

# HMS Electronics Inc.

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**SD-1**

This Diagnostic chip activates all the outputs and displays the state of all the switches on the machine (inputs). The **game chip** provides a built-in diagnostic for checking the decoders located between the reels just above the electronics).

1. Remove the game chip and install the diagnostic chip. **!Important:** The little notch on one end of the chip is an orientation notch. If either chip is installed and the power applied with the chip in backward, it will destroy the chip! All the chips on the board are aligned to the same direction.

2. Turn on the power.

A. First indication on panel meter is - - - , board started

B. Next indication on panel meter is -00, board completed initialization

C. Next indication on panel meter is 111 (begin of diagnostics)

To step through the diagnostics, press and release the 'hopper reset switch' (top switch)

To skip to the next diagnostic, press and release the 'hopper fill switch' (center recessed switch)

Diagnostics 0: (use the 'hopper reset' switch to step through this diagnostic)

Display=111, 1 coin light lit, Insert Coin Light lit

Display=222, 2nd coin light lit, Tilt Light lit

Display=333, 3rd coin Light lit, Coin Deflector Coil Activated (diverts coins from base to hopper).

Display=444, 4th coin light lit, Coin Lockout Coil Activated (located behind the coin mechanism) with the lever pulled in by the coil, coins are allowed to drop through.

Display=555, 5th coin light lit, Handle Release Coil Activated (this should drop the arm which allows the handle to be pulled). Pull the handle so you can check the stop solenoids in the later diagnostic!

Display=666, 6th coin light lit, Coin-in Meter activated. Note: This meter is only for use when it is necessary to monitor the number of coins dropped into the machine.

Display=777, Tilt-Tower-Light lit (it normally has a blinking style bulb). Coin Accepted Light lit

Display=888, 1 coin light lit, Insert coin light lit.

Display=999, 1-2 coin lights lit, Tilt light lit (tilt light on door)

Display=000 (lower zeroes), 1-2-3 coin lights lit, Coin Deflector coil activated

Display=000 (upper zeroes), 1-2-3-4 coin lights lit, Coin Lockout coil activated

Display= - - - (upper dashes), 1-2-3-4-5 coin lights lit, Handle Release Coil Activated

Display= - - - (Mid dashes), 1-2-3-4-5-6 coin lights lit, Coin-in meter activated

Display= - - - (bottom dashes), no coin lights, no coils

Display= -blank-, Tilt-Tower Ligh, no coils

Note: At the next step (hopper reset) the Diagnostic0 auto runs through all the steps: Press and release the 'hopper fill' switch to select the next diagnostic (1)

**Diagnostic -1-** =Hopper Run

Press the hopper reset button to run the hopper.

**Diagnostic -2-** = Jackpot Bell

Note on stop solenoids. Each reel should have a similar 'sound'. Meaning the stopping action should be very much the same. You can pickup the sound of a sticky mechanism if you listen carefully!

**Diagnostic -3-** = Solenoid 1, Locks in Reel 1

Press the hopper reset button to pulse the reel1 solenoid.

**Diagnostic -4-** = Solenoid 2, Locks in Reel 2

Press the hopper reset button to pulse the reel 2solenoid.

**Diagnostic -5-** = Solenoid 3, Locks in Reel 3

Press the hopper reset button to pulse the reel 3solenoid.

**Diagnostic -6-** = Solenoid 4, Locks in Reel 4 (only applicable to 4 reel machines)

Press the hopper reset button to pulse the reel 4solenoid.

**Switch Input Diagnostics (Normal is 1, changes to 0 on switch activation)**

**Diagnostic -7-** (changes to -71 or -70 after 1/2 second)

Activate the **coin in switch** (just below the coin mechanism) The -70 or -71 should alternate with the activation of the switch. If no change on the display, the ILQ-74 chip is bad.

**Diagnostic -8-** (changes to -80 or -81 after 1/2 second)

Activate the **hopper coin out switch**. The display should alternate with the activation of the switch. If no change on the display, the ILQ-74 chip is bad.

**Diagnostic -9-** (changes to -90 or -91 after 1/2 second)

Activate the **Jackpot Reset Switch** on the side of the machine. The display should alternate with the activation of the switch. Note: This switch is necessary if the machine does not pay out all of the "Jackpot". It is used to 'reset after jackpot'. If this signal is the wrong state, the game will not play.

**Diagnostic -o-** (lower zero), changes to -o0 or -o1 after 1/2 second.

Activate the **rotor spin switch** by pulling the handle to launch the reels. As you slowly pull the handle, the last digit should change from 0 to 1 back to 0 (reels launched). Note: The rotor spin switch is located on the left side of the reel

mechanism and has its own little cable that plugs into the back of the electronics chassis.

Troubleshooting hints:

1. Some digits don't display, some segments don't display. Try re-inserting the reel mechanism. Dirt on the contacts will cause intermittent display problems. If the same segment is out on all the digits, it may be the display driver 74C912.
2. Please Note: none of the light control outputs affect the operation of the machine. IE, how many coins are in. insert coin light, coin accepted light, etc. But for looks, these should all work. Seldom does the slot controller board cause light problems or coil problems. These are almost always (99%) the interface board. All of the output controller circuits are identified on the web site for repair purposes.
3. All of the input switches should function properly in order for the game to play. Exception is the Jackpot reset Switch. It need not be present as long as the 'normal' switch setting is detected. Otherwise it will lockup the game. The state of of the 'Jackpot Reset Switch' is detected by the diagnostic #9.
4. Nothing runs. If the chip socket (24 pin socket) has poor contact, the program may not run. If you have noticeable corrosion on the board, the board is probably bad. The board requires 5 volts and a run signal from the power supply. If nothing runs with the diagnostic chip, you should probably send in both the slot controller board and the power supply. If the machine has never run for you, send in all 3 boards as I often do not charge for diagnose of the interface board if you end up purchasing a slot controller board.