure of this fuse is rare, and would normally indicate a motor fault.

Motor fuse	2 Amp (T) 20mm
	(T) = Time Delay/Anti-Surge

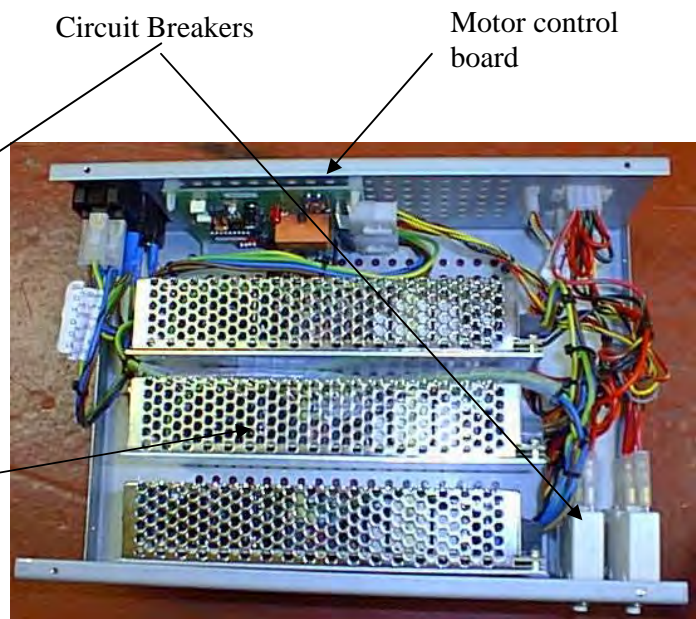
#### Power Supplies

There are three power supply enclosures located in the base of the machine. The transformer enclosure for the flashing rope lighting is located in the coin entry area. The machine power supply units all have circuit breakers fitted in the low voltage sides of the circuits, accessible without opening the enclosures.

Resetting these devices, having identified and rectified the fault condition, is simply a case of pressing the button back in to the body of the device. Since these are thermally operated devices, a small ‘cooling down’ time may be required after tripping before reset can be achieved.



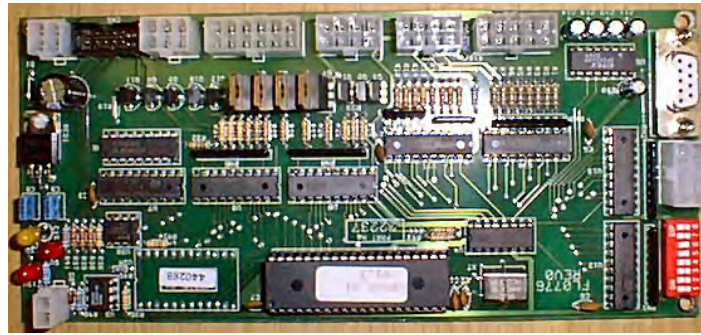
Single rail  
Power supply units



Circuit Breakers

Motor control  
board

## 4.2 Logic Board



There is a logic board for each section, located in the coin entry area on the left hand web. There is a bank of DIP switches to change the various settings.

Program: |CSL\_02 V1.0

<u>SW1 pole 1</u>	<u>Master/Slave select</u>		
	Off	Slave – Sections 2 - 6	
	On	Master - Section 1	

<u>SW1 pole 2</u>	<u>Ticket on coin in select</u>		
	Off	disabled	
	On	enabled – pays 1 ticket	

<u>SW1 poles 3 4 5</u>	<u>Coins : ticket ratio</u>			
	Off	off	off	3
	On	off	off	4
	Off	on	off	5
	On	on	off	6
	Off	off	on	7
	On	off	on	8
	Off	on	on	9
	On	on	on	10

<u>SW1 poles 6 7 8</u>	<u>percentage payout setting</u>			
	Off	off	off	20
	On	off	off	25
	Off	on	off	30
	On	on	off	35
	Off	off	on	40
	On	off	on	45
	Off	on	on	50
	On	on	on	55

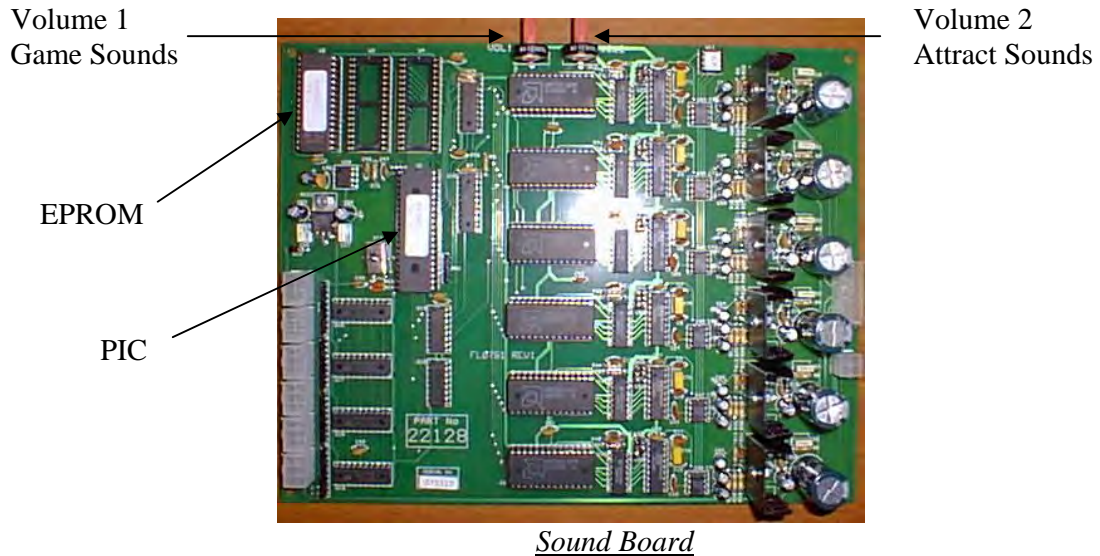
<u>SW1 pole 8</u>	<u>Memory Reset</u>	
	Off	Inactive
	On	Active



To clear memory, power up the game with pole 8 on, then switch pole 8 off. A tone will indicate the clearing action. Switch the game off. Restore pole 8 to its required position for percentage setting. Switch the game back on.

### 4.3 Sound Board

There is a 6 channel soundboard located on the roof panel of the coin entry area. This sound board produces all of the sounds generated within the machine. There are two volume controls, one for the music/messages and the other for the game operation sounds, such as coin in, feature operate, reel stop etc.

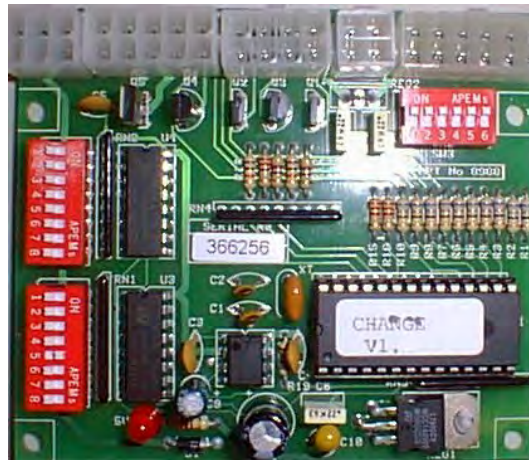


Program:      PIC:            SND8 V1.0  
                 EPROMS:      CSSND\_A      V1.0

### Loudspeaker

There are 6 loud speakers, one per section, located to the left of each lower cabinet door. They are rated at 8 Ohms 15 watts.

#### 4.4 Swipe Changer Board



*Swipe Changer Board*

The swipe changer board is located on the right hand web of the coin entry area. It monitors the payout hopper level and enables/inhibits the swipe system via a small relay board, providing volt-free contacts that are open to inhibit: closed to enable. It takes its swipe input from the swipe system, and passes this to the logic board, which dispenses coins to the player according to dipswitch settings.

Change board program:           CHANGE21 V1.1

<u>SW1 poles</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>Coins paid per swipe</u>	
Off	off	off	off	off	1	
On	off	off	off	off	2	
Off	on	off	off	off	3	
On	on	off	off	off	4	<b>default USA swipe</b>
Off	off	on	off	off	5	
On	off	on	off	off	6	
Off	on	on	off	off	7	
On	on	on	off	off	8	
Off	off	off	on	off	9	
On	off	off	on	off	10	
Off	on	off	on	off	11	
On	on	off	on	off	12	
Off	off	on	on	off	13	
On	off	on	on	off	14	
Off	on	on	on	off	15	
On	on	on	on	off	16	

<u>Pole</u>	<u>6</u>	<u>Changer system</u>	
Off		Coin mech/Bill Acceptor	
On		Swipe system	<b>default</b>

SW2           not used

#### 4.5 Power Supplies

***WARNING - Dangerous voltages (110 V) - Disconnect from the mains supply!***

There are three power supplies within the machine base. These provide the DC supplies for the whole machine. A fourth enclosure houses the transformer that provides the AC supply for the flashing rope lighting, and is located in the coin entry area of the machine. All power supply enclosures also house circuit breakers for the respective circuits.

Two of the three enclosures that house the DC supplies also each contain a circuit board. These boards are the 'Motor Control' and 'Tilt' board respectively. These boards are housed in these enclosures to comply with safety regulations, as they have dangerous (Mains) voltages present on them.



Motor Control / Tilt Board Also  
Located In Two Of The PSU  
Enclosures

Two Of The PSU Boxes  
Also House Circuit Boards

#### 4.6 **Reel Mech Interface Board**

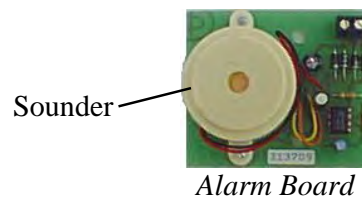
The interface board provides the drive control electronics for the two reel band mechanisms in each section. This board is located on the rear of each section pin Perspex, immediately below the reel mechs. The feature multiplier board, mounted on the front of each pin Perspex, is controlled from the interface board.

#### 4.7 **Reel Band Mechanisms**

Each reel band is a self contained unit, and may be replaced separately should this ever be required. They are located behind each section pin perspex. The illumination lamps are mounted in holders on the circuit board of each unit. Reel bands are replaceable items.

#### 4.8 **Alarm Board**

Located in the top sign, this board drives a sounder to produce the alarm tone for tilt, motor jam etc.



#### 4.9 **Counters/Meters**

Electro-mechanical counters are provided in each player section, located in the coin entry compartment. These counters record:

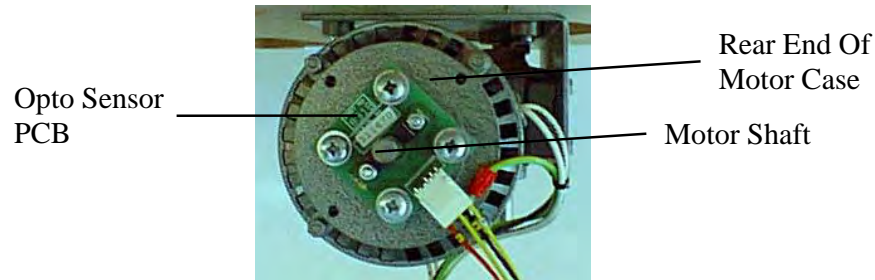
- Coin-in
- Ticket-out
- Swipe Coins

Taking readings of these counters regularly will obviously facilitate the monitoring of the machine performance and assist in cash accounting.

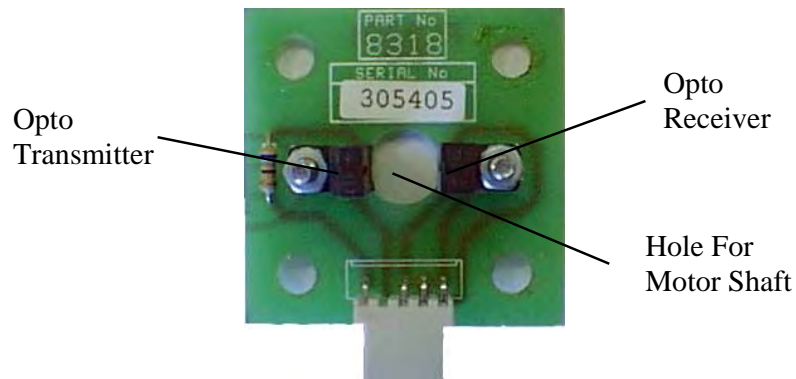
#### 4.10 Pusher Box Motor Control

This system utilises an opto-electronic method to monitor the motor load, and stop the motor in the event of a restriction/jam.

The motor drive shaft extends some 35mm out of the rear end of the motor case. It is here that the opto sensor PCB is located, secured to the motor case. The motor shaft has a hole drilled in it, through which the infrared beam may pass when correctly aligned. With the rotation of the motor shaft, this results in the beam being continually interrupted, and a resultant string of pulses produced by the opto receiver.



Opto Sensor PCB Mounted To Motor

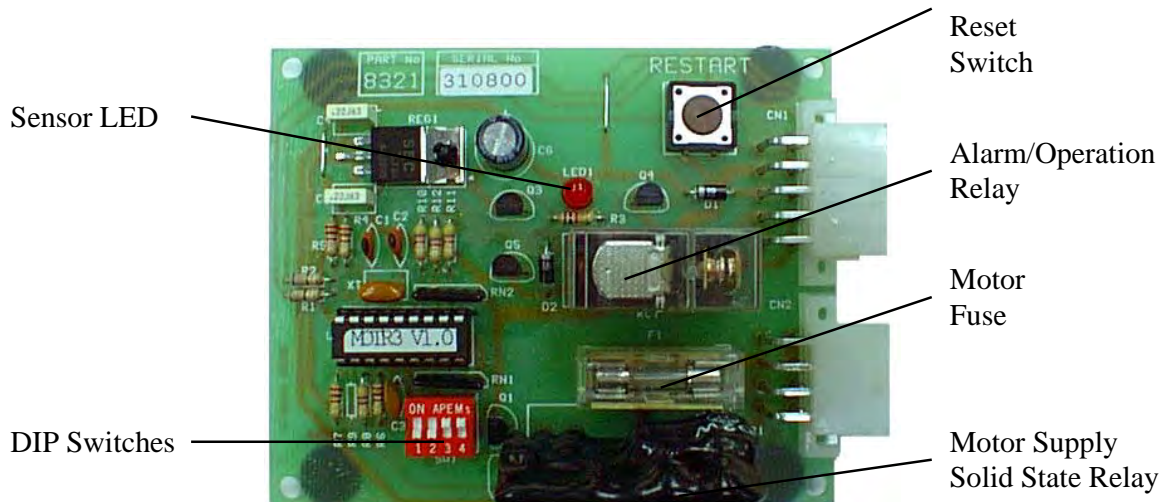


Close Up Of Opto Sensor PCB

The pulses produced by the opto receiver are monitored by the circuitry of the motor control PCB. This control circuit basically monitors for a given number of pulses within a set time frame. Should this number of pulses decrease beyond the tolerated amount, the supply to the motor is immediately switched off via a solid-state relay.

The control of the motor cut off point may be set by way of a 4 way DIP switch mounted on the motor control board thus (located in the power supply unit):

Pole	1	Response	
	off	Fast	
	on	Slow	
Pole	2	Override	
	Off	Normal use	
	On	Motor always runs.....USE WITH CARE!	
Pole	3	4	Stop Resistance
	off	off	Weakest
	on	off	2nd Weakest
	off	on	2nd Hardest
	on	on	Hardest



When the system operates and stops the motor, the supply to the motor remains off until manual reset is initiated. This creates the opportunity to ensure the machine is in a safe state to re-start; a visual check by the attendant ensuring that there is no longer any item causing the obstruction. Reset of the system is done by depressing the 'Restart' switch on the Motor Control PCB or by way of the remotely located reset switch, mounted under the lower cabinet of section one.

There is an LED on the Motor Control PCB, which indicates the output of the opto-sensor. In normal operation this will appear to be continuously ON, due to the high repetition rate of the pulses. This facility may be used to check the operation of the sensors, by manually rotating the motor shaft and observing the LED. The LED should turn on then off as the hole in the shaft passes between the sensors.

The 20mm fuse on this PCB is to provide over current protection to the solid-state relay/motor combination (Refer to specific machine manuals for type and rating).

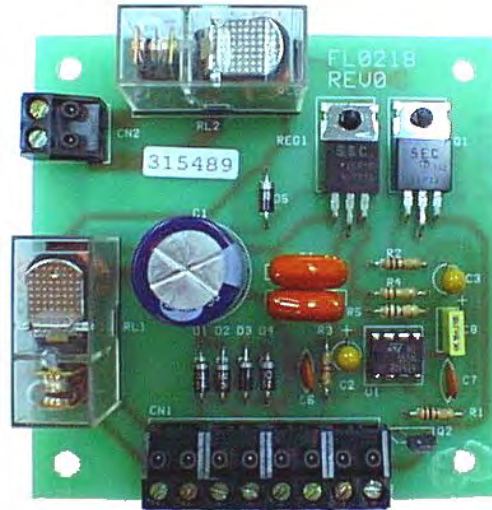
The other relay (RL1) is used to provide a switching function upon system operation, which is used for signalling to other circuits for alarm operation etc.

#### 4.11 Tilt Board

The Tilt Board provides the machine security feature. The inputs to this board are the slam tilt switches located on the lower cabinet doors/walls and the pendulum tilt device located in the top sign. The tilt board itself is located in one of the power supply enclosures located in the base of the machine. This board drives the alarm board and switches the top sign lighting off in the event of a tilt/tamper condition. It also signals to all logic board that a tilt condition exists.

**Caution – this board has dangerous voltages (Mains) present on it**

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Tilt Board

#### 4.12 Hoppers

Each player section has two hoppers in it. These are mounted on the removable pay cup board, located in the lower compartment of each section.

The front or upper hopper is the ‘count’ hopper, receiving coins directly from the playfield win chute. This hopper is activated when the game is live and counts out any coins won from the playfield. The rear or lower hopper is the ‘pay out’ hopper, and is activated to issue coins to the pay cup. The count hopper always ‘runs to empty’, and the pay out hopper requires initial priming with coins; thereafter this is kept topped up by the playfield lose holes and count hopper.

#### 4.13 Reset and Key-switch

Reset:

This is a push switch located on the roof of the section coin entry area. Should a payout fail to be completed (because of an empty hopper for example), once the problem is rectified, pressing this switch causes the remaining payout to be resumed.

Hopper dump key-switch:

Located alongside the hopper reset switch, operation of this key-switch causes the payout hopper to run continuously and empty its contents.



## 5.1 **Cabinet Lighting**

### 110V Lighting

***WARNING – Dangerous Voltages (110v) - switch OFF prior to replacing!***

High efficiency long life lamps are situated in the top sign and coin entry areas. These are hot, so be careful when working with the coin entry doors or top sign are open.

### Rope Lighting

The corner sections each have a rope light running inside connected to a flasher board. The flasher boards, transformer and associated circuitry are installed in the metal enclosure in the coin entry area.

### Spot Lighting

Low voltage spot lamp lighting is situated at the top of each playfield. These lamps are low voltage multi-LED types for long life. They are easily replaced by simply pulling the old bulb free from the fitting, and pushing the replacement bulb back in place.

## 6.0 **Mechanical Systems**

### 6.1 **Pusher boxes**

The pusher boxes are mounted on two Accuride slide bearings. An annual check to remove any build up of dust and a light coat of grease will ensure many years of reliable service.

Ensure that the coin scraper system is fully intact and working smoothly and freely, replace any suspect parts.

## 7 **Fault Finding**

### 7.1 **Methodology**

It is of mutual interest that your pusher is kept in excellent working condition, therefore when required please order original replacement parts from your distributor or Harry Levy Amusement Contractor Ltd.

If a fault occurs with any electrical system **SWITCH THE MACHINE OFF**. Check that:-

- a) There is a suitable mains supply.
- b) All circuit breakers are set.
- c) All plugs and sockets are correctly mated.
- d) No wires are trapped, damaged or broken.
- e) All wires are properly secured to their terminals and pins.



Wiring check.

A visual inspection will reveal the general condition of the wiring. A more thorough test using a continuity tester will be needed to check apparently intact wires, however once a machine has been playing successfully for some time wiring is not usually at fault.

Device testing.

Disconnect the machine from the mains supply then check the physical condition and operation of the suspect device. Remove from the machine if necessary and test using suitable test equipment.

In general PCB's are not user serviceable. Should a problem develop indicating a board fault it is recommended that the board be returned to your distributor/Harry Levy for repair.

**7.2 Systems Checking**

When a fault occurs that affects the whole of the machine, the power supply system should be investigated first.

Check the supply input connection, and main supply circuit breaker is set.

If the fault is not visual, or easily measurable it is often helpful to disconnect the outputs from the PSU, check that the PSU is functioning then connect the loads one at a time.

When the faulty system has been identified, then use a similar technique within that system (such as disconnecting all hoppers) to identify the faulty component.

**7.3 Basic Checks**

<u>Symptom</u>	<u>Possible Fault</u>	<u>Remedy</u>
Will not start	Internal switch OFF Circuit Breaker tripped	Check internal switch is ON Check plug fuse then circuit breakers.
No sound	Volume Speaker Sound board	Adjust volume Check wiring. Replace if faulty Check power supply & connectors, replace board if faulty.
Light failed	Lamp failed	Check wiring Replace lamp.
Pusher boxes not moving	Power to motor Mechanical jam	Check for coins or swag causing jam. Clear & reset control system.
Tilt alarm not working	Pendulum stuck Door bump sensor Sounder Tilt P.C.B	Check pendulum & adjust. Check & adjust. Test connections & power Check connections & power.
Counter not working	Wiring Counter Opto sensor	Check connectors & loom Bench test / replace. Check every opto sensor.

Hopper not working	Hopper motor. Power. Jammed.	Bench test with power supply. Check supply & connections. Check for obstruction.
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## 8 Spare Parts List

This spares list is by no means fully comprehensive. The following are some of the more commonly required items that you may need. If the item you require is not listed, please contact either your distributor or Harry Levy Amusements and we will be pleased to assist you.

<u>Description</u>	<u>Harry Levy Stock Number</u>
201 lock & keys	6278
301 lock & keys	6087
Accuride pusher box slide	6081
Circuit Breaker 3A	8879
Circuit Breaker 5A	8881
Circuit Breaker 8A	8882
Circuit Breaker 10A	8883
Circuit Breaker 16A	22419
Coin-in opto sensor	8392
Coin in interface board	22422
Counter – PCB assembly	BX101
Electronic alarm board	7819
Fan 50mm 12 V DC	8624
Fan 100mm 12V DC	22046
Filter 10A	8180
Hopper – Payout D&B Token	22509
Hopper – Count	22511
Interface board – feature	30000
Lamp - 20W low energy	23941
Lamp – 12v 2.2W	6082
Led Lamp 12V 3w	23900
LED Strip	23488
Logic board	23991
Motor 110v 60Hz	8567
Motor Capacitor 5uF	8530
Motor control board	8321
Motor Opto board	8318
Motor – swinging chute	22142
Power supply 12V 100W	8859
Power supply 24V 100W	8860
Reel Mech RM19	22554
Reel band – Casino Lights	LUC5307
Reel Feature Display PCB	23989
Rope Light Driver PCB	23815
Rope light LED PCB	23816
Sound board	30201
Speaker (small)	22134
Swipe Changer PCB	22115
Switch – Key-switch	6610

Switch - ON / OFF / ON	8712
Switch – push reset	6127
Switch - pendulum tilt	CC004
Switch – slam tilt	6534
Tilt board	7917
Transformer – Rope Lights	30004

Other items may be available on request.

SCHEMATIC DRAWINGS: To follow