

OPERATING AND SAFETY INSTRUCTIONS	2
PRODUCT SAFETY	2
ELECTRICAL SAFETY	2
CONNECTION.....	2
PARTS LIST	3
CONVERSION INSTRUCTIONS.	4
SETTING-UP	4
AWARD STRUCTURE.....	5
SWITCH SETTINGS	6
SWITCH BANK 1	6
SWITCH BANK 2.....	6
STAKE, PRIZE AND PERCENTAGE SETTINGS.....	7
GAME DESCRIPTION	8
DEMONSTRATION MODE	9
TEST ROUTINE.	9
<i>Test 1 – Coins.....</i>	<i>10</i>
<i>Test 2 – Reel test.....</i>	<i>10</i>
<i>Test 3 – Lamp test</i>	<i>10</i>
<i>Test 4 - Switch test.</i>	<i>11</i>
<i>Test 5 – Display.....</i>	<i>11</i>
<i>Test 6 – Meters.</i>	<i>11</i>
<i>Test 7 – RS232.....</i>	<i>11</i>
<i>Test 8 – Sounds.....</i>	<i>11</i>
<i>Test 10 – Alarms.....</i>	<i>12</i>
<i>Alarm codes.....</i>	<i>12</i>
TECHNICAL DATA.....	13
MACHINE DESCRIPTION	13
Cabinet.....	13
COIN HANDLING	13
METERS	14
SOFTWARE METERS (ELECTRONIC).....	14
REELS	15
<i>Motor alignment.....</i>	<i>15</i>
<i>Reel Band Placement.....</i>	<i>15</i>
<i>Reel band Layout.....</i>	<i>15</i>
BUTTON LAYOUT	16
LAMP ALLOCATION	17
CONNECTIONS.....	19
MPU CONNECTIONS	20

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

Each Way Shifter is designed to fit the list of Barcrest Roll Top base machines on the front cover.

If the Each Way Shifter kit is to be fitted on a machine other than the ones stated then additional parts may-be required depending on the base machine.

On receipt of your kit please check the content against the following list, and notify our Spares Department *immediately* of any shortages on 01222 377402.

Part	Part number
Top Perspex	AT 1005
Reel Glass	AL 1005
Reel band 1	AR 1019
Reel band 2	AR 1020
Reel band 3	AR 1021
Button legends	AB 1005
£2 cash disclaimer	AD 1059
£3 cash disclaimer	AD 1060
£4 disclaimer	AD 1061
£5 cash disclaimer	AD 1062
£15 cash disclaimer	AD 10
Shift Feature award 2p	AD 1064
Shift feature award 5/10p	AD 1065
2p £2 award	AD 1066
2p £3 award	AD 1067
2p £4 award	AD 1068
2p £5 award	AD 1069
5,10p £5 award	AD 1070
5,10p £15 award	AD 10
2p common award	AD 1072
5, 10p common award	AD 1073
Price of play strip 2,5,10p	AD 1074
Top glass vacuum form loomed	
Reel glass vacuum form loomed	
1 x Game EPROM	
2 x Sound EPROM's	
6 x triangular button assembly	
Alpha Numeric Bracket	

Conversion instructions.

Prior to commencement ensure that the machine to be converted is in good working order.

- 1) Disconnect and slide the payout shelf back to allow easier access to the interior of the machine.
- 2) Disconnect and remove the Mars mech.
- 3) Disconnect and remove the reel unit.
- 4) Disconnect the lamp looms attached to the lamp interface board.
- 5) Remove the button switches from the button housings.
- 7) Remove the alphanumeric display.
- 8) Remove the securing screws fixing the glass frames from the machine.
- 9) Place the frames onto a flat surface and remove the glasses, retain all fixings to use again, discard the glasses.
- 10) Before replacing the new glass into the framework affix the vacuum forming to the glass ensuring that it is aligned correctly. Replace glasses into the frame and secure back into the machine the same way they came out.
- 11) Remove the lens caps from the buttons and discard the existing button legends. Replace with legends provided. See figure 1 in the Technical Data section of the manual.
- 12) Reconnect button switches to the button housings.
- 13) Reconnect lamp looms to interface board. See figure 5 in the Technical Data section of the manual.
- 14) The six triangular buttons are then fitted into the top Perspex. See figure 2 in the Technical Data section of the manual.
- 15) Connect the feature switches. The white wires are for the switch. The green and blue wires are fitted to the lamp terminals. See figure 4 in the Technical data section of the manual.
- 16) Connect the trailing white loom to the AUX 1 port on the MPU.
- 17) Fit the alphanumeric display on to the central extrusion with the bracket provided.
- 18) Fit the Sound EPROM's and the game EPROM into the program card and adjust selector links (if necessary). See figure 3.
- 19)

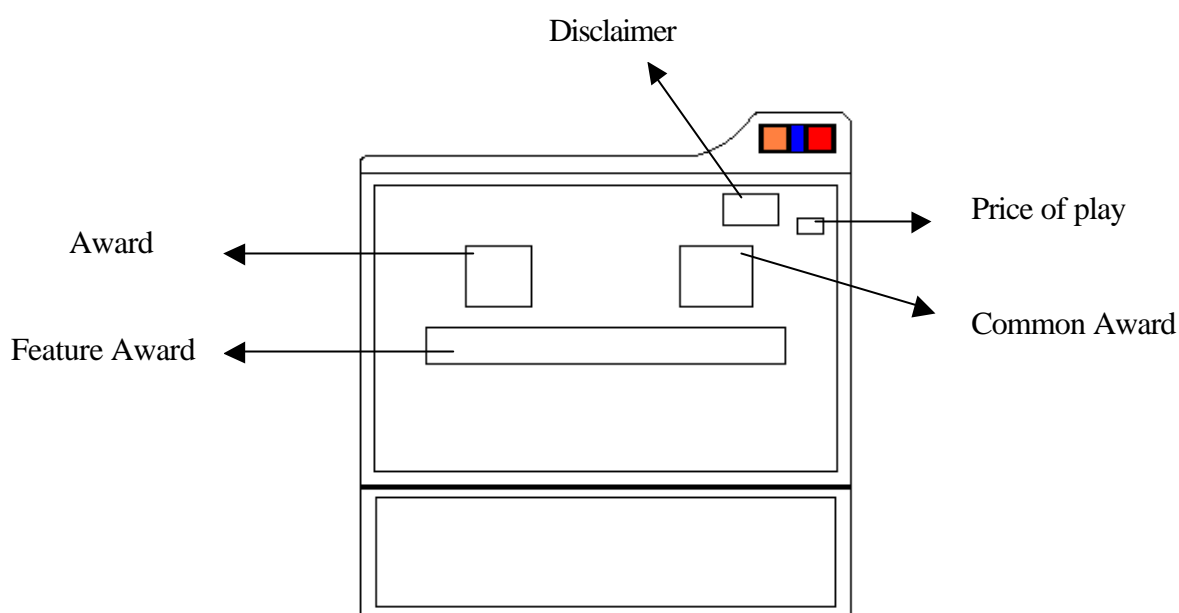
Setting-up

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.

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



2p Shift Feature award (AD1064)

JACK	£ 1	40p	20p	10p	10p	20p	40p	£ 1	JACK
POT									POT

5/10p Shift Feature award (AD1065)

JACK	£ 2	£ 1	40p	20p	20p	40p	£ 1	£ 2	JACK
POT									POT

2p Common award (AD1072)

40p
20p
10p

5/10p Common award (AD1073)

60p
40p
20p

2p£2 award (AD1066)

£ 2
£ 1
60p

2p£3 award (AD1067)

£ 3
£ 1
60p

2p£4 award (AD1068)

£ 4
£ 1
60p

2p£5 award (AD1069)

£ 5
£ 1
60p

5/10p£5 award
(AD1067)

£ 5
£ 3
£ 1

£ 15 award (AD1068)

£ 15
£ 3
£ 1

Switch Settings

The following outcomes occur when the switch is set in the 'ON' position

Switch bank 1

Switch	Function
1	Ram clear
2	Coin alarm inhibit
3	Direct payout
4	High token ratio
5	Lock up if tubes low
6	Motor selection- Large motors
7	I.O.M option
8	Single coin play

Switch bank 2

Switch	Function
1	Stake & Prize selection
2	Stake & Prize selection
3	Stake & Prize selection
4	Stake & Prize selection
5	Payout percentage selection (see next page)
6	Payout percentage selection (see next page)
7	Payout percentage selection (see next page)
8	Payout percentage selection (see next page)

Stake, Prize and Percentage Settings.

Switch 1	Switch 2	Switch 3	Switch 4	Outcome
OFF	OFF	OFF	OFF	2p £ 2
ON	OFF	OFF	OFF	2p £ 3
OFF	ON	OFF	OFF	2p £ 4
ON	ON	OFF	OFF	2p £ 5
OFF	OFF	ON	OFF	5p £ 5
ON	OFF	ON	OFF	5p £ 15
OFF	ON	ON	OFF	10p £ 5
ON	ON	ON	OFF	10p £ 15
OFF	OFF	OFF	ON	5P £ 8tokens / cash*
ON	OFF	OFF	ON	10p £ 8token/cash*
OFF	ON	OFF	ON	20p £ 8token/cash*
ON	ON	OFF	ON	25p £ 8 token/cash*
OFF	OFF	ON	ON	20p £ 5
ON	OFF	ON	ON	20p £ 10
OFF	ON	ON	ON	25p £ 5
ON	ON	ON	ON	25p £ 15

* Note that if Dil switch 7 on bank 1 is on then the payout is £ 8 cash.

The percentage can be selected via the DIL switches. 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

Game Description

General

Each-way Shifter is a three-reel machine fitted with an alphanumerical display. The main feature consists of 10 award columns showing a cash prize at the top and the letters W, I and N. During play a letter will be lit at random in each of the letter rows. If the player manages to line up the letters W, I and N vertically the player will be awarded the associated cash prize. Up to three nudges are available at random each game.

Shift Matrix

On each of the 3 reels, shift symbols are present. Any symbol landing on or about the win line will be transferred to the three by three shift matrix. If the player should complete any of 8 lines on the shift matrix, he will be awarded 2 shifts per line.

Bonus

The center reel contains a bonus symbol which when present on the win line will award one of the following bonus features: -

SHUFFLE	All lit symbols on the shift matrix will be extinguished and re-lit at random positions, allowing the player to achieve complete lines directly or via holds.
SPOTTER	All unlit positions on the shift matrix will cycle at random, allowing the player to stop on and light extra positions.
SELECTOR	All unlit positions on the shift matrix will cycle slowly, allowing the player to select a desired position.
SKILL	The word SKILLSTOP will cycle up and down on the alphanumerical display. Each time the player successfully stops on the end letter "P" position he will be awarded an extra shift matrix position.
RESPIN	All reels will spin and stop to a random position, transferring any shift symbols to the shift matrix.

Shift Feature

When any shift lines are achieved, the player is given the chance to either bank the shifts or use them in an attempt to line up the letters 'WIN' in order to win the associated cash award.

Any shifts banked will be left on the shift matrix and held over to the next game on a 50/50 basis.

If the player lines up two matching letters in any award column during the shift feature, he will have a chance that these will be held and matched up in the following game.

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 payout of prizes.

To enter the demonstration mode, open the back 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 Take 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 back door must be open and the test-button pressed twice.

The test routine will start on the Coin test. To step to the next test press the third Hold button. To step to a previous test press the first Hold button. The relevant test will be displayed on the alphanumerical display. To activate the desired test the Start button is then pressed. Pressing the Cancel button once escapes that test. If the Cancel button is pressed twice the machine enters the demonstration mode.

<u>Test Number</u>	<u>Test procedure</u>
1	Coin in & out test
2	Reel test
3	Lamps test
4	Switch test
5	Display test
6	Meter test
7	RS232
8	Sound test
9	Percentage test
10	Alarm log

Test 1 – Coins

When a coin is accepted the relevant amount will display on the alphanumeric.

The Bank Shifts button will flash and when pressed will inhibit all coins. When pressed again the coins will then be enabled.

The solenoids can then be pulsed when the relevant hold buttons are pressed. If the button is held down for three seconds the solenoid will pulse until the button is released.

1st Hold button will pulse the 20p solenoid.

2nd Hold button will pulse the pound solenoid.

3rd Hold button will pulse the front token tube or 10p tube if fitted.

The level sensors can also be tested in this test. The £1 level sensor will light N position 8 when engaged and a voice saying, “Pound” will sound.

The 20p level sensor will light N position 9 when engaged, and a voice saying “20p Low” will sound.

The 10p tube* level sensor will light N position 10 when engaged, and a voice saying “10p” will sound.

*If fitted.

Test 2 – Reel test

On pressing the Start button, the reels will spin and settle with the optic flag in the sensor. The appropriate win value will be displayed on the alphanumeric display and the appropriate award will illuminate on the glass.

The reels can be stepped up or down by holding the relevant buttons.

If the SHIFT symbols are on the win line then the SHIFT FEATURE is initialised.

The SHIFT buttons can then be pressed to check the relevant awards.

Pressing the Take button will allow the win to be paid out.

Test 3 – Lamp test

On pressing the Start button all buttons will illuminate. Each press of the Start button will illuminate the next group.

- Group 1-* Buttons
- Group 2-* Reels
- Group 3-* Reel glass
- Group 4-* Top glass

Pressing the first Hold button will flash all lamps. To exit all lamps flash, press the Hold button again.

To enter the step lamp test, press the Bank Shift Chance button once. This will step through the lamps in the current group. Whilst in step lamp test pressing the third Hold/Nudge button will enable the step lamp test to be stepped manually. Pressing the Bank Shift Chance button again will stop the step lamp test.

Test 4 - Switch test.

On the press of each button, its corresponding lamp will illuminate, a tone will sound and the relevant information displayed on the alphanumerical display.

The DIL switches on the MPU will light the relevant position on the top glass if in the on position. The information is also displayed on the alphanumerical display. For example if DIL bank 2, switch 3 is turned on then the alphanumeric will display "DIL Switch 2 – 3".

DIL switches 1 to 8 on bank 1 will illuminate Shift Feature awards positions 1 to 8.

DIL switches 1 to 8 on bank 2 will illuminate W positions 1 to 8.

The test switch will illuminate the NUDGE NOW box.

With the refill key turned the lower right hand shift symbol will illuminate.

The £1 level sensor will light N position 8 when engaged and a voice saying, "Pound" will sound.

The 20p level sensor will light N position 9 when engaged, and a voice saying "20p Low" will sound.

The 10p tube* level sensor will light N position 10 when engaged, and a voice saying "10p" will sound.

*If fitted.

To exit this test, press the Start and Cancel buttons simultaneously.

Test 5 – Display.

On pressing the Start button each segment of the alphanumeric will light from left to right then dim. This test when finished will automatically advance to test 6.

Test 6 – Meters.

With the Refill key turned and the Start button pressed, each meter will pulse five times in the following order: - Cash in, Cash out, Token refill.

All the meters operate in 10p units.

Once all three meters have been pulsed the machine will automatically advance to test 7.

Note that in ALL CASH mode the token refill meter now acts as a Cash Refill meter.

Test 7 – RS232.

If the RS232 Data port is not present the alpha will display FAIL.

This test will automatically advance to test 8.

Test 8 – Sounds.

On pressing the **Start** button the sample number will be listed on the alphanumerical display. To activate the sample press Start.

To increment the sample number use the third **Hold/Nudge button**, to decrease use the first **Hold button**. On pressing the Bank Shift chance button the machine will automatically play each tune.

Press Cancel to exit test.

This is not a volume adjust. The volume is adjusted via a potential resistor on the program module.

Test 9 – Percentage.

On pressing the Start button the aiming and the actual percentage will be displayed on the alphanumerical display.

Press Cancel to exit.

Test 10 – Alarms.

On pressing the Start 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 third Hold/Nudge and the first Hold/Nudge buttons you can increment or decrement the log number respectively.

By depressing the Bank Shift Chance button for five seconds the alarm log can be cleared.

Alarm codes

Code	Fault	Causes (in order of probability)
0.1	Ram clear/checksum failure	Faulty battery, change of program, M.P.U
0.2	Mode change	Price of play or jackpot change
0.3	Manual ram clear	DIL switch1 bank 1 activated
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
1.5	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
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

Technical Data

Machine Description

Cabinet

Cabinet name: Roll Top
Manufacturer: Barcrest
Technology: MPU4
Height: 1690mm
Width: 687mm
Depth: 650mm
Weight: 120Kg

Coin Handling

This machine uses an 18 way routing plug. The pins are identified with the notch of the routing plug facing downward and the wire links facing you.

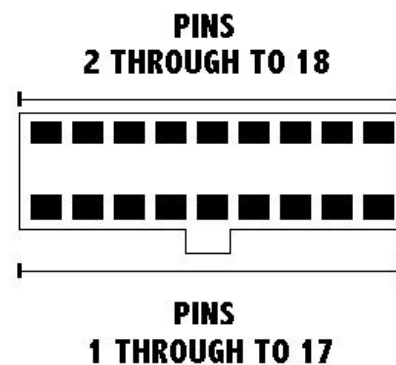
To achieve the correct routing, link pins: -

1 + 2, 4 + 6, 8 + 15, 12 + 13

If the machine is set up on 2p play, a 10p tube is fitted in place of the front token tube and the coin validator is configured to accept the 2p coin via the token channel (5) the routing now becomes: -

1 + 2, 4 + 6, 8 + 15, 7 + 16, 12 + 13

1 x 20p Coin Controls compact 50v AC. Fitted with cream Starpoint level sensor.
1 x £1 Coin Controls compact 50v AC. Tube is fitted with red Starpoint 3CLD AA level sensor.
2 x 20p Token Coin Controls compact 50vAC fitted with cream or grey Starpoint 3CLD AA level sensors (if tubes fitted).
1 x 10p Coin controls compact 50vAC fitted with grey Starpoint 3CLD AA level sensor (**2p version only**).



Coin Tube Capacities

The coin tube capacities are listed below with the level sensor positions.

Coin Tube	Capacity	Sensor
20p	£ 30	£ 4.40
£ 1	£ 70	£ 16
20p token front (1)	£ 44.60	£ 5.40
20p token rear (2)	£ 25.40	£ 9.60
10p	£ 17.80	£ 4.50

Meters

2 x 12v DC
1 x 48v AC

Note that the Token refill meter now acts as a Cash Refill Meter.

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 back door and press the test button once. The machine will go into demonstration mode. Next turn the refill key to the on position.

The alphanumerical 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.

Reels

Motor alignment

Put the machine into reel test (test 2). This will spin the reels showing the first symbols on the reel band in the win line.

A pointer moulded into the reel drum should line up with a pointer on the side of the frame. Any miss-alignment can be adjusted by slackening off the motor mounting screws and rotating the motor.

Reel Band Placement

Place the notched reel band on to the notch on the reel drum and rotate. When fully rotated remove the double-sided tape on the bottom edge of the reel band and affix to the top edge of the reel band.

Reel band Layout

Reel 1	Reel 2	Reel 3
Shift Blue 7 Yellow bars	Yellow Bars Blue 7 Yellow Bars	Yellow Bars Shift Yellow Bars

Button Layout

FIGURE 1 8-WAY BUTTON PANEL

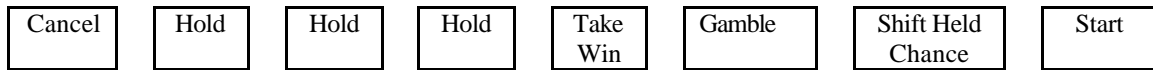


Figure 2 Triangular feature button.

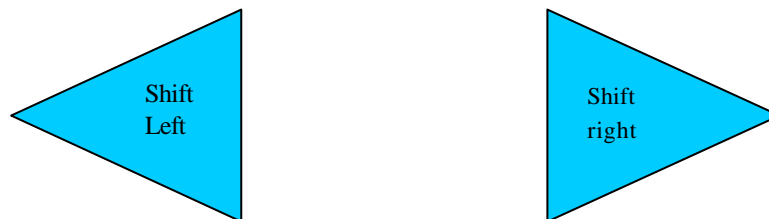
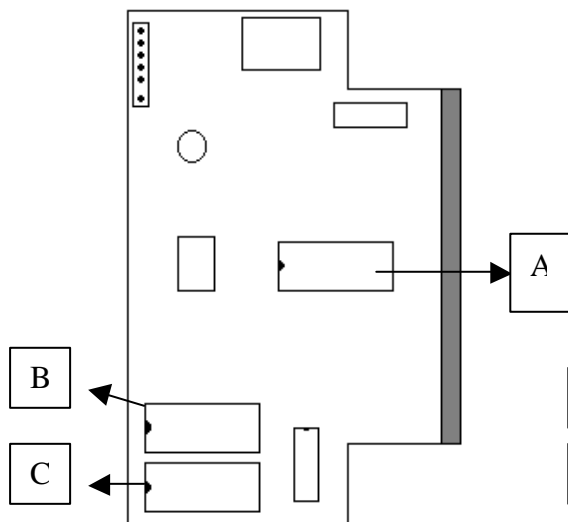


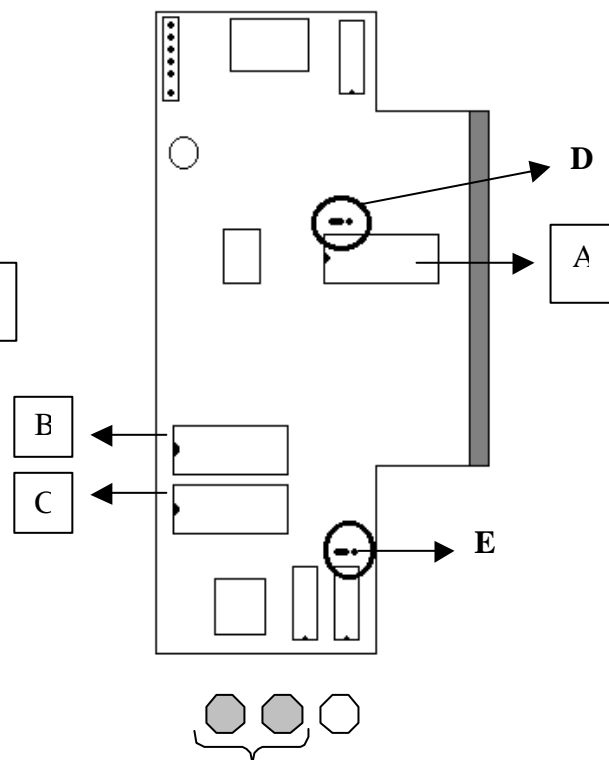
Figure 3 Program Cards

Board No. 682976



A = Game EPROM socket
B = Sound EPROM 2 socket
C = Sound EPROM 1 socket

Board No. 683049



D & E link setting positions.
Left and center pins connected.

Lamp Allocation

Lamp	Blue Pin	Green Pin	Function	Group
0	9	1	Reel 1 Top	2
1		2	Reel 2 Top	1
2		3	Reel 3 Top	
5		6	Shift Right Button Bottom	
6		8	Shift Right button Middle	
7		9	Shift Right Button Top	
8	8	1	Reel 1 Middle	2
9		2	Reel 2 Middle	1
10		3	Reel 3 Middle	
13		6	Shift Left Button Bottom	
14		8	Shift Left Button Middle	
15		9	Shift Left Button Top	
16	7	1	Reel 1 Bottom	2
17		2	Reel 2 Bottom	4
18		3	Reel 3 Bottom	
21		6	£ Top glass right lower	
22		8	£ Top glass right middle	
23		9	£ Top glass right top	
24	5	0	Cancel button	1
25		1	1 st Hold/Nudge	4
26		2	2 nd Hold/Nudge	
29		5	£ Top glass left lower	
30		8	£ Top glass left middle	
31		9	£ Top glass	
32	4	0	3rd Hold/Nudge	1
33		1	Take Button	3
34		2	Gamble Button	
35		3	£ Reel glass middle top	
36		4	3 Nudges	
37		5	Held Secret	
38		6	£ Reel glass middle lower	3
39		8	£ Reel glass right top	
40	3	1	Bank Shift Chance	1
41		2	Start	3
42		3	£ Reel glass left top	
43		4	E.W.S Name Reel glass	
44		5	2 Nudges	
45		6	Shift Matrix Right Bottom	
46		8	Shift matrix right middle	3
47		9	Shift matrix right top	
50	2	3	£ Reel glass right lower	
51		4	EWS Name reel glass	
52		5	1 Nudge	
53		6	Shift matrix centre bottom	
54		8	Shift matrix centre mid	3
55		9	Shift matrix centre top	
57	1	2	Coin In + Push to Reject	
58		3	£ Reel glass left lower	
59		4	EWS Name Reel glass	
60		5	Nudge Now Box	
61		6	Shift matrix left bottom	3
62		8	Shift matrix left middle	
63		9	Shift matrix left top	

Lamp	Blue	Green	Function	Group
64	17	10	N position 9	4
65		11	N position 10	
66		12	I position 9	
67		13	I position 10	
68		14	W position 10	
69		15	W position 9	
70		16	Shift Award position 10	
71		17	Award position 9	
72	16	10	N position 8	
73		11	I position 8	
74		12	W position 8	
75		13	Shift award position 8	
76		14	Mixed 7 award	
77		15	Single bar award	
78		16	Red bars award	
79	15	17	EWS Name Top glass	
80		10	N position 7	
81		11	I position 7	
82		12	W position 7	
83		13	Shift Award position 7	
84		14	Mixed 7	
85		15	Blue Bar	
86		16	Red Bar	
87		17	EWS Name Top glass	
88	14	10	N position 6	
89		11	I position 6	
90		12	W position 6	
91		13	Shift award position 6	
92		14	Mixed 7	
93		15	Blue Bar	
94		16	Red Bar	
95		17	EWS Name top glass	
96	13	10	N Position 5	
97		11	I position 5	
98		12	W position 5	
99		13	Shift award position 5	
100		14	N position 1	
101		15	I position 1	
102		16	W position 1	
103		17	Shift award position 1	
104	12	10	N position 4	
105		11	I position 4	
106		12	W position 4	
107		13	Shift award position 4	
108		14	Yellow bars award	
109		15	Blue 7 award	
110		16	Red 7 award	
111		17	EWS Name top glass	
112	11	10	N position 3	
113		11	I position 3	
114		12	W position 3	
115		13	Shift award position 3	
116		14	Yellow bar	
117		15	Blue 7	
118		16	Red 7	
119		17	EWS Name top glass	
120	10	10	N position 2	
121		11	I position 2	
122		12	W position 2	
123		13	Shift award position 2	
124		14	Yellow Bars	
125		15	Blue 7	
126		16	Red 7	
127		17	EWS name top glass	

Connections

Figure 4 Feature switch connections.

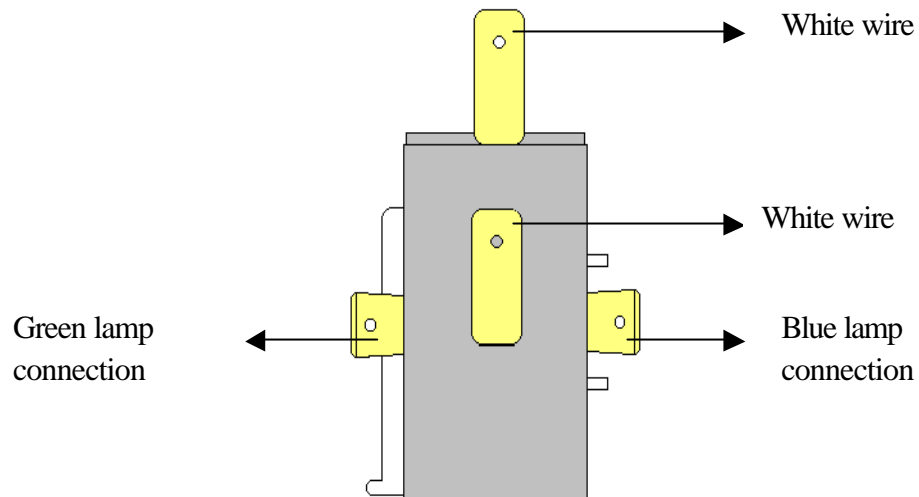
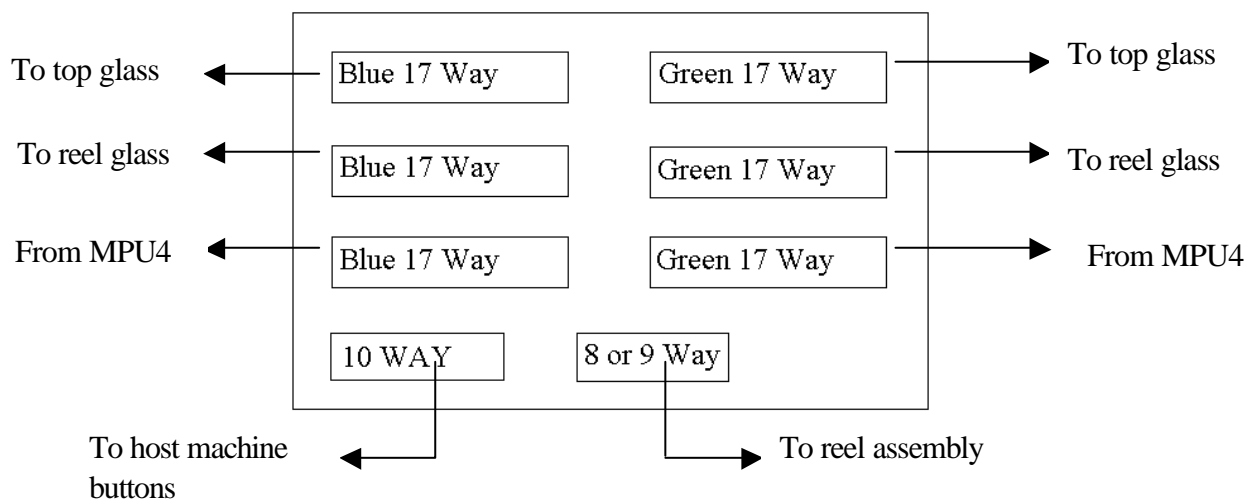


Figure 5 Lamp interface board.



MPU Connections

11 Way White – Triac Drives	
Pin	Function
1	48v AC
2	0v
3	20p Solenoid
4	£1 solenoid
5	Token solenoid A
6	Token Solenoid B
7	KEY
8	Not used
9	Not used
10	Cash refill meter (if fitted)
11	Token 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 supply
11	Aerial

19 Way Orange-switches	
Pin No	Function
1	20p level
2	£1 level
3	Token level A
4	Token level B
5	Not used
6	Not used
7	Not used
8	Not used
9	Not used
10	Not used
11	Not used
12	Not used
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	Not used
2	Not used
3	Not used
4	Not used
5	Not used
6	Test switch
7	Refill key switch
8	Door switches
9	Cancel
10	Hold-Nudge
11	Hold-Nudge
12	Hold-Nudge
13	Take
14	Gamble
15	Bank Shift Chance
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	Not used
9	Key
10	Meters 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