EXIDY, INC.

TV PINBALL

(MODEL TVPB)

SCHEMATIC

EXIDY, INC.

2599 Garcia Avenue, Mountain View, California 94043   (415) 968-7670
I. ACCESS TO MACHINE

A. Remove two 3/8 bolts to open table top (inside front door).
   1. A board located at the top of the picture tube can be used to secure the top in an upward position.

B. The monitor can be removed by pulling upward on the monitor brackets.
   1. The harness has been designed to allow the monitor to travel the length of its guide, but only a few inches beyond this point.

II. GENERAL MAINTENANCE

A. If the monitor screen becomes hazy or cloudy, Windex can be used to clean it.
   1. Rub lightly when cleaning color overlay; paint can be damaged if too much pressure is applied.

B. To check power supply voltage, do so with unit powered and PC board under load. Pins 1 (positive) and 3 (negative) of 6 pin connector can be utilized to measure voltage (voltage should be 5.2 V DC).
   1. If voltage is under 5.2 V DC, adjustment at the power supply is possible using the adjustment pot (clockwise to increase volts).
   2. If voltage will not attain 5.2 V, the power supply should be replaced.

C. The relay assembly is located at the rear of the monitor's chassis. Characteristic problems connected with relay malfunctions are: (1.) Picture will not flip over to Player 2; and (2.) Shoot switch or pot control problems. (Unit should not be powered when removing relay.)

D. The PC board can be removed by disconnecting the card edge connectors and pulling upward until board is clear of guide.
   1. Numbers on the PC board correspond to numbers on the card edge connectors to insure proper connections.
   2. Changes can be made on the PC board to change various characteristics of the game. (See enclosed literature.)
HOW TO SET UP YOUR TV PINBALL

Remove the LOGIC printed circuit card-- Notice the RED and GREEN patch cords.

Caution: This is a delicate instrument.

GAME
Plug wire marked GAM into pins 1/25¢ 3/50¢ 2/25¢

BALL
Plug wire marked BALL into pins 3 or 5 Balls per player.

FREE
Plug wire marked FREE into pins BALL or GAME
FOR AN EXTRA BALL OR AN EXTRA GAME AS SET UP FROM SCORE LEVELS

<table>
<thead>
<tr>
<th>1 Game Credit</th>
<th>POINTS</th>
<th>2 Game Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 to A2 &amp; C1 to XX</td>
<td>30,000</td>
<td>B1 to A2 &amp; D1 to D2</td>
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<tr>
<td>A1 to A2 &amp; C1 to C2</td>
<td>35,000</td>
<td>B1 to A3 &amp; D1 to YY</td>
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<tr>
<td>A1 to A3 &amp; C1 to XX</td>
<td>40,000</td>
<td>B1 to A3 &amp; D1 to D2</td>
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<tr>
<td>A1 to A3 &amp; C1 to C2</td>
<td>45,000</td>
<td>B1 to A4 &amp; D1 to YY</td>
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<td>50,000</td>
<td>B1 to A4 &amp; D1 to D2</td>
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<tr>
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<td>55,000</td>
<td>B1 to B2 &amp; D1 to YY</td>
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<tr>
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<td>60,000</td>
<td>B1 to B2 &amp; D1 to D2</td>
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<td>65,000</td>
<td>B1 to B3 &amp; D1 to YY</td>
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<tr>
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<td>70,000</td>
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<tr>
<td>A1 to B3 &amp; C1 to C2</td>
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<td>80,000</td>
<td>B1 to B4 &amp; D1 to D2</td>
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<tr>
<td>A1 to B4 &amp; C1 to C2</td>
<td>85,000</td>
<td>B1 to C4 &amp; D1 to YY</td>
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<td>A1 to C4 &amp; C1 to XX</td>
<td>90,000</td>
<td>B1 to C4 &amp; D1 to D2</td>
</tr>
<tr>
<td>A1 to C4 &amp; C1 to C2</td>
<td>95,000</td>
<td>B1 to C4 &amp; D1 to D2</td>
</tr>
</tbody>
</table>

CHANGE GAME CARD ON FRONT PANEL FOR NEW FORMAT

USE STICK-ON LABEL PROVIDED

BELL / CHIME

A slide switch located near main connector-- This disables the Chimes for an audio sound.
TVPB Adj. Procedure

1. Set voltage at connection to ±5V

2. Adj. paddle size with game in idle mode
   (Next to 20K; about a 240K)
   Sheet 16, RX1, Near Chip H12
   Paddle must have small space on right side before bumper
   The smaller R used, the larger the space

3. Adj. paddle notch with game in select mode
   (Next to 10 K; about a 30K)
   Sheet 16, RX2, Near Chip H12
   The smaller R used, the more notch goes to left

4. Moving target Adj. (Top left corner Sheet 15)
   a. Set scope .5 SEC, INT - , Level -
   b. Scope probe on 1.2K next to 400 UF cap
   c. Adj. 2.7K first (Next to 2 diodes right; need
      about 30K in parallel)
   d. Adj. for 2.5 sec (target moves left to right)
   e. Adj. 1.5K (Next to 2 diodes left; need about
      5.1K in parallel)

5. Check adj. after soldering in resistors

6. Ball mode change--place game in idle mode
   a. Ground 3.3K resistor in random OSC (Near A12 Chip)
   b. Mode change when ball hits a pocket should be frequent.
      If not add a 240K across 39K resistor (Sector A10,
      Sheet 11 & 12)

7. Speed up time
   a. Speed up time on odd balls 18 sec.
   b. Speed up time on even balls 36 sec.
   c. Place a .1 UF cap across .001 UF on 20K Chip H12
   d. Put scope on GL-7
   e. Check time required for ball speed up
   f. Observe that the ball does speed up when the
      level of GL-7 goes high

8. Bell switch
   a. Bell switch in left position the bell should ring
      Back door for bumpers
      Front door for M-T & Wipe Out
   b. Bell switch in right position--credit sound
      should replace bell sound
9. Place in player 2 select mode
   a. Place game coin select on 1/25¢
   b. Press credit switch, causing one credit to show on screen
   c. Press 1 player then 2 players; only 1 player should show
   d. Press credit switch; 2 credits will show
   e. Press one player then 2 players; both should show
   f. Repeat for all credits through 19

10. Game credit per 25¢
    a. Place game coin select on 2/25¢; should give credit when credit button is pushed and when credit button is released
    b. Place game coin select on 3/50¢; set credit on zero--reset DC. First 25¢ should give 1 credit and 2 25¢ should give 2 credits. Select 2 players mode and press shoot; credits should drop from 3 to 1

11. Ball amount
    a. Set ball on 3; play game and observe that game ends on 3 balls
    b. Set ball on 5; play game and observe that game ends on 5 balls

12. 2 Player switch
    a. Place credit on 2
    b. Press 2 Player
    c. Shoot ball; credits should go to zero; when ball is lost and ready for new serve, 2 player should light

13. Score match test
    a. Select 2 players
    b. Place score patch on 35,000 and 45,000; place free game patch on GAM
    c. Ground G3-8; a credit should be given at 35,000 and 45,000
    d. Move score patch to 55,000 and 65,000 and observe credits being given
    e. Move score patch to 75,000 and 85,000, then 95,000 and observe credits being given
    f. Place score patch on 40,000 and 80,000 with both 5,000 patches free
    g. Notice game credit at 40,000 and 80,000
    h. Change play to second player score; place lower 5,000 wire on C2 and upper 5,000 wire on YY
    i. Ground G3-8; notice credit for 45,000 and 80,000
14. Free ball
   a. Place ball game selector on free ball
   b. Set score select on 35,000 and 45,000
   c. Set play for 2 players
   d. Ground G3-8 until score of player 1 reads greater than 45,000
   e. Let ball play until player 2 is on
   f. Ground G3-8 until score of player 2 is greater than 45,000
   g. Play game through; game should not end until 9 balls have been served

15. Up sound
   a. Check up sound for clarity and not a broken up quality

16. Score reading
   a. Score 100 points for pocket or bumper
   b. Score 2000 for MT hit
   c. Score 8000 for Wipe-out
   d. Max credits is 19

17. Reset on end of ball
   a. Set the ball in action and allow it to erase 2 or 3 bumpers. As the ball leaves the screen hold down the shoot button. Screen should reset to 16 bumpers and upon release of button ball should move from reset position. With game over screen should go into idle mode, if shoot button is held down

18. Game play
   a. Play game and see if it generally plays as it should
   b. Check for corner closing
   c. Check for random vector change

19. Leave game on 3/50%, 5 balls, free-game score of 45,000 and 80,000

20. Check that the board works OK from 4.5V to 5.5V.
TVP8
ANTI-STATIC MODIFICATION

Change the following 330 pf caps to .01 uf ceramic caps:

1. Cap below F11 (From F11-13 to F11-4)
2. Cap below E11 (From E12-6 to F11-1)
3. 3 caps -- location M10 (From L10-10 to L10-13)
   (From L10-7 to L10-11)
   (From K11-9 to L10-9)
4. Cap below K8 (From J9-9 to J8-12)
5. Cap below B4 (From A4-9 to A3-2)
6. Cap below A4 (From A4-5 to A3-3)

Add:

.01 uf Cap

1. From F11-8 to ground (trace @ F11-7)
   (Connect to area of trace adjacent to F11-8)
2. From K8-4 to K8-7 (Ground pin)
3. From J8-11 to ground (trace @ J8-8)
   (Connect to area of trace adjacent to J8-9)
4. From J8-5 to J8-8 (Ground pin)
5. From J8-4 to ground (trace @ J8-8)
   (Same point as #4 above)
6. From M4-5 to M4-8 (Ground pin)

.001 uf Cap

1. From F11-4 to F11-7 (Ground pin)
Dear Customer:

The Exidy TV Pinball can be modified to increase your earning. Shown below is a simple one jumper modification which will change the play of the game slightly.

A.) Makes ball change speed and direction more often thus making the game more exciting to play.

If your picture looks hazy or cloudyly remove the T.V. set and wipe it off with Windex—your unit will look like new. This will take about five minutes.

Should you have any questions, please feel free to contact me at your convenience.

Sincerely,

Exidy, Inc.
H. R. Kauffman, President
DRAWING ABBREVIATIONS

Sheet 1

1. OSC-1, 2, 3, & 4  
2. Bit Clik  
3. SLC  
4. XCI, 2 & 3  
5. XC, A, B, C, D, & E  
6. X Clik  
7. Set-X-Up  
8. Set-X-Down  
9. TOG-X  
10. VGX-Up  
11. VGX-DW  
12. VGX-CMP  
13. VGX-CUP  
14. VGX-CDW  
15. SET-XY  
16. XA-XB  
17. VGX-I through E  

Oscillator circuit  
4 MHZ clock  
Scan line clock  
X count 1, 2, & 3  
X count A, B, C, D, & E  
X clock  
Set X to count up  
Set X to count down  
Toggle X count F/F  
Vector generator X up  
Vector generator X down  
Vector generator compare  
Vector generator carry up  
Vector generator carry down  
Set X and Y count  
X count A equals X count B  
Vector generator I through E

Sheet 2

18. X-PLY-FLD  
19. XP-O through 2B  
20. XPD-F  

X playfield  
X position 0 through 2B  
X position data - F

Sheet 3

21. Y-CLK  
22. Set-Y-Dwn  
23. Set-Y-Up  
24. TOG-Y  
25. VGY-CRY  
26. Y 256  
27. Y 262  
28. YC-I through F  
29. YA-YB  
30. VGY-CMP  
31. VGY-ENB  
32. VGY-UP  
33. VGY-DW  
34. VGY-I through E  
35. VGY-CUP  
36. VGY-CDP  

Y clock  
Set-Y-down  
Set-Y-up  
Toggle Y  
Vector generator Y carry  
Y count 256  
Y count 262  
Y count I through F  
Y count A equals Y count B  
Vector generator Y compare  
Vector generator Y enable  
Vector generator Y count up  
Vector generator Y count down  
Vector generator I through E  
Vector generator compare up  
Vector generator compare down
Sheet 4
37. YPD-A through G
38. Y-END
39. YP-21
40. CLR-BUM-CNT
41. YP 0

Sheet 5
42. BG-SHF
43. CLK-BGS
44. CLR-BGS
45. YP-MT
46. Y-ENB

Sheet 6
47. BAL-NOW
48. RAM-SET
49. LFT-PKT-HIT
50. RHT-PKT-HIT
51. LFT-EDG-VID
52. RHT-EDG-VID
53. LFT-EDG-HIT
54. RHT-EDG-HIT
55. BGS-CLK
56. BG-SHF
57. BG-Y1
58. BG-Y2

Sheet 7
59. ZRO-BUM
60. BG-R
61. BUM-VID

Sheet 8
62. TD-A through S
63. SCR-ZENB
64. TOP-VID
65. TOP-PKT-HIT
66. TOP-EDG-HIT
67. V-SYNC
68. CLK-MOD

Sheet 9
69. BAL-VID
70. BC-A through J
71. BC-BALN
72. BC-STOP
73. BC-SCLR
74. H-SYNC-RAMP
75. PAD-ALOG

Sheet 11
76. PAD-HIT
77. HD-P
78. HD-A through Y
79. MT-LR
80. COIN-LTH
81. EDG-SND
82. FST-CLK
83. SPD-UP
84. SU-CLK

Sheet 12
85. CNT-IKON
86. PAD-HIT-MID
87. MC-A through E
88. MOD 1 through 2
89. RAM-SET
90. RAM-OSC
91. UP SET

Sheet 13
92. SCR-VID
93. MT-VID
94. PAD-VID
95. MIX-VID-A, B, C

Sheet 14
97. HLF-BLK
98. CNT-ZBUM
99. CNT-1000

Sheet 15
100. MT-HIT
101. MT-SET
102. MT-RST

Sheet 16
103. PC-FUL
104. PC-HLF
105. PC-MID
106. PC-RC

(3)

Horizontal synchronizing ramp
Paddle analog

Paddle hit
Hit decode - P
Hit decode A through Y
Moving target left right
Coin latch
Edge sound
Fast clock
Speed up
Speed up clock

Count 1000 on
Paddle hit middle
Mode control A through E
Mode 1 through 2
Random set
Random oscillator
Up ball set

Score video
Moving target video
Paddle video
TV video

One half blink
Count zero bumper
Count 1000

Moving target hit
Moving target set
Moving target reset

Paddle control full
Paddle control half
Paddle control middle
Paddle control resistor capacitor
Sheet 17
107. CC-SER  Credit control serve
108. GME-OVR  Game over
109. SER-1 PLY  Set 1 player
110. SER-2 PLY  Set 2 players
111. GO-1 PLY  Go 1 player
112. GO-2 PLY  Go 2 players
113. CLR 1 PLY  Clear 1 player
114. ONE PLY  One player
115. TWO PLY  Two players
116. PLY - 2  Player 2 up
117. CLR-SCR  Clear score
118. CDD-12  Credit 1 and 2
119. CDT-NOW  Credit now
120. CC-A, B, C  Credit control A, B, C

Sheet 18
121. COIN-SMT  Coin schmitt
122. SER-BAL  Serve ball
123. SER-SMT  Serve schmitt
124. ON-SET-XY  Set XY FF on

Sheet 19
125. ZRO CDT  Zero credit
126. FRE CDT  Free credit
127. EOG  End of game
128. UP-CDT  Up credit count
129. POR  Power on reset

Sheet 20
130. BC-1, 2, 3, 4  Ball count 1, 2, 3, 4
131. CMP-EOG  Compare end of game
132. STP-BC  Stop ball count
133. CLK-BC  Clock ball count

Sheet 21
134. SCR PH2  Score phase 2
135. SGC-A, B, C, D  Score game count-A, B, C, D
136. GC-CRY  Game count-carry
137. GC-BRW  Game count borrow
138. GC-set  Game count set

Sheet 22
139. UL-A through E  Under line A through E
140. SCR-PHI  Score phase 1
141. SCR-XP  Score X position
142. SCR-GO  Score go
143. SCR-CLK  Score clock
<table>
<thead>
<tr>
<th>Sheet</th>
<th>Description</th>
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<tbody>
<tr>
<td>144.</td>
<td>SCNT A, B, C</td>
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<tr>
<td>145.</td>
<td>ENB-MUX</td>
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<td>146.</td>
<td>SCR-ENB</td>
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<td>SCRA-A through G</td>
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<td>SCRA-I through 5</td>
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<td>ENB-SEG</td>
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<td>SOCD-A, B, C, D</td>
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<td>152.</td>
<td>SP2-A through M</td>
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<td>P2-100</td>
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<td>P2-1000</td>
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<td>SPI-A through M</td>
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<td>PI-100</td>
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<td>UP-SND</td>
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<td>GONG COM</td>
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<td>GONG FD</td>
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<td>LOW 10K</td>
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<td>HI-10K</td>
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<td>168.</td>
<td>LOW-5K</td>
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<td>169.</td>
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<td>SM-P1</td>
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<td>GO-MTH</td>
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<tr>
<td>176.</td>
<td>SMP1-GO</td>
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</table>

(5) Score count A, B, C
Enable multiplexer
Score enable
Under line now
Score A-A through G
Score A-I through 5
 Enable segment
Score data A, B, C, D
Score player 2 - A through M
Player 2 count 100
Player 2 count 1000
Score player 1 - A through M
Player 1 count 100
Player 1 count 1000
Up sound
Gong common
Gong front door
Gong back door
TV sound
Score match player 1 go
Score match player 2 go
Score match A, B, C, D
Lower 10,000 match point
Higher 10,000 match point
Lower 5,000 match point
Higher 5,000 match point
Score match player 1
Score match player 2
Score match player 1 - 5 K
Score match player 1 - 6 K
First match
Go match
Score match player 1 - go