

Excalibur

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Manual

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Operating and Safety Instructions

Product Safety

Every effort has been made to ensure this product has been designed with safety in mind.

Components used within this product are used within the manufacturers stated specification limits. Under no circumstances should replacement parts other than those specified or supplied by the manufacturer be used within this machine.

Electrical Safety

This machine must not be used unless it is correctly earthed and should be connected to a mains supply of 220v/240v at a frequency of 50Hz.

All machines leaving the manufacturer are subject to electrical safety tests. These tests consist of earth-bond and insulation tests. These tests should be carried out on a regular basis, or when a critical part is replaced.

Only suitably qualified or adequately instructed person should carry out work on the internal parts of this machine.

Connection

A three-pin plug fitted with a fuse rated at 3 Amps should be fitted to the supply cable. The supply cable should not exceed a length of 2 metres.

Parts list

Excalibur is designed to fit the Barcrest Genesis base.

Part	Part number
Top Glass small (to fit light grey coin bezel-flat shape)	AT 2000
Top Glass large (to fit smaller dark grey coin bezel-curved)	ATLG 2000
Reel Glass	AL 2000
Reel Band 1	AR 2000/1
Reel Band 2	AR 2000/2
Reel Band 3	AR 2000/3
Reel band 4	AR 2000/4
Button Legends x 12	AB 2000
£5 Cash disclaimer	AD 2000/1
£15 cash disclaimer	AD 2000/2
5p £15 stake/prize decal	AD 2000/3
5p £5 stake /prize decal	AD 2000/4
10p £15 stake /prize decal	AD 2000/5
10p £5 stake/prize decal	AD 2000/6
20p £15 stake/prize decal	AD 2000/7
20p £5 stake/prize decal	AD 2000/8
25p £15 stake/prize decal	AD 2000/9
30p £15 stake/prize decal	AD 2000/10
20p £5+rep chance award decal	AD 2000/11
20/25/30p £15 award decal	AD 2000/12
5p/10p £15 award decal	AD 2000/13
5/10p £5 award decal	AD 2000/14
RPB assembly complete x4	MDMGPB335
Gamesman Gm3000 reel unit & foot	MDMGM3000
Fourth Reel Loom	
Fourth reel mounting bolts x 2	
Snap Rivets x2	
Top Vacuum Form loomed	
Reel glass vacuum form loomed	
Switch matrix loom	
Game EPROM x 1	
Sound EPROM's x 4	
Game manual	
Switch settings sticker	
Hopper Procedure sticker	

Excalibur Game Information (continued)

One of the following “hidden features” will be offered when all hidden feature fruits are lit: -

BIG MONEY
BIG REPEATER
REEL STEPPER

WIN STREAK

JACKPOT
SUPER JACKPOT

Merlins Magic: -

Boost
Add Again

Reel Skill

Power
Jackpot Repeater

Question mark features-:

Repeat Chance

Extra Life
Repeat Add
Magic Add
Series Add
Feature Add
Lose Repeat Pot
Lose Series Pot
Lose Features
Magic Carpet
Joust
Game Over
Run For It

Setting-up

No connector or component must be removed or reconnected whilst the power is turned on.

Check that all connectors, assemblies, and wiring harness are correctly engaged inside the machine.

Check that the correct coin validator is fitted before powering the machine up. This is very important, as the machine will decide which type of coin mechanism is fitted and run the correct software for the coin handling and the coin diversion.

If the alphanumerical display shows “PARALLEL MECH” then a standard Mars126 coin validator is present within the machine.

If the display shows “BINARY MECH” then a Coin Controls C435A or Mars 126 CASHFLOW validator is present.

Set the DIL switch options on the MPU board to the desired position and fit the relevant decals. Run the machine through the test procedure.

Award Structure

Located on the right hand side of the reel glass is a stake and prize decal that changes according to the desired price of play and jackpot selected via DIL switches 1, 2 and 3 on bank 2. Close to the bottom of the reel glass is the awards decal, for the correct decal layout relevant to the stake and prize please refer to the table below.

5/10p £5

AD2000/14



5/10p £15

AD2000/13



20p £5+repeat chance

AD2000/11



20/25/30p £15

AD2000/12



Switch Settings

Switch bank 1.

Switch	OFF	ON
1	Ram clear toggle	Ram Clear toggle
2	Enable coin alarm	Coin Alarm Inhibit
3	Wins banked	Direct Payout
4	20p Hopper fitted	10p Hopper fitted
5	Not Used (leave OFF)	
6	Not Used (leave OFF)	
7	Show float with door open	Show float level with door closed
8	Multi-coin play	Single coin play

Switch bank 2

Switch	Function
1	Stake & Prize selection (see overleaf)
2	Stake & Prize selection (see overleaf)
3	Stake & Prize selection (see overleaf)
4	Not used
5	Payout percentage selection (see overleaf)
6	Payout percentage selection (see overleaf)
7	Payout percentage selection (see overleaf)
8	Payout percentage selection (see overleaf)

Stake, Prize and Percentage Settings

The stake and prize can be selected via the DIL switches on **bank 2**.

NO STAKE & PRIZE KEY SHOULD BE FITTED

Switch 1	Switch 2	Switch 3	Outcome
OFF	OFF	OFF	5p £ 5
ON	OFF	OFF	5p £ 15
OFF	ON	OFF	10p £ 5
ON	ON	OFF	10p £ 15
OFF	OFF	ON	20p £ 5
ON	OFF	ON	20P £ 15
OFF	ON	ON	25P £ 15
ON	ON	ON	30P £ 15

The percentage can be selected via the DIL switches on bank 2. If a percentage key is fitted this will override the DIL switch selection. If all the switches are off then the percentage defaults to 78%.

Switch 5	Switch 6	Switch 7	Switch 8	%
ON	OFF	OFF	OFF	70
OFF	ON	OFF	OFF	72
ON	ON	OFF	OFF	74
OFF	OFF	ON	OFF	76
ON	OFF	ON	OFF	78
OFF	ON	ON	OFF	80
ON	ON	ON	OFF	82
OFF	OFF	OFF	ON	84
ON	OFF	OFF	ON	86
OFF	ON	OFF	ON	88
ON	ON	OFF	ON	90
OFF	OFF	ON	ON	92
ON	OFF	ON	ON	94
OFF	ON	ON	ON	96
ON	ON	ON	ON	98

To activate any changes that have been made to the switches the machine must be turned off and then on again.

Demonstration mode

A demonstration mode is provided which enables the game to be played or tested without having the need to insert coins and without any actual paying out of prizes.

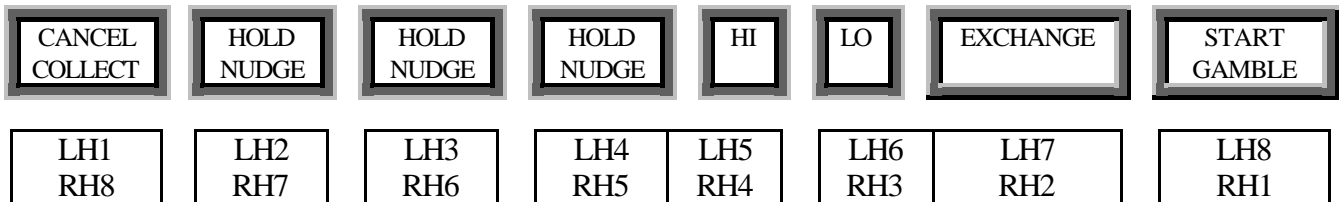
To enter the demonstration mode, open the top door and press the test button once. To achieve £5 worth of credits press the Start button. By holding down the Cancel button and any of the Hold buttons the reels can be stepped down. The reel can also be stepped up by holding down the Cancel and HI buttons, to induce reel wins or to play the feature.

If the MPU does not recognise any activity after approximately 20 seconds the machine enters the attract mode. Credits can then be achieved by pressing the Start button again.

Test Routine

To enter the test routine the top door must be open and the test-button pressed twice.

Navigation.



To step to the next test press the RH1 button. To step to a previous test press the RH3 button. The relevant test will be displayed on the alphanumeric display. To activate the desired test the RH2 button is then pressed. Press the RH1 once to exit that test.

<i>Test Number</i>	<i>Test procedure</i>
1.1	Coin in
1.2	Coin out
2.1	Reels 1
3.2	Lamps
4.1	Inputs
4.2	DILS
5.1	Alphanumeric
6.1	Meters
7.1	Communications
8.2	Volume
9.1	Keys
A.1	Alarm log

Test 1.1 – Coin In

All coins accepted by the machine will display the relevant coin value on the display.

To inhibit the coins the LH1 button is pressed. To return to coin acceptance then the LH1 button is pressed again.

The LH2 button is used to toggle coin diversion ON, or OFF. Coin diversion will only affect £1 coins and 20p or 10p coins (dependent on which hopper is fitted) when 'COIN IN DIV' is displayed

Test 1.2 – Coin out

Either button RH2 or RH3 is used to select between the £1 hopper and the second hopper (10p or 20p depending on which has been fitted). If the display shows "PND" then the £1 hopper is currently selected and ready to payout. If the display shows "SEC" then the second hopper, either 10p or 20p, is selected.

Button LH1 is used to activate the paying out of the coins. Press this button once at the time and the hopper will pay out one coin at a time and the alphanumeric display will increment with each coin being paid out. Once the coin has been paid out the hopper motor will stop.

If the LH1 button is held down for 3 seconds then all coins in the selected hopper will be paid out. This will initialise the hopper float level. The display will read "FLOAT UPDATED" then the *amount* of coins that have been paid out. This is not to be mistaken by the *value* of the coins that have been paid out.

Once "FLOAT UPDATED" has been displayed the hoppers will not operate again. To activate the hopper again the test must then be exited and then re-entered.

Test 2.1– Reels 1

On entry to this test reels 1 to 4 will spin to the SYNC position and light all the lamps behind the reel bands. The message SYNC POSITION will be displayed. At this point the first reel symbols will be on the win line. Reels 1,2,3 will show MDM jackpot and reel 4 will show 12.

The relevant HOLD/NUDGE button can be pressed to step the reels down.

Pressing the CANCEL button will nudge the feature reel.

The symbol on the last reel pressed will be displayed.

If the CANCEL button is held for 3 seconds or more any win/feature available will be indicated.

Test 3.2 – Lamp test

On entering the test the display will read 3.2 FLASH, and all the lamps will flash.

Pressing the LH1 button will toggle the step lamp test.

The RH2 and RH3 buttons will respectively step through the lamps forwards and backwards.

Test 4.1 – Inputs

When any input changes a sound will be generated and the relevant information is displayed. To exit this test, hold down RH1 for longer than two seconds.

The following table indicates lamps that will light upon various switches being made.

Input Definition	Lamp Definition
Test switch	Damsel
Refill key	Trail Held
Hopper Top up switch	1 Nudge
Hopper Dump switch	2 Nudges

Test 4.2 – DIL Switches

On entry to this test the status of the DIL switches are displayed. When a number 1 is displayed then the switch is ON. If the number is 0 then the switch is OFF.

Test 5.1 – Alphanumerical display

On pressing the RH2 button each segment of the alphanumeric will light from left to right. Once all the segments have been tested they will then be tested simultaneously.

Test 6.1 – Meters

Pressing the RH1 button initiates the test. Each meter will pulse 5 times. **The refill key is not required for this test.**

Test 7.1 – Comms

If machine recognises that there is a Datapak connected to the RS232 port the machine will display PASS. If there is no Datapak fitted then FAIL is displayed.

Test 8.2 – Volume

This test will allow adjustment of the electronic volume control and is identical to the volume adjustment via the refill key with the doors closed.

The display will show the volume in a percentage.

The LH1 and LH2 buttons will be used to adjust the volume down and up respectively.

The RH2 and RH3 buttons will allow the sample number to be increased or decreased respectively.

It is recommended that the manual volume control is set to maximum (fully clockwise) to allow the software to control the volume correctly.

Test 9.1 – Keys

The display will show whether the percentage and the stake and prize is currently controlled off the DIL switches or a key. The display will then change to display the current aiming percentage, the current stake and prize and then the actual percentage.

Test A.1- Alarm log

On pressing the RH1 button the alarm log number will be shown on the left-hand side of the display, the alarm code on the right.

By pressing the LH4 button and the LH2 buttons you can increment or decrement the log number respectively.

By holding the RH2 button for five seconds the alarm log can be cleared.

Alarm codes

Code	Fault	Causes (in order of probability)
0.1	Ram clear/ checksum fail	Change of program, faulty battery, M.P.U
0.2	Mode change	Stake, prize or percentage changed
0.3	Manual ram clear	Dil switch 1 toggled
1.1	£ 1 coin input	Coin jam. Coin mech., coin loom,
1.2	50p coin input	As above
1.3	20p coin input	As above
1.4	10p coin input	As above
1.6	5p coin input	As above
1.5	Token input	As above
1.9	Anti-strim alarm	Coin mech., coin loom, M.P.U
2.1	Reel 1 fault	Set-up, opto, loom, motor, M.P.U
2.2	Reel 2 fault	As above
2.3	Reel 3 fault	As above
2.4	Reel 4 fault	As above
4.1	10p Hopper fault	Disconnected, jammed, Opto dirty/failure
4.2	20p Hopper fault	Disconnected, jammed, Opto dirty/failure
4.4	£ 1 Hopper fault	Disconnected, jammed, Opto dirty/failure
6.0	Meter error	More than 1 meter disconnected
6.1	Meter 1 fault	Meter1 faulty
6.2	Meter 2	“
6.3	Meter 3	“
6.4	Meter 4	“
6.5	Meter 5	“
7.1	E.D.C failure	Dataport unit not fitted, M.P.U, no -12v
9.1	Incorrect switch settings	Adjust switch settings, faulty MPU
9.2 – 9.8	Faulty processor	Faulty MPU, programme card
HOPPER ERROR on Power up/Reset		Jam, Hopper not connected, faulty opto,No18.5vAC or 22vAC, PSU

Technical Data

Machine Description

Cabinet

Cabinet name:	Genesis
Manufacturer:	Barcrest
Technology:	MPU4
Height:	1680mm
Width:	680mm
Depth:	650mm
Weight:	120Kg (approx.)

Coin Handling

Check that the coin validator is fitted before powering the machine up.

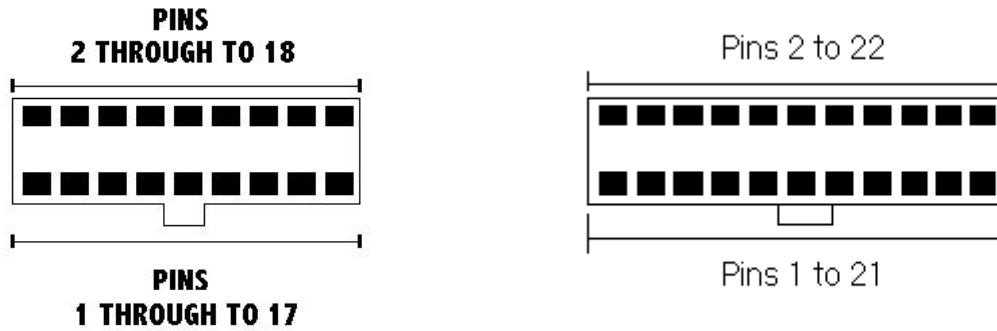
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If the alphanumerical display shows “PARALLEL MECH” with the door open then a standard Mars126 coin validator is present within the machine.

If the display shows “BINARY MECH” with the door open then a Coin Controls C435A or Mars 126 CASHFLOW validator is present.

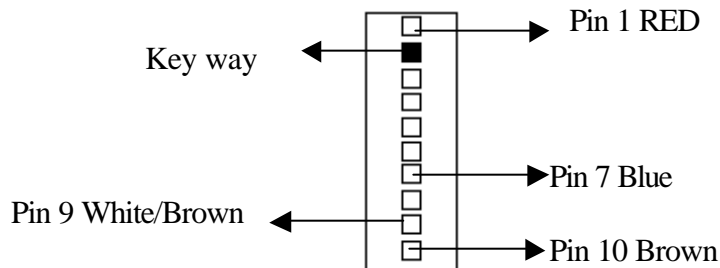
Routing

Depending on which coin validator and loom is fitted in the machine the routing plug configuration is different. The pins are identified with the notch of the routing plug facing downward and the wire links facing you.



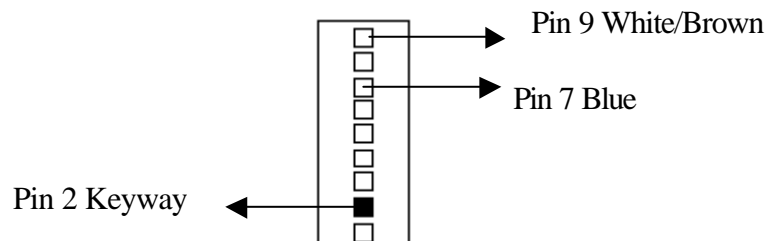
C435A/GB+ Sorter Over-ride Connector.

The sorter over-ride connector pins are identified with the wire facing towards you.



Mars Cashflow Route Inhibit Connector.

The route inhibit connector pins are identified with the wire facing towards you.



20p Hopper Fitted

Coin Validator Type	Way	Routing	Sorter Over-ride/ Route Inhibit Connectors
Me126 Parallel	18	Pin 3 to Pin 11 of AUX 2 of MPU. Links 5+6, 7+14, 8+13, 15 to diverting PCB (exit B-purple), 12 to Diverting PCB(20p- yellow).	NONE
Me126 CashFlow Binary	22	Links 1+9, 8+18, 11+13, 12+20	Pin 9 White/Brown to Pin 11 of AUX2 Pin 6 to MPU meter port pin 7
Coin Controls C435 Binary	18	Pin 1 to Pin 3 of AUX 2, Links 7+8, 7+13, 15+12	Pin 1 Red to Pin 2 of AUX2 Pin 7 to MPU Meter port pin 7. Pin 9 white/brown to Pin 11 of AUX2. Pin 10 Brown to Pin 1 of AUX 2.

10p Hopper Fitted

Coin Validator Type	Way	Routing	Sorter Over-ride/ Route Inhibit Connectors
Me126 Parallel	18	Pin 3 to Pin 11 of AUX 2 of MPU. Links 5+6, 7+14, 8+13, 15 to diverting PCB (exit B-purple), 16 to Diverting PCB (10p – yellow)	NONE
Me126 CashFlow Binary	22	Links 1+9, 8+17,11+13, 12+20	Pin 9 White/Brown to Pin 11 of AUX2 Pin 6 to MPU meter port Pin 7
Coin Controls C435 Binary	18	Pin 1 to Pin 3 of AUX 2, Links 7+8, 7+13, 15+16	Pin 1 Red to Pin 2 of AUX2 Pin 7 to MPU Meter port pin 7. Pin 9 white/brown to Pin 11 of AUX2. Pin 10 Brown to Pin 1 of AUX 2.

Hopper

This machine is fitted with a Coin Controls Compact £1 hopper and a 20p or 10p hopper. When the machine pays out, the coin is passed through an opto sensor in the hopper, breaking the beam. With each break of the beam the machine recognises that a coin has been paid out.

Hopper Level & Procedures

The float level of the machine is dependant on the price of play see table below:

Price of Play	£ 1 Hopper float level	10p or 20p Hopper
5p	£ 75	£ 25
10p	£ 100	£ 25
20,25,30p	£ 125	No coins required

Manually refilling the hopper

- 1) With the machine on, insert and turn the refill key.
- 2) Open the top door and place the relevant amount into the £ 1 and second hopper.
- 3) Press the HOPPER TOP UP button, a beep will be heard and the alphanumerical display will show "HOPPERS FULL".
- 4) The LO button is used to select a hopper, displaying the float level.
- 5) Remove the refill key and close the top door. The hopper is now correctly topped up.

Refilling via the coin validator.

- 1) With the machine on and both doors closed, insert and turn the refill key.
- 2) The alphanumerical display will show "R= ****" (where**** is the amount refilled).
- 3) Put the relevant coins through the coin validator to the required float level. The minimum float level should be no less than £30 in £ 1 coins and £25 in 10p or 20p coins. Once the hopper is full the £ 1 and 20p coins will be locked out. The 10p coins cannot be locked due the internal wiring of the machine.

Hopper dump procedure.

- 1) Open the outer and inner cash box doors.
- 2) Insert and turn the refill key.
- 3) Press the HOPPER DUMP button, a beep will be heard and the display will show "HOPPER DUMP PND" for the £ 1 hopper or "HOPPER DUMP SEC" for the second hopper fitted (10p or 20p).
- 4) The LO, COLLECT/CANCEL, and the START buttons will be lit.
- 5) The LO button selects between the two hoppers. Pressing the CANCEL/COLLECT button will exit the dump procedure.
- 6) Once the desired hopper is selected pressing the START button will payout all the coins in that hopper. The hoppers can only be dumped one at a time.
- 7) If there is LESS than the float level in the hopper the display will read "SHORT BY ****" (where the **** is the amount).
- 8) If there is MORE than the float level in the hopper, then the float level will paid out and the display will read "DEFLOAT EXCESS".
- 9) Pressing the START button again will continue to pay out the excess in the hopper. "EXCESS = **** will be displayed".

This can also be performed in COIN OUT test.

To check the float level in all cases, open one of the doors, insert and turn the refill key. The display will read "P= ****" for the £ 1 coins and "S=****" for the second hopper, where **** is the value of coins. Where there is "R=****" this is the coins refilled via the coin validator at that moment in time.

Meters

2 x 12v DC

1 x 48v AC or 1x12v DC for refill

Software Meters (electronic)

In all there are 50 meters, but there are useful meters that have been incorporated for the operators benefit. These are Cash in, Cash out, Games played, and Cash refilled. For the desired meter refer to the table below.

To access the software meters open the top door and press the test button once. The machine will go into demonstration mode. Next turn the refill key to the on position.

The alphanumeric display will show meter number 0. To display the next meter press the third **Hold/Nudge** button, to display the previous meter press the first **Hold** button.

To clear the meters, press and hold the **Start** button. A countdown sequence will be initiated and can be aborted by releasing the **Start** button. Once the countdown reaches zero the meters will be cleared.

Meter No.	Description	Divide by

Note that the software will be cleared down every time the RAM has been reset and the percentage or price of play has been altered.

Reel band Layout

Reel 1	Reel 2	Reel 3	Reel 4
MDM Jackpot Cherry Lemon+2	MDM Jackpot Cherry+1 Lemon	MDM Jackpot Cherry Lemon+1	12 4 11

Lamp Allocation

Lamp	Blue Pin	Green Pin	Position
0 1 2 3 4 5 6	9	1 2 3 4 5 6 8	Reel 1 top Reel 2 top Reel 3 Top
8 9 10 11 12 13 14 15	8	1 2 3 4 5 6 8 9	Reel 1 middle Reel 2 middle Reel 3 middle
16 17 18 19 20 21 22 23	7	1 2 3 4 5 6 8 9	Reel 3 bottom Reel 3 bottom Reel 3 bottom
24 25 26 27 28 29 30 31	5	1 2 3 4 5 8 9	Cancel button Hold Nudge 1 button Hold Nudge 2 button
32 33 34 35 36 37 38 39	4	1 2 3 4 5 6 8	Hold Nudge 3 button HI button LO button
40 41 42 43 44 45 46 47	3	1 2 3 4 5 6 7 8	Exchange button Start/Gamble button Repeat button Name 10 Magic carpet Name 5 Feature Reel
48 49 50 51 52 53 54 55	2	1 2 3 4 5 6 8 9	Series button Magic button Feature button Name 7 Name 8 Name 9 Name 4 Name 3 not used

Lamp allocation

Lamp	Blue pin	Green pin	Position
56	1	1	
57		2	
59		4	Repeat pot B
60		5	Repeat pot A
61		6	Name 6 girl
62		8	Name 1
63		9	Name 2 not used
64	17	10	Cherry (repeat pot)
65		11	Lemon (repeat pot)
66		12	Plum (repeat pot)
67		13	Orange (repeat pot)
68		14	Grape (repeat pot)
69		15	Bell (repeat pot)
70		16	Melon (repeat pot)
71	17	Jackpot (repeat pot)	
72	16	10	Squire general 2
73		11	Squire General 1
74		12	Repeat +1
75		13	Feature +1 START
76		14	Series + 1
77		15	Merlins magic
78		16	Magic carpet
79	17	Mystery ?	
80	15	10	Lo
81		11	Hi
82		12	Boost
83		13	Add again
84		14	Reel skill
85		15	Power
86		16	Jackpot Repeater magic
87	17	Merlins magic	
88	14	10	+2 feature
89		11	Repeat +1
90		12	Feature + 1
91		13	2 bonus nudges
92		14	Mystery ?
93		15	Repeat +2
94		16	Series +1
95	17	1 bonus nudge	
96	13	10	1 series
97		11	2 series
98		12	3 series
99		13	4 series
100		14	5 series
101		15	Jackpot repeater series
102		16	Series pot
103	17	Mystery ?	
104	12	10	Knight general 4
105		11	Knight general 3
106		12	2 bonus nudges
107		13	Mystery ?
108		14	Feature +2
109		15	1 bonus nudge
110		16	Repeat + 2
111	17	Merlins Magic	

Lamp allocation

Lamp	Blue pin	Green pin	Position
112	11	10	Start (sword trail)
113		11	Magic (sword trail)
114		12	Extra life (sword trail)
115		13	Repeat chance (sword trail)
116		14	Win spinner
117		15	Nearest win
118		16	Cash climb
119		17	Skill stepper
120		10	10
121	11		Cash link
122	12		Bank roll
123	13		Jackpot repeater
124	14		Feature pot B
125	15		Feature pot A
126	16		Refill
127	17		Call Attendant

Auxiliary Lamp Allocations

Lamp	Blue Pin	Green Pin	Position
192	9	1	Trail 8 (sword)
193		2	Trail7 (sword)
194		3	Trail 6 (sword)
195		4	Trail 5 (sword)
196		5	Trail 4 (sword)
197		6	
200	8	1	Trail 3 (sword)
201		2	Trail2 (sword)
202		3	Trail 1 (sword)
203		4	Trail held (secret)
204		5	
208	7	1	Jackpot4 award (flag decal)
209		2	Jackpot3 award (flag decal)
210		3	Jackpot 6 award (flag decal)
211		4	
212		5	Melon 1 award decal
213		6	
216	5	1	Melon
217		2	Jackpot
218		3	MDM winner
219		4	No lamp
220		5	Jackpot 2 award (flag decal)
221		6	Jackpot award (flag decal)
224	4	1	Bell 2 award decal
225		2	Grape 2 award decal
226		3	Orange 2 award decal
227		4	Plum 2 award decal
228		5	Lemon 2 award decal
229		6	Melon 2 award decal
232	3	1	Bell 1 award decal
233		2	Grape 1 award decal
234		3	Orange 1 award decal
235		4	Plum 1 award decal
236		5	Lemon 1 award decal
237		6	Cherry 1 award decal
240	2	1	4 nudges
241		2	3 nudges
242		3	2 nudges
243		4	1 nudge
244		5	
245		6	Cherry 2 award decal
246		7	
248	1	1	Bell
249		2	Grape
250		3	Orange
251		4	Plum
252		5	Lemon
253		6	Cherry

MPU Connections

11 Way White –Triac Drives	
Pin	Function
1	48v AC
2	0v
3	Not used
4	Not used
5	Not used
6	Not used
7	Not used
8	Not used
9	Not used
10	Not used
11	Refill meter

11 Way Blue – Power Out	
Pin	Function
1	48v AC
2	0v
3	Audio output
4	0v
5	0v
6	0v
7	+12v DC supply
8	Key
9	-12v DC supply
10	+34v DC supply
11	Aerial

19 Way Orange-switches	
Pin No	Function
1	Float Switch
2	20p level sense
3	£1 level sense
4	Hopper dump switch
5	Not used
6	Stake
7	Stake
8	Stake
9	Jackpot select
10	Jackpot select
11	Jackpot select
12	Jackpot select
13	% key pin 4
14	Key
15	% key pin 3
16	% key pin 2
17	% Key pin 1
18	Enable pins 1-8
19	Enable pins 9-17

19 Way Black-Switches	
Pin No	Function
1	Series Switch
2	Feature Switch
3	Magic Switch
4	Repeat Switch
5	Not used
6	Test switch
7	Refill key switch
8	Door switches
9	Cancel/Take
10	Hold-Nudge
11	Hold-Nudge
12	Hold-Nudge
13	HI
14	LO
15	Exchange
16	Key
17	Start
18	Enable Pins 1-8
19	Enable pins 9-17

10 Way Yellow –Meters	
Pin	Function
1	Cash In
2	Cash Out
3	Token In
4	Token Out
5	Not used
6	Not used
7	Not used
8	Refill meter
9	Key
10	+12v DC Common

9 Way Green – Photo	
Pin	Function
1	+5v supply
2	LED Drive
3	Signal
4	Key
5	Reel D input
6	+12v supply
7	Reel C input
8	Reel B input
9	Reel A input

15 Way Red-Power In	
Pin No	Function
1	-12v Return
2	+34v Supply
3	+34v Supply
4	Key
5	48v Return
6	-12v supply
7	+12v supply
8	+12v supply
9	+12v supply
10	+12v return
11	+12v return
12	+12v return
13	+34v return
14	+34v return
15	48v supply

19 Way Red-Stepper Motors	
Pin No	Function
1	+12v supply
2	Reel D drive
3	Reel D drive
4	Reel D drive
5	Reel D drive
6	Reel C drive
7	Reel C drive
8	Reel C drive
9	Reel C drive
10	Reel B drive
11	Reel B drive
12	Key
13	Reel B drive
14	Reel B drive
15	Reel A drive
16	Reel A drive
17	Reel A drive
18	Reel A drive
19	+12v supply