

MANUAL

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# 1. P.C.BOARD SPECIFICATIONS

# POWER SUPPLY:

VOLTAGE 5V ± 5%

 $12V \pm 10\%$ 

AMPERE 5V MAX. 5A

12V MAX. 1A

# MONITOR INTERFACE:

VIDEO SIGNALS · · · TTL POSITIVE

SYNC SIGNALS · · · TTL NEGATIVE (COMPOSITE SYNC)

HORIZONTAL FREQUENCY · · · 15.723KHz

H.PERIOD ... 63.6 μ s

H.BLANK  $\cdots$  15.6  $\mu$  s

H.SYNC PULSE · · · 6.0 μ s

VERTICAL FREQUENCY ... 60.0Hz

V.PERIOD ... 16.663ms

V.BLANK  $\cdots$  1.40ms V.SYNC PULSE  $\cdots$  318  $\mu$  s

| TOLERABLE:           | WHILE OPERATING   | IN STORAGE                          |
|----------------------|-------------------|-------------------------------------|
| TEMPERATURE          | 0 TO 50 °C        | -5 TO 60 ℃                          |
| RELATIVE<br>HUMIDITY | 20 TO 70%         | NO MORE THAN 80%                    |
| VIBRATION            | NO MORE_THAN 0.5G | NO MORE THAN 1.0G                   |
| DROPPING<br>DISTANCE | NO MORE THAN 0 cm | (When packed)<br>NO MORE THAN 50 cm |

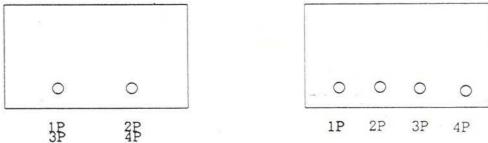
# 2. DIP SWITCHES

DIP SW1

|                             |             | SW 1 |     |     |   |     |     |     |     |
|-----------------------------|-------------|------|-----|-----|---|-----|-----|-----|-----|
|                             |             | 1    | 2   | 3   | 4 | 5   | 6   | 7   | 8   |
| Given holes                 | 2           | OFF  |     |     |   |     |     |     |     |
| (Stroke play)               | 1           | ON   |     |     |   |     |     |     |     |
| Given holes                 | 2           |      | OFF |     |   |     |     |     |     |
| (Match play,<br>Skins game) | 1           |      | ON  |     |   |     |     |     |     |
|                             | NORMAL      |      |     | OFF |   |     |     |     |     |
| Difficulty                  | HARD        |      |     | ON  |   |     |     |     |     |
| Control panel               | 2 Joysticks | 2    |     |     |   | OFF |     |     |     |
| (See below)                 | 4 Joysticks |      |     |     |   | ON  |     |     |     |
| Any button                  | NO          |      |     |     |   |     | OFF |     |     |
| starts game                 | YES         |      |     |     |   |     | ON  |     |     |
| Sound in                    | NO          |      |     |     |   |     |     | OFF |     |
| attracting mode             | YES         |      |     |     |   |     |     | ON  |     |
| Diagnostic test             | NO          |      |     |     |   |     |     |     | OFF |
|                             | YES         |      |     |     |   |     |     |     | ON  |

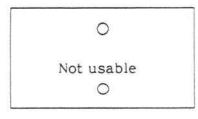
| * | CABINET(DIP | 2-2) & | CONTROL | PANEL | (DIP | 1 - 5) |
|---|-------------|--------|---------|-------|------|--------|

| ☆ One side(Upright type): 2 joysticks | ☆ One side(Upright type):4 joysticks |
|---------------------------------------|--------------------------------------|
| DIP 2-2.OFF, 1-5.OFF                  | DIP 2-2.OFF, 1-5.ON                  |

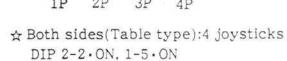


☆ Both sides(Table type): 2 joysticks DIP 2-2.ON, 1-5.OFF

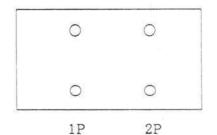
2P · 4P



1P · 3P



4P



3P -

\* The game is not programmed to be played with 1 joystick only on the control panel.

DIP SW2

|      |        |    |                 |     | SW 2 |     |     |     |     |     |     |  |
|------|--------|----|-----------------|-----|------|-----|-----|-----|-----|-----|-----|--|
|      |        |    |                 | 1   | 2    | 3   | 4   | 5   | 6   | 7 - | 8   |  |
| FLIP |        |    | NO              | OFF |      |     |     |     |     |     |     |  |
| ΡI   | CTURE  |    | YES             | ON  |      |     |     |     |     |     |     |  |
| CA   | BINET  |    | UPRIGHT         |     | OFF  |     |     |     |     |     |     |  |
| TY   | PE     |    | TABLE           |     | ON   |     |     |     |     |     |     |  |
| CC   | OIN    |    | SHARED          |     |      | OFF |     |     |     |     |     |  |
| CF   | HUTES  |    | SEPARATE        |     |      | ON  |     |     |     |     |     |  |
|      |        |    | 1 COIN 1 PLAY   |     |      |     | OFF | OFF | OFF | OFF | OFF |  |
|      |        |    | 2 COINS 1 PLAY  |     |      |     | OFF | ON  | OFF | OFF | OFF |  |
|      | MODE 1 |    | 3 COINS 1 PLAY  |     |      |     | OFF | OFF | ON  | OFF | OFF |  |
|      |        |    | 4 COINS 1 PLAY  |     |      |     | OFF | ON  | ON  | OFF | OFF |  |
|      |        |    | 5 COINS 1 PLAY  |     |      |     | OFF | OFF | OFF | ON  | OFF |  |
|      |        |    | 6 COINS 1 PLAY  |     |      |     | OFF | ON  | OFF | ON  | OFF |  |
|      |        |    | 1 COIN 2 PLAYS  |     |      |     | OFF | OFF | ON  | ON  | OFF |  |
|      |        |    | 1 COIN 3 PLAYS  |     |      |     | OFF | ON  | ON  | ON  | OFF |  |
|      |        |    | 1 COIN 4 PLAYS  |     |      |     | OFF | OFF | OFF | OFF | ON  |  |
|      |        |    | 1 COIN 5 PLAYS  |     |      |     | OFF | ON  | OFF | OFF | ON  |  |
|      |        |    | 1 COIN 6 PLAYS  |     |      |     | OFF | OFF | ON  | OFF | ON  |  |
| (+1  |        |    | 2 COINS 3 PLAYS |     |      |     | OFF | ON  | ON  | OFF | ON  |  |
| MODE |        |    | 3 COINS 2 PLAYS |     |      |     | OFF | OFF | OFF | ON  | ON  |  |
| ×    |        |    | 4 COINS 3 PLAYS |     |      |     | OFF | ON  | OFF | ON  | ON  |  |
|      |        |    | 1COIN CONTINUE  |     |      |     | OFF | OFF | ON  | ON  | ON  |  |
| z    |        |    | FREE PLAY       |     |      |     | OFF | ON  | ON  | ON  | ON  |  |
| COIN |        |    | 1 COIN 1 PLAY   |     |      |     | ON  | OFF | OFF |     |     |  |
| Ö    | 100000 | *  | 2 COINS 1 PLAY  |     |      |     | ON  | ON  | OFF |     | -   |  |
|      | MODE A |    | 3 COINS 1 PLAY  |     |      |     | ON  | OFF | ON  |     |     |  |
|      |        |    | 5 COINS 1 PLAY  |     |      |     | ON  | ON  | ON  |     |     |  |
|      | 2      |    | I COIN 2 PLAYS  |     |      |     | ON  |     |     | OFF | OFF |  |
|      | 2      | ** | 1 COINS 3 PLAYS |     |      |     | ON  |     |     | ON  | OFF |  |
|      | В      |    | 1 COINS 5 PLAYS |     |      |     | ON  |     |     | OFF | ON  |  |
|      |        |    | 1 COINS 6 PLAYS |     |      |     | ON  |     |     | ON  | ON  |  |

\* COIN CHUTE A

\*\* COIN CHUTE B

- Please turn off the power switch before changing the DIP SW setting, or the change may not take effect.
- Continue Coin is the mode which starts the game with 2 coins, but continues
  it with 1 coin alone. When this mode is set, no other coin modes can be set.

| GROUND                    |
|---------------------------|
| 3P. RIGHT                 |
| 3P. LEFT                  |
| 3P. DOWN                  |
| 3P. UP                    |
| 3P. START/COIN            |
|                           |
| 3P. SW B (MODE SELECTION) |
| 3P. SW A (SHOT)           |
|                           |

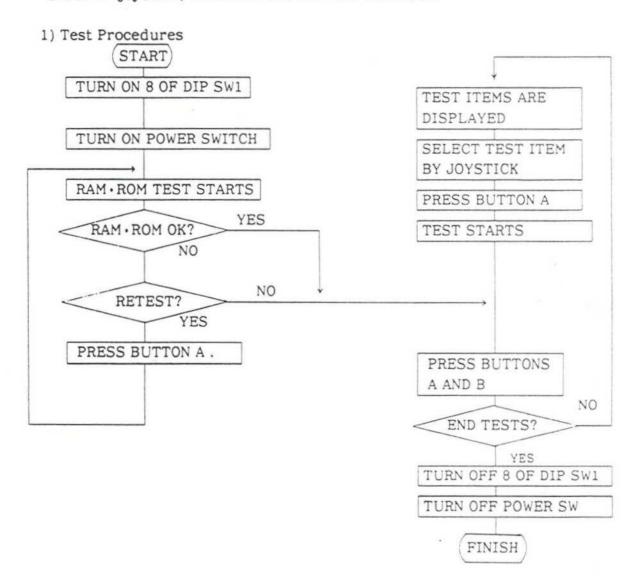
| 1 | GROUND                    |
|---|---------------------------|
| 2 | 4P. RIGHT                 |
| 3 | 4P. LEFT                  |
| 4 | 4P. DOWN                  |
| 5 | 4P. UP                    |
| 6 | 4P. START/COIN            |
| 7 |                           |
| 8 | 4P. SW B (MODE SELECTION) |
| 9 | 4P. SW A (SHOT)           |

- \* Use No.6 pin of connector CN4 and CN5 as START SW when Dip Switch 2-3 is turned OFF, and use it as COIN SW when Dip Switch 2-3 is turned ON.
- \* Use horisontally positioned CRT monitor, and 2-WAY joysticks, each with two push buttons.

#### 4. DIAGNOSTIC TEST

As soon as No.8 of DIP Switch 1 is turned "ON" and the power switch is turned on, RAM·ROM test starts. When the test result appears on the screen, program is ready for the test mode selection.

To finish the test mode, turn off No. 8 of DIP Switch 1 and power switch. \* Use 1P joystick, buttons A and B in the test mode.



#### 2) RAM and ROM Test

Although the picture does not appear on the screen and only various patterns appear on it for a while after turning on the power switch, RAMs for the picture are being tested during this time. RAM and ROM Test is carried out everytime power switch is turned on.

- \* When RAMs and ROMs are good, "OK", "RAM OK" and "ROM OK" will appear.
- \* If RAM(s) is(are) not good, "RAM NG" and the problem will appear on the screen.
- \* If ROM(s) is(are) not good, "ROM NG" will appear on the screen.
  When RAMs and ROMs properly work after this RAM ROM Tests, press
  buttons A and B for 1p to go to the next test. In case any RAM(s) or ROM(s)
  is (are) found faulty after the test, the test will be repeated.

#### 3) Test Item Selection and Start

The following test items are shown so that you may select an item you want to test by moving joystick up and down. Press button A to start the test of the item indicated in green. Press buttons A and B to stop the test of the item.

1. IN PORT ... Test of dip swiches, buttons, etc.

2. SOUND · · · Test of sound

3. CHARACTER · · · Test of character display

4. SCREEN ... Test of color and distortion on monitor screen

5. OPTION · · · · Test of ticket dispenser

6. EXIT · · · Stops the test mode

#### (1) IN PORT Test

This test shows the status which DIP Switches, Buttons and Joysticks are turned "ON".

```
0 1 2 3 4 5 6 7 8 9 A B C D E F
IN PORT1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
IN PORT2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
IN PORT3 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

```
1 2 3 4 5 6 7 8

DIP SW1 0 0 0 0 0 0 0 1

DIP SW2 0 0 0 0 0 0 0 0

DIP SW3 0 0 0 0 0 0 0 (O-OFF, 1-ON)
```

# (2) SOUND Test

The screen shows the number of each sound and the test is done about whether the corresponding sound is given.

To carry out next sound test, move 1P joystick down.

SOUND OO

# (3) CHARACTER Test

The player character is displayed on the screen.

| Normal     | Horizontally |
|------------|--------------|
| position   | reversed     |
| Vertically | Horizontally |
| reversed   | and vertical |
|            | ly reversed  |

Make sure that the same character is shown in four different positions, each vertically and horizontally reversed, as shown on the left.

# (4) SCREEN Test

By pressing the 1P joystick, the test can be advanced like 1-2-3-4-5-6-7-8-9-10-1, test of colors, balance and distortion on the monitor screen.

1. The whole screen shows only BLUE color.

| 2. | n  | RED     |
|----|----|---------|
| 3. | "  | MAGENTA |
| 4. | ** | GREEN   |
| 5. | "  | - CYAN  |
| 6. | "  | YELLOW  |
| 7. | 11 | WHITE   |

- 8. Figure A is displayed on the screen.
- 9. Figure B is displayed on the screen.
- 10. Figure C is displayed on the screen.

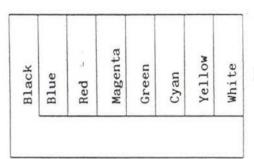
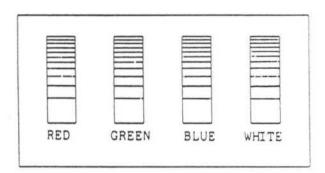


Figure A

Color bars (in 16 grades)



Brighter

Darker

Figure B

Crosshatch Pattern (drawn with 1-dot white lines)

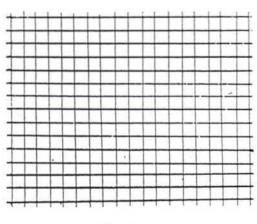


Figure C

15 lines

20 LINES