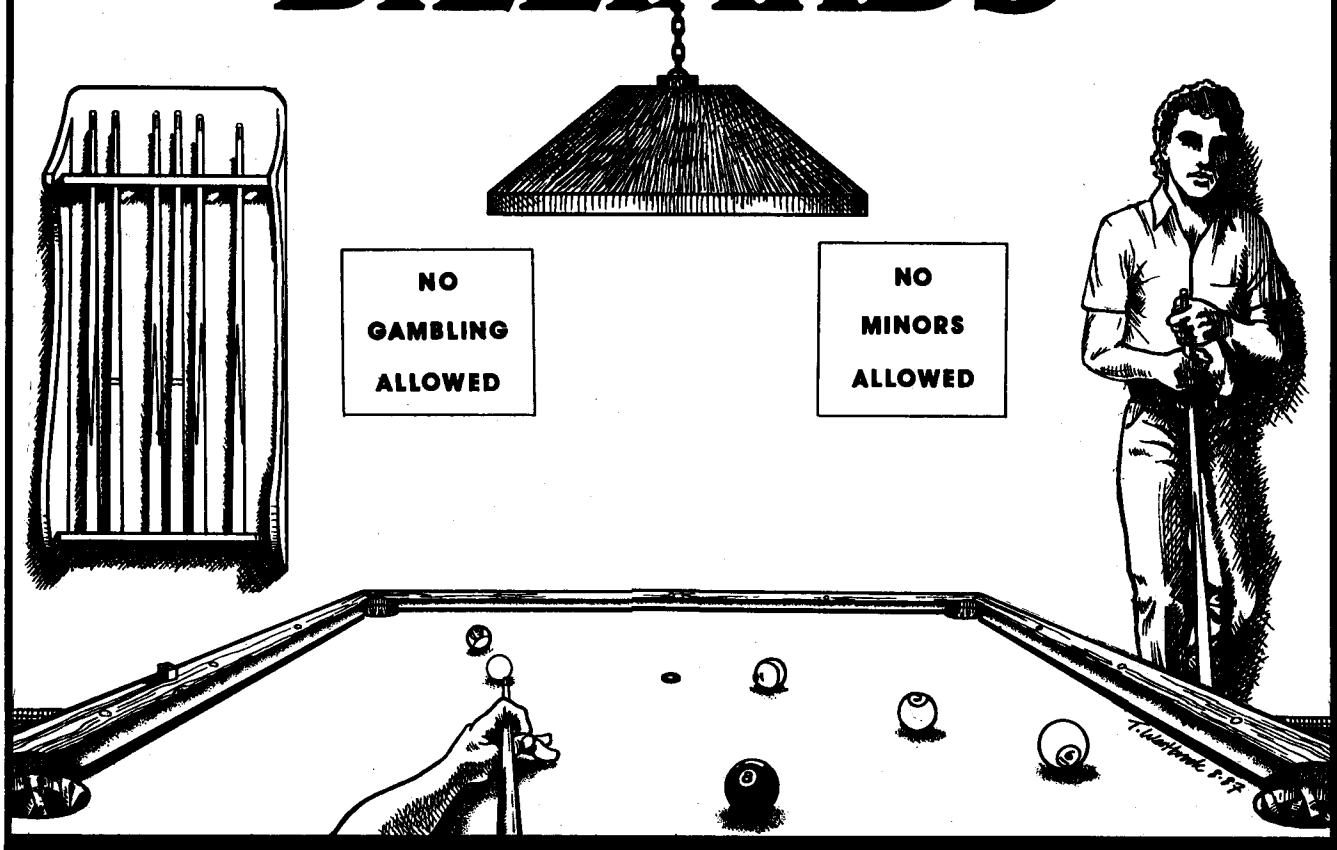


INSTRUCTION MANUAL

PERFECT BILLIARDS



ALL AMERICAN RIGHTS HELD BY:
UNITED ARTISTS THEATRE AMUSEMENTS
PALM SPRINGS, CALIFORNIA

LICENSED FROM NIHON SYSTEMS INC., JAPAN
ALL RIGHTS RESERVED ©1987

DISTRIBUTED EXCLUSIVELY BY



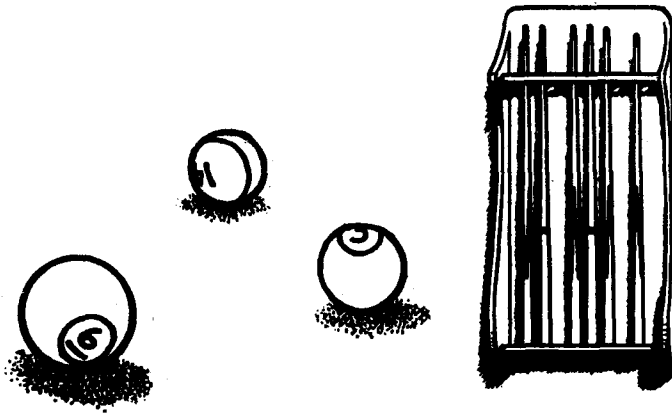
UNITED AMUSEMENTS

1975 RIVERSIDE DRIVE
LOS ANGELES, CA 90039

1 800 722 8258

KIT CONTENTS

1. PERFECT BILLIARDS PC BOARD
2. PERFECT BILLIARDS MARQUEE SIGN
3. PERFECT BILLIARDS MONITOR PLEXI
4. WIRE HARNESS
5. CONTROL PANEL OVERLAY
6. CONTROL PANEL PLEXI
7. 8-WAY JOYSTICK
8. 4 BUTTONS WITH SWITCH ASSEMBLIES
9. INSTRUCTION LABELS
10. INSTRUCTION MANUAL



IMPORTANT F.C.C. WARNING

W A R N I N G

This equipment generates, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. As temporarily permitted by regulation it has not been tested for compliance pursuant to subpart J of part 15 of F.C.C. rules, which are designed to provide reasonable protection against such interference. Operation of this equipment in a residential area is likely to cause interference in which case the user, at his own expense, will be required to take whatever measures may be necessary to correct the interference.

PREPARING THE CABINET

STEPS:

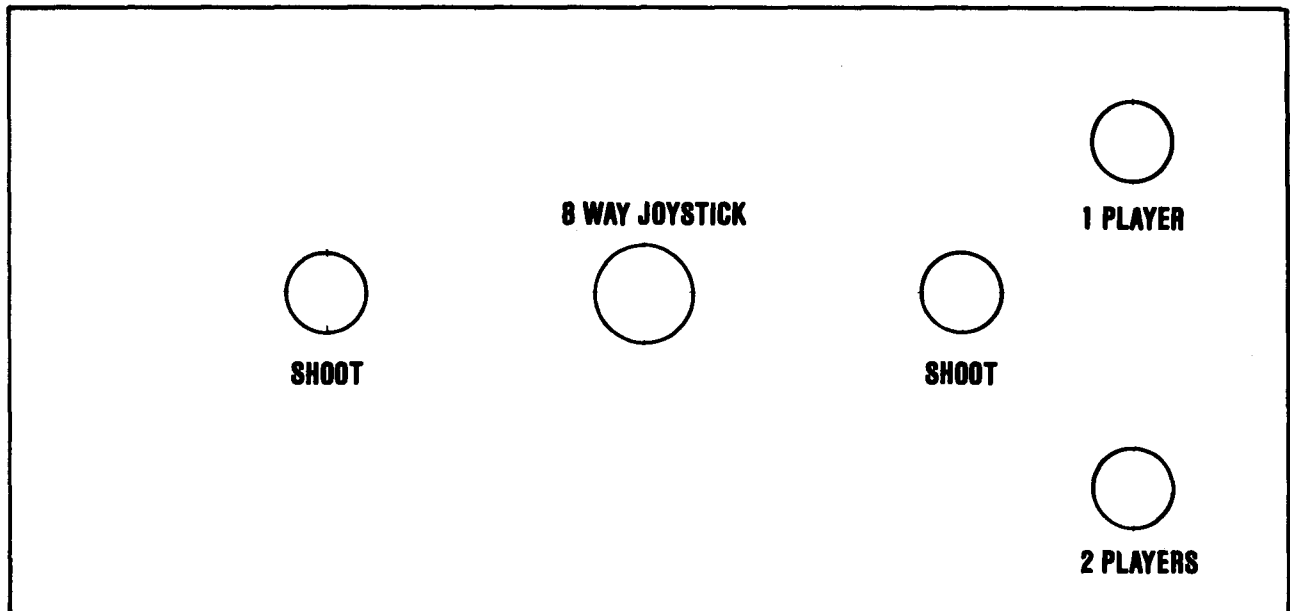
1. Remove the old P.C. board
2. Remove the control panel
3. Remove the marquee sign
4. Remove front or side decals
5. Remove the old wire harness

Leave all the A.C. wiring to monitor, power supply, flourescent lamps, fuses, on/off switches, and transformer circuitry intact. Remove all remaining wiring from the cabinet.

Clean the cabinet thoroughly and repair any visible damage. Using a coat of paint on an older cabinet can restore a "like new" appearance. If needed, painting should be performed at this time.

A little extra time and effort spent now on enhancing a cabinet's appearance will definitely result in increased earning power later!

SUGGESTED CONTROL PANEL LAYOUT



HORIZONTAL MONITOR MOUNTING +5, +12, — VOLTS REQUIRED

SPECIAL REQUIREMENTS

TV MONITOR:

This game is designed to be used with a

horizontally [X]
vertically []

mounted R.G.B. monitor, with the PCB as a negative polarity video and sink signals.

Your new game requires one sink wire connection called "composite sink". Tie the horizontal and vertical wires together, this signal is negative. Most monitors have supply positions for both negative and positive sink.

POWER SUPPLY:

The power supply requirements are as follows:

+5 VDC at 7 amps [X]
+12 VDC at 1 amp [X]

If the power supply in the game does not meet these requirements, it should be replaced prior to beginning the conversion procedures.

CONTROL PANEL:

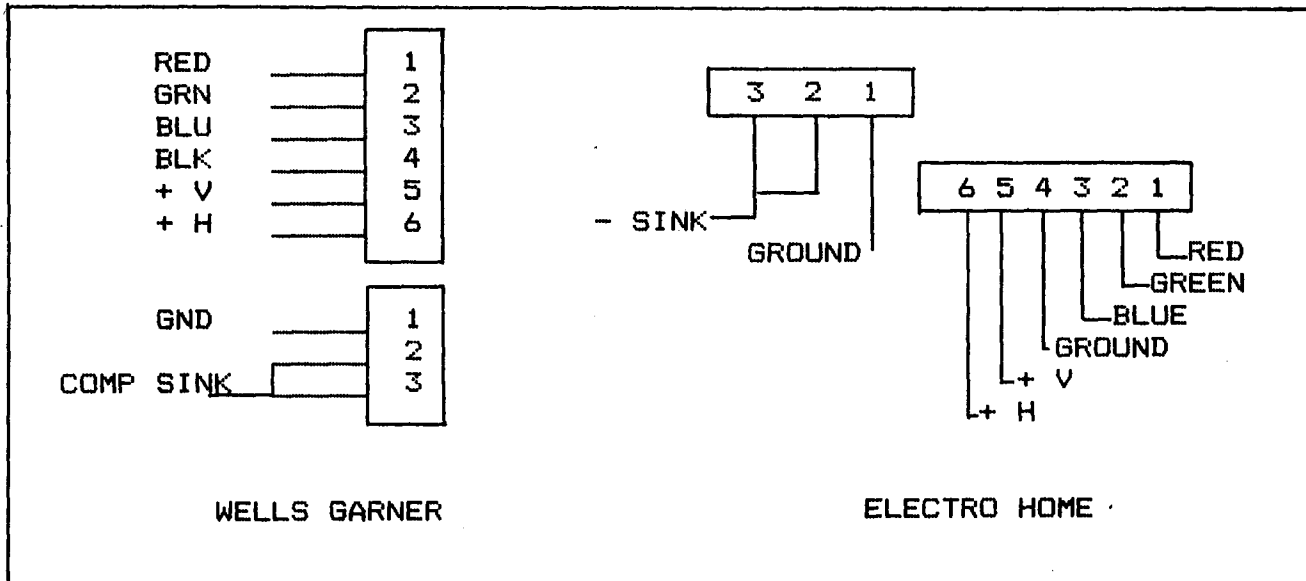
The control panel on the game to be converted can be either metal or wood. When selecting a game to convert consider the placement of joystick, push buttons and the monitor position.

Route the wires labeled control 1 (for upright) to your control panel. Cut this down to the required length. Strip and solder the wires to the joystick, and push buttons according to the pin-out assignments.

MONITOR WIRING:

Route the wires labelled "VIDEO" or "MONITOR" up to your monitor and cut the excess wire. Refer to the pin-out assignment at the back of this manual for video outputs. The color code is as follows:

RED wire	-----	VIDEO RED
GREEN wire	-----	VIDEO GREEN
BLUE wire	-----	VIDEO BLUE
BLACK wire	-----	VIDEO GROUND
WHITE wire	-----	NEGATIVE COMP. SINK



POWER SUPPLY WIRING:

Attach the wire harness connector to the main logic PCB.

*** CAUTION: Sometimes the connector is not keyed and it is very easy to install it reversed on the logic board. Double check that it is wired and connected properly.

The label with the game name should face the component side of the PCB.

Separate the bundle of wires labeled "POWER" and route them to your power supply. Strip about 1/2 " off the insulation and attach them to the power supply screws. The color code is:

RED wire # 18	-----	+ 5 VDC
YELLOW wire # 18	-----	+ 12 VDC
BLACK wire	-----	GROUND

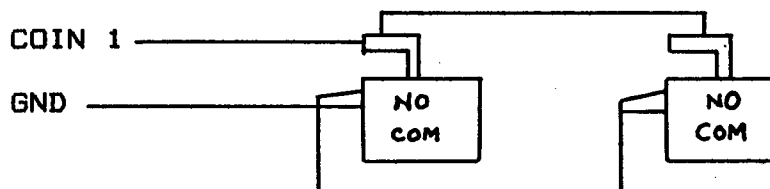
NOTE:

You can use the -5 VDC to power the lights to the coin door or the lighted push buttons.

COIN SWITCHES:

Most games have two coin outputs. Coin 1 must go to the N.O. (normally open) terminal of the microswitch, (same as with coin 2) and a ground wire will go to the common terminal of the microswitch.

If you wish to use a coin meter for both coin mechanisms, connect only one coin output to both coin switches. This will save you the use of two coin meters.



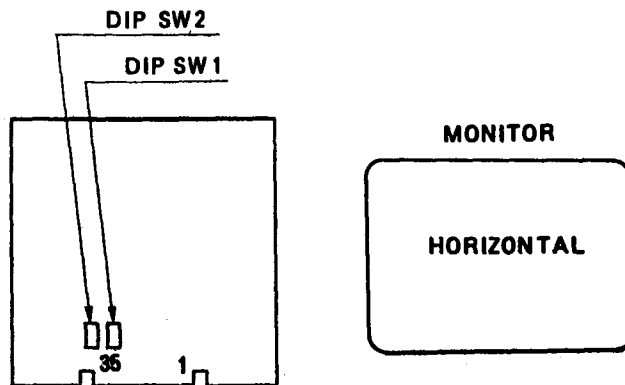
PIN-OUT

DIP SW-1 OPTION SWITCH SETTING

		1	2	3	4	5	6	7	8
BALLS	3	OFF							
	5	ON							
EXTEND	10 30 50		OFF	OFF					
	20 40		OFF	ON					
	30 60		ON	OFF					
	20		ON	ON					
					OFF				
					ON				
CONTINUE	YES					OFF			
	NO					ON			
SHOT	3						OFF		
	2						ON		
TYPE	TABLE							OFF	
	UPRIGHT							ON	
FLIP PICTURE									OFF
									ON

DIP SW-2 COIN/CREDIT OPTION SWITCH SETTING

	COIN	CREDIT	1	2	3	4	5	6	7	8
COIN 1	1	1	OFF	OFF	OFF	OFF				
	1	2	OFF	OFF	OFF	ON				
	1	3	OFF	OFF	ON	OFF				
	1	4	OFF	OFF	ON	ON				
	1	5	OFF	ON	OFF	OFF				
	2	1	OFF	ON	OFF	ON				
	2	3	OFF	ON	ON	OFF				
	2	5	OFF	ON	ON	ON				
	3	1	ON	OFF	OFF	OFF				
	3	2	ON	OFF	OFF	ON				
	3	4	ON	OFF	ON	OFF				
	3	5	ON	OFF	ON	ON				
	4	1	ON	ON	OFF	OFF				
	4	3	ON	ON	OFF	ON				
	4	5	ON	ON	ON	OFF				
	5	1	ON	ON	ON	ON				
COIN 2	1	1					OFF	OFF	OFF	OFF
	1	2					OFF	OFF	ON	ON
	1	3					OFF	OFF	ON	OFF
	1	4					OFF	OFF	ON	ON
	1	5					OFF	ON	OFF	OFF
	2	1					OFF	ON	OFF	ON
	2	3					OFF	ON	ON	OFF
	2	5					OFF	ON	ON	ON
	3	1					ON	OFF	OFF	OFF
	3	2					ON	OFF	OFF	ON
	3	4					ON	OFF	ON	OFF
	3	5					ON	OFF	ON	ON
	4	1					ON	ON	OFF	OFF
	4	3					ON	ON	OFF	ON
	4	5					ON	ON	ON	OFF
	5	1					ON	ON	ON	ON



PERFECT BILLIARDS

SERVICE GUIDE

WIRE COL.	PART SIDE		SOLDER SIDE	WIRE COL.
BLACK	GND	A1	B1	BLACK
BLACK	GND	A2	B2	BLACK
RED	+5V	A3	B3	RED
RED	+5V	A4	B4	RED
YELLOW	+12V	A5	B5	YELLOW
WHITE	SPEAKER(+)	A6	B6	BLACK
GREEN	COIN METER 1	A7	B7	TAN
BLUE	COIN SW1	A8	B8	WHITE
ORANGE	1P START	A9	B9	YELLOW
BLUE	1P UP	A10	B10	BLUE
WHITE	1P DOWN	A11	B11	WHITE
BROWN	1P LEFT	A12	B12	BROWN
RED	1P RIGHT	A13	B13	RED
VIOLET	1P SHOOT	A14	B14	VIOLET
		A15	B15	
RED	RED	A16	B16	BLUE
GREEN GREEN	GREEN	A17	B17	WHITE
BLACK	GND	A18	B18	BLACK