



Book Keeping 9-10-11

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LIST OF FIGURES

Cabinet Component Locations
Stern 16B-6 Transformer Wiring Connections
Playfield Parts
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SECTION I INSTALLATION

ASSEMBLE THE GAME

Note: See static discharge caution before touching PC Boards.

Bolt legs to cabinet. Using flat washers under bolt heads, bolt back box to cabinet. Feed cable connectors and ground braid through cable port in back box. Insert connectors so they are completely seated on printed circuit boards. Load all supplied silver balls into the game near the outhole.

Reassemble the plumb bob tilt switch so the narrow end enters the ring from the bottom.

LEVEL THE GAME AND CHECK TILT SWITCHES

Level the game from side to side and front to back using the leg levelers.

Adjust the plumb bob tilt switch for approximately $\frac{1}{4}$ " gap between the plumb bob and the ring. Increase the gap for less sensitivity.

Visual inspections before plugging in line cord:

On all games there are some items that must be checked after shipment. Making these visual inspections may avoid time consuming service work later. Minor troubles caused by abusive handling in shipment are unavoidable. Cable connectors may be loosened, switches may go out of adjustment.

1. Check that wiring of transformer corresponds to location voltage. (See Figure 8-1).
2. Check the transformer for any foreign material shorting across wiring lugs.
3. Check that fuses are firmly seated and making good contact.
4. Check wire on coils for proper soldering. Cold solder connections may not show up in factory inspection, but vibration in shipment may break contact.
5. Check switches for loose solder or other foreign material that may have come loose in shipment and could cause shorting of contacts.
6. Check for any wires that may have become disconnected.
7. Check that all cable connectors are completely seated on printed circuit board assemblies.
8. Check that cables are clear of all moving parts.

STATIC DISCHARGE CAUTION

Integrated circuit chips can be damaged by static discharge from the body. Before touching chips, discharge body by touching any ground path.

SECTION II GENERAL GAME OPERATION

SECTION II START-UP AND GENERAL OPERATION

GAME START UP

Plug in the line cord; make certain that the power receptacle provides proper grounding. Lack of proper grounding can cause improper game operation and other undesired effects. Move the power ON-OFF toggle switch at bottom right front corner of cabinet to "ON" position.

When power is applied to the game (or turned OFF and ON), the game cycles through seven self tests which are indicated by seven audible tones and seven flashes of a LED located on the MPU board in the back rack (Figure 1). The LED will flash, have a pause, flash again, have a longer pause, then flash again, have a longer pause, then flash five more times and then remain dimly lit. Accompanying each flash is an audible tone (total of seven). Each of the seven tests checks a different circuit of the game. At the end of the self test, the game will operate in the attract mode with a light show. The game must now be adjusted to give the desired awards, bonuses and display features. Adjustments are described in Section _____. The adjustments will determine some of the general game operations.

GENERAL GAME ACTIONS

Coin Game. The game should accept the coin(s) and post credits for coins accepted (2). Pressing the credit button on the door will reset drop targets and cause the outhole kicker to move the ball to the shooter lane. The first player display will flash 00.

One player is registered each time the credit button is pressed (one to four can play). The credits are reduced by one each time the credit button is pressed until the credits are reduced to zero. (Credit button is inoperative after 4 players are registered). Shooting the ball starts the game.

When the ball enters the outhole, the bonus score is added to the player's score. The player-up and/or ball in play on the back box is advanced one position. The bonus score starts at ** points. The outhole kicker moves the ball to the shooter lane and play is resumed. This continues until each player has played the allowable number of balls per game (3 or 5) (2) At this time the "Game Over" light illuminates; A random "Match" number appears and the "Match" Lamp illuminates. If the match number is the same as the last two digits in the player's score, a free game may or may not be awarded. (2)

Extra ball won during the course of the game is played immediately after the player's regular ball enters the outhole. The player-up and/or ball in play is not advanced for extra ball play. Bonus score is added to the player's score, the bonus is reset to ** and the bonus multiplier earned is restored (memory) or reset (*) before the game moves the extra ball for play.

At the end of the game, a "High Game" is flashed on all players scores. If the "High Game" is beat, this feature (*) can award up to 3 free games.

Tilting while playing the game results in loss of the ball in play. The flippers, thumper-bumper, etc., go "dead". Bonus score is not added. The purpose of the tilt penalty is to discourage the player from jostling the machine in an attempt to prolong play. Game action becomes normal after the outhole kicker moves the ball to the shooter lane.

Slamming the machine results in the loss of the game. All feature lights go out and the game becomes "dead" through a built-in time delay circuit. The purpose of the time delay circuit is to discourage abuse of the machine. After the delay, the "Game Over" light lites "Shoot Again" lite flashes and the game is ready for play. The time delay occurs anytime one of the slam switches is made to contact.

* Some tunes and features can be disabled by operator if so desired

** Bonus starts at 0

See back box adjustments.

(1) Ball walker and lane kicker cycles

(2) Selectable by MPU switches

SECTION III GAME ADJUSTMENTS (FRONT DOOR)

General

Many of the game features are adjustable. Adjustments are made at two different locations (1). The front door which uses the SELF TEST button to set three different score levels for rewards as well as setting the "high score to date", (2) 32 switches located on the MPU board in the back rack.

FRONT DOOR ADJUSTMENTS

THREE SCORE-REWARD-LEVELS: Three different scores can be set-up at the front door all of which receive an award. All three scores will receive the same award which can be either an extra ball or a free game. The specific award is selected by MPU switches as described in Section _____. The three scores can be set anywhere between 10,000 and 9,990,000 points. Any or all levels can be deleted by setting to zero. Recommended settings are shown in Table 2-1. Adjust as follows.

1. Push and release the front-door SELF-TEST button six times or until the BALL/MATCH display shows 01. (See Table 4.2 in Section IV). The 01 indicates the first (and lowest) award score. The present setting will appear on all Player Score displays.

2. To increase the award score, depress the CREDIT button. The displayed score will increase 10,000 points at a time. Release button at desired score. To decrease a preset score, hold CREDIT button until displayed score recycles back to zero and then release at the desired score. The first level award will be deleted if score is set to zero. NOTE: Values can be quickly reset to zero by pressing the MEMORY CLEAR button (on door).

3. Press the SELF TEST button so 02 appears on the BALL/MATCH display. Adjust the score level using step 2. Adjust the third level score using the same procedure. Any level set to zero will delete that level from the game.

HIGH SCORE TO DATE ADJUSTMENT: When the game is installed, a realistic but challenging score should be entered to promote interest. The factory recommended setting is shown in Table _____. It is suggested that the score, which will build with game play, be periodically reset to encourage game play. The adjustment procedure is almost identical to the 3-score-award-levels described previously except that the SELF TEST button is used to select 04 on the BALL/MATCH display. At location 04 press the CREDIT button for the desired displayed value. The MEMORY CLEAR button can be used to return to zero if the score overshoots the desired level. HIGH SCORE TO DATE action can only be deleted by the MPU switches and not by setting the displayed value to zero.

TABLE 3-1

RECOMMENDED SETTINGS FOR SCORE LEVELS

3 BALL (AS SELECTED BY MPU SWITCH 22)
1ST REWARDED SCORE LEVEL.....500,000.....EXTRA BALL
2ND REWARDED SCORE LEVEL 1,080,000 OR UP
3RD REWARDED SCORE LEVEL NO RECOMMENDED SCORE TO 3
HIGH SCORE TO DATE.....1,500,000..... CREDITS

5 BALL (AS SELECTED BY MPU SWITCH 22)
1ST REWARDED SCORE LEVEL 840,000 EXTRA BALL
2ND REWARDED SCORE LEVEL 1,540,000 OR UP
3RD REWARDED SCORE LEVEL NO RECOMMENDED SCORE TO 3
HIGH SCORE TO DATE 2,300,000 GAMES AS
SWITCH SELECTED

SECTION IV GAME ADJUSTMENTS (PLAYFIELD & MPU SWITCHES)

Playfield Post Adjustments:

Posts that control left and right outlane openings on playfield can be moved to make access to outlanes conservative or liberal for ball to enter. (See appropriate illustrations).

Conservative entry will decrease playing time and scoring.
Liberal entry will increase playing time and scoring.

Back Box MPU switches

Each game has thirty-two switches located on the MPU module, located in the back box, that allows play to be customized to the location. (See Fig. 1) Credits per coin, maximum credits, credit display, balls (3 or 5) per game, match feature, high game feature, special award maximum extra balls and background sound are selectable by means of switches. The switches are contained in four-sixteen lead packages numbered SL-8, S9-16, S17-24, and S25-32 for easy identification. The "On" position is marked on the assembly. **TURN OFF POWER BEFORE MAKING ADJUSTMENTS. MAKE ADJUSTMENTS BEFORE TURNING POWER BACK ON.**

SECTION VI SELF TEST AND BOOKKEEPING FUNCTIONS

GAME SELF-DIAGNOSTIC TESTS:

When the game is first turned ON, seven tests of the MPU board are made as described in the game start-up section. The game will stop at any test that is failed. If all seven tests are passed, the game goes into the "attract mode". From this mode, five diagnostic tests and 17 accounting functions can be performed by the TEST SWITCH on the front door. The tests are described in the following paragraphs and summarized in Table 6-1.

- No. 1. BURN IN TEST - All outputs tested. Combines tests 2, 3, 4 and 5 that follow.
- No. 2. FEATURE LAMPS - All feature lamps will flash on and off continuously, determining any burnt lamps.
- No. 3. DISPLAYS - Each digit on all displays will cycle from 0 thru 9, then the number 8 will shift left to right. This test will recycle continuously.
- No. 4. SOLENOIDS - Each solenoid will be energized, one at a time, in a continuous sequence. (Holding both flipper buttons "in" during this test will cause the flipper coils to be energized). The number appearing on the "Player Score" display is the same as the number assigned to the solenoid and also the same transistor number on the SDU board. The sound of a solenoid pulling in as a number appears indicates proper operation (providing transistor is being used), the absence of a solenoid sound shows a fault. If sound is absent, see Solenoid I.D. page in book for help in Solenoid identification. (After the solenoids are tested, the game sounds are tested.)
- No. 5. SWITCHES - The MPU will scan each switch assembly for stuck contacts. * (Flipper Button and flipper End of Stroke switches are not included). If there are any stuck, the lowest number encountered is flashed on the Player Score displays. The number remains until the fault is corrected. See Switch I.D. page in book for help in switch identification. Other numbers may follow if more stuck contracts are present. If there are no stuck switches, the "Match/Ball in Play" display flashes "0". DO NOT FURNISH OR FILE GOLD PLATED SWITCH CONTACTS.

TABLE 6-1.

SELF TEST SUMMARY

TEST SWITCH PUSH NUMBER	BALL/MATCH DISPLAY	DESCRIPTION
1st	Same as displays.	Burn in test - all outputs tested.
2nd	Blank	Lamp test - all feature lamps on and off.
3rd	Same as displays.	Display test - all digits display 0000000 thru 9999999 then an 8 shifts from left to right.
4th	Blank	Solenoid test - continuous sequence of solenoids pulsed with solenoid driver transistor, "Q" number displayed.
5th	Flashing 0 if all switches are open. All balls must be moved from the outhole to the shooter position to open all switches.	Switch test - switch I.D. Number appears on display when it is manually closed as performed with glass removed. If game has a stuck or closed switch, that switch number will be displayed.

NOTE: At any of the five preceding tests, the game may be returned to the MPU tests and hence to normal operation by either turning the power off and on or by pressing the MEMORY CLEAR button on the door. For bookkeeping functions,

SECTION VI (con't)

GAME LEVELS AND BOOKKEEPING

With the game at the 5th self test, pressing the Self-Test button eighteen more times causes the MPU to step thru the game levels and bookkeeping functions and finally to repeat the power-up test. To return to normal operation at any time, turn the power off and on. DO NOT USE THE MEMORY CLEAR BUTTON EXCEPT TO DELETE DATA. The item being displayed will be reset to zero.

The first three items of Table 602 are operator adjustable and are described in Game Adjustments (Front Door).

TABLE 6-2 BOOKKEEPING FUNCTIONS

TEST SWITCH PUSH NUMBER	BALL/MATCH DISPLAY	DESCRIPTION	DISPLAYS
6th	01	1st rewarded score level	00 to 9990000
7th	02	2nd rewarded score level	00 to 9990000
8th	03	3rd rewarded score level	00 to 9990000
9th	04	Current High Game Score	Current Score
10th	05	Current Credits	00 to 99
11th	06	Total Plays	00 to 999999
12th	07	Total Replays	00 to 999999
13th	08	Total times high score is passed	00 to 999999
14th	09	Number of coins thru Chute No. 2	00 to 999999
15th	10	Number of coins thru Chute No. 1	00 to 999999
16th	11	Number of coins thru Chute No. 3	00 to 999999
17th	12	Total Balls played	00 to 999999
18th	13	Total Extra Balls Awarded	00 to 999999
19th	14	Total Playfield Special Awards	00 to 999999
20th	15	Total Level 1 rewarded scores	00 to 999999
21st	16	Total Level 2 rewarded scores	00 to 999999
22nd	17	Total Level 3 rewarded scores	00 to 999999
23rd		Cycles through the seven MPU tests that occur at power-up and then returns to the "attract mode".	

SECTION VIII GAME RULES

Iron Maiden provides multi-ball action for 1 to 4 players. Players get 3 or 5 balls per game as set by the MPU switch settings. Shooting the first ball starts the game. High scores are obtained by shooting for the following described bonuses.

UPPER AND LOWER 5-TARGET BANK BONUSSES

Dropping all 5 upper targets or all 5 lower targets in ascending or descending order makes it possible to receive a dual bonus ("bonus multiplier" in both cases plus extra ball for ascending order or a "special" for descending order). The dual bonuses are awarded only if the center target of the opposite bank is dropped. If the bonuses are collected, each additional drop target increases the bonus values.

Dropping all 5 upper targets or all 5 lower targets in a random order makes it possible to receive a single bonus of a "bonus multiplier". The bonus is awarded only if the center target of the opposite bank is dropped. If the bonus is collected, each additional drop target increases the bonus value.

3 - TARGET BANK BONUSSES

The first target dropped starts a bonus timer which lights a different bonus light at 5 second intervals. 5 lights provide 5 different bonuses as follows:

If all targets dropped during the first 5 SEC light, 25 more seconds are received plus 3000 bonus points.

If all targets dropped during the second 5 SEC light, 20 more seconds are received plus 3000 bonus points.

If all targets dropped during the 3rd 5 SEC light, 15 more seconds are received plus 3000 bonus points.

If all targets dropped during the 4th 5 SEC light, 10 more seconds are received plus 3000 bonus points.

If all targets dropped during the 5th 5 SEC light, 5 more seconds are received and a bonus score of 3000 points is received.

Each individual target scores 500 points and each hit increases the received bonus.

Accumulated bonus time is registered by four lights marked 5, 10, 20 and 30 seconds and can be preset for a maximum of 30 or 50 seconds. The accumulated bonus time is awarded after all players have shot their last ball. The game will continue for any player as long as additional bonus time is obtained.

SPINNER BONUS

The spinner scores 200 points normally and adds 200 points for each letter of IRON MAIDEN that is lit. (2000 max. for 10 letters). Spinner score goes to 3 times value if hit while the (3X-WHEN-LIT) arrow is illuminated. This arrow is lighted by the lower right stand-up target when it is spotted by illumination of the (3X-SPINNER-VALUE) light just below the target. The (3X-SPINNER-VALUE) light alternates from On to OFF as any of the three slingshots are hit.

MULTI-BALL ACTION

All letters of the words IRON MAIDEN must be lit and three balls must be placed into the walker (located just above the bottom bank of 5 drop targets. To get balls into the walker they must be shot into a kicker (two kickers) while the (5000-POINTS-AND-TRAP-BALL-WHEN-LIT) arrow along the shooting lane is illuminated. The third ball into the walker releases all three balls and lights the (EXTRA-BALL) spotting light at the lower right stand-up target. Hitting the target wins another ball. If the words IRON MAIDEN are not illuminated when the third ball enters the walker, only one ball is released. Balls still in the walker at game-over are retained for the next player.

SPECIAL AT LOWER RIGHT

When the (5X) BONUS MULTIPLIER illuminates, the SPECIAL at the lower right also illuminates. The SPECIAL light turns on and off when any of the slingshots are hit. The bonus is collected by hitting the adjacent stand-up target while the light is on.