Bally GAMING

FIELD ADVISORY

RELEASE DATE: May 23, 1997
PRODUCT LINE: All Gaming Machines
SUBJECT: Hopper Control Boards

FA-97015

Bally Gaming, Inc. has released a number of Hopper Control Boards and supporting firmware. The proper combination of control board, firmware, and hopper is necessary for proper operation. The following shows the possible configurations:

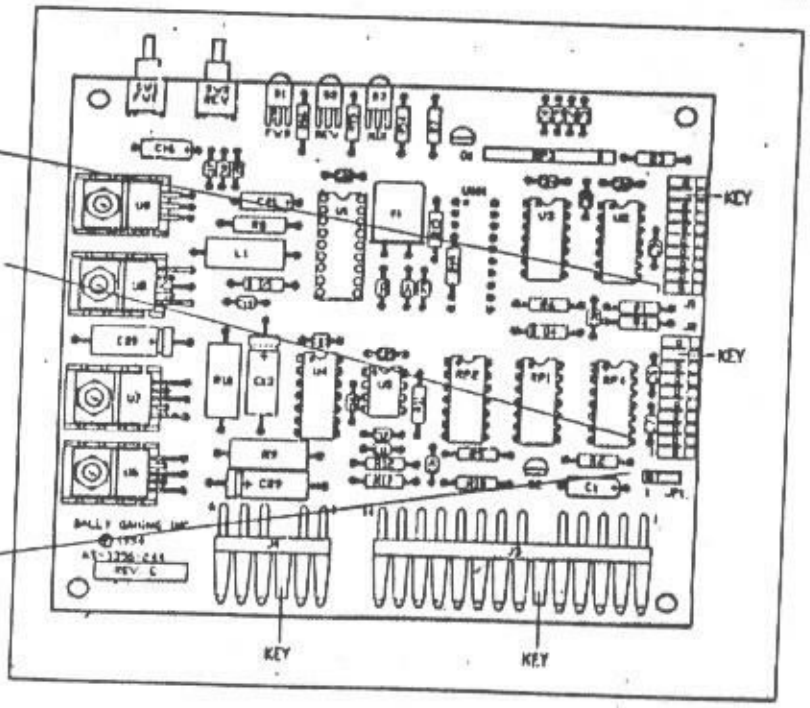
The Hopper Control Boards listed in the following table support all versions of XS1200 and Asahi Seiko hoppers.

Hopper Control Board	Date of Release	Mechanical Coin Switch	Optical Coin Switch	Dual Optical Coin Switch	Micro Controller	Bally Part Number
AS-03356-171A	6/08/92	YES	YES	NO	V3.5	E-01056-0002
AS-03356-0244	3/31/94	YES	YES	YES	DBL007	E-01056-0007
AS-03356-0339	8/08/95	YES	YES	YES	DBL009	E-01056-0009

A single coin switch (optic) should connect at the 10-position .100 MTA connector at J1.

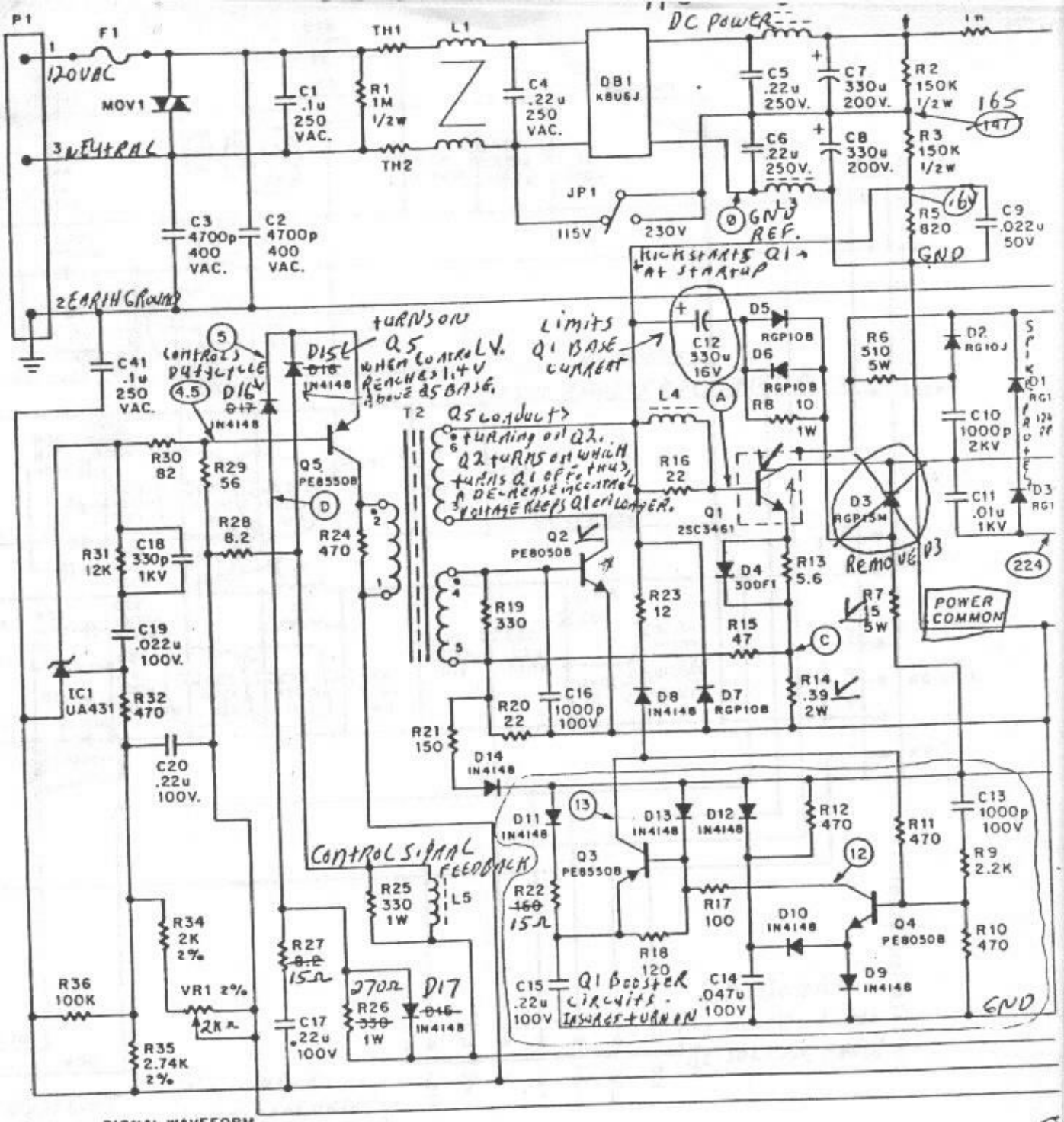
If a second coin switch (optic) is used, it should connect at J2.

JP1 selects single or dual operation of the -244 and -339 boards. For single-switch (optic) operation, the jumper on JP1 should connect pins one and two. For dual optic operation, pins two and three of JP1 should be connected.



AS-03356-0244 or AS-03356-0339
Hopper Control Board

Bally Gaming, Inc. Customer Service, 6601 S. Bermuda Road, Las Vegas, NV 89119
1-800-HOT-SLOT (468-7568) or +702-896-7772 Fax: +702-896-7710
Bulletin Board System: 1-888-TOP-DROP (867-3767) or +702-897-2088
http://www.ballygaming.com Automated Fax Back: +702-263-5612

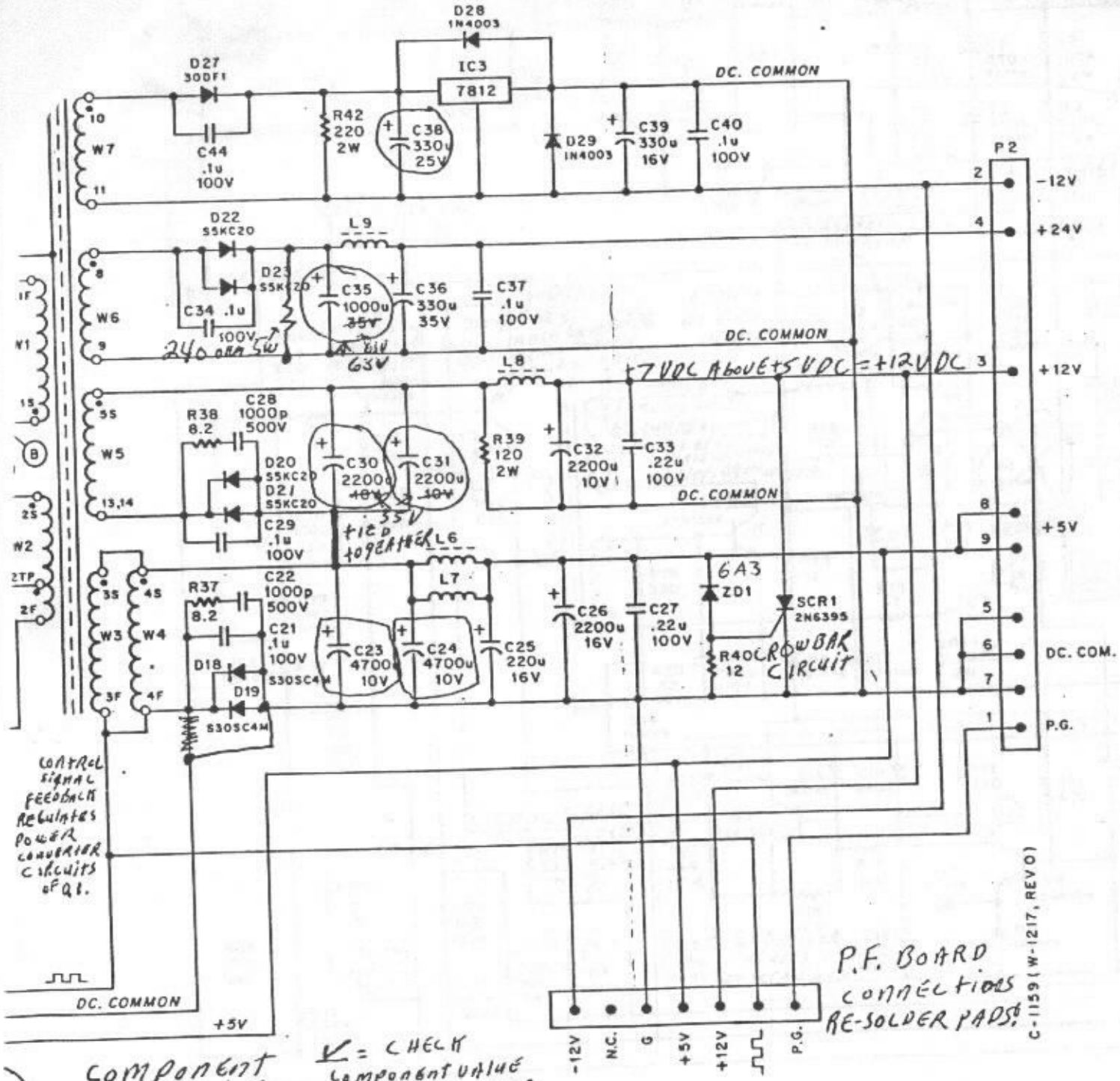


NOTE: UNLESS OTHERWISE SPECIFIED

1. RESISTORS ARE IN OHMS, 1/4W, 5% VALUE.
2. CAPACITORS ARE IN FARADS.
3. DIGITS IN CIRCLE ARE IN VOLTS DC.

BALLY PWR. SUPPLY

(5K)



COMPONENT = UPDATE LOCATIONS

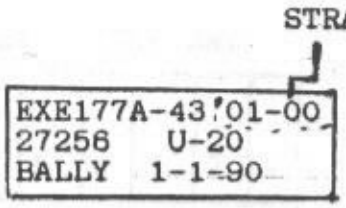
✓ = CHECK COMPONENT VALUE BEFORE POWERUP.

~~Tom~~ Mike

STRAP CONFIGURATION FOR THE BALLY "S-5000 PLUS"

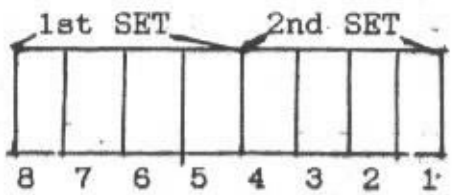
IF THE GAME DOES NOT HAVE A PIGGY BACK BOARD ON THE MPU. YOU DON'T NEED THIS.

LOOK ON THE PERSONALITY EPROMS (U-18 or U-20) DIRECTLY FOLLOWING THE PROGRAM NUMBER.THERE ARE 2 SETS OF 2 DIGIT NUMBERS.
THOSE NUMBERS REFER TO THE STRAP CONFIGURATION.



ON THE PIGGYBACK BOARD THERE IS A 8 PACK DIP SHUNT.THAT IS WHERE THE STRAP WILL BE CONFIGURED.
DEPENDING ONTHE STRAP CONFIGURATION I.D. NUMBER,YOU WILL CUT EACH JUMPER ACCORDINGLY.
TAKE THE STRAP I.D. NUMBER "01-00".LOOK AT THE 8 PACK DIP SHUNT.
THE FIRST FOUR JUMPERS FROM THE LEFT GOING RIGHT.
JUMPERS 8-7-6-5 WILL BE USED FOR THE 1st SET OF 2 DIGIT NUMBERS.
THE 4 JUMPERS ON THE RIGHT 4-3-2-1 WILL BE USED FOR THE 2nd SET OF 2 DIGIT NUMBERS.
YOU WILL ASSIGN THE 1st & 2nd SET OF JUMPERS A BINARY POSITION.

EXAMPLE:



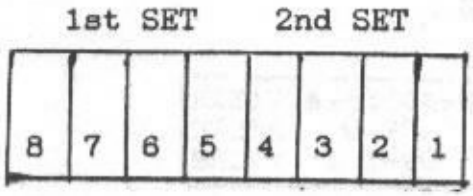
BINARY >
POSITION > 8 4 2 1 8 4 2 1

WITH THE STRAP CONFIGURATION NUMBER OF "01-00".USING THE 1st SET OF NUMBERS FROM THE STRAP I.D. CONVERT THAT NUMBER TO BINARY AND ASSIGN IT TO THE 1st SET OF JUMPERS.(01 to 0001)
THEN YOU WOULD CUT EACH JUMPER WITH A "1" ASSIGNED TO THAT JUMPERS POSITION.
THEN YOU WOULD DO THE SAME THING FOR THE 2nd SET OF 2 DIGIT NUMBERS USING THE 2nd SET OF JUMPERS.

THE END RESULT WOULD BE ,TO CUT JUMPER NUMBER "5" FOR THE 1st SET AND NONE CUT FOR THE SECOND SET.

"EXAMPLE"

WITH A STRAP CON FIGURATION I.D. OF 07-03.



BINARY>	8	4	2	1	8	4	2	1
POSITION>	0	1	1	1	0	0	1	1

YOU WOULD CUT JUMPERS 5-6-7 IN THE 1st SET OF JUMPERS AND CUT JUMPERS 1-2 ON THE 2nd SET OF JUMPERS.

EASY!!!!
IF YOU DON'T UNDERSTAND CALL BALLY. I'M SURE THEY WOULD BE MORE THAN HAPPY TO EXPLAIN IT TO YOU OR JUST LEAVE IT FOR GREG.

Diagnostic Tests

TEST #1 Start of New Game:

The following messages appear on the Message Center for about 1 second each.

MESSAGE	DESCRIPTION
S33L3X-MB0	machine model number
XXXXX-X	main program
XXXXXXXX-X	program personality
06-04-86	date
%CONFIGUR: XX-XX	configuration straps

MACHINE MODEL NUMBER BREAKDOWN TABLE

S33L3X-MB0 example model number			
Position	Description	Options	Description
S	machine type	S	electronic slot
3	series number	3	standard reels & stops
		4	variably spaced stops
		5	maxi reels
3	maximum number of coins/game	0	if specialty
		More than 9	written description required
L	game type	B	option buy
		L	line pay
		M	multiplier
		U	undefined: written description required
3	number of reels		
X	cabinet size	1	low boy narrow
		4	chop top wide
		5	casino top narrow
		6	casino top wide
		7	high boy narrow
		8	high boy wide
	NOTE: X appears on the Message Center, but the number is on the machine outside plate.		
MB0	code for the type of winning symbol combination use 0-9 and/or A-Z		

TEST #2 Output Test:

The machine cycles through each outgoing signal (output), turning 1 output ON for 1 second while displaying the port and toggling the bit.

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PORT 1 00000001

925 display

To stop the test on any output, press and hold the pseudo coin button. Release it to continue. See TROUBLESHOOTING, under I/O MAP OUTPUT TABLE for exact signal description.

service button starts test over

TEST #3 Input Test: to check handle solenoid - energizes automatically if good. Is handle optics also (pull of handle)

The Message Center displays "INPUT TEST" until an input is manually activated. As any incoming signal (input) is activated and operating properly, its port and bit appear. The bit toggles as the input is activated for example, when a button is pressed or the handle is pulled.

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NOTE: The normally closed switch must be opened then closed before the port and bit appear. See TROUBLESHOOTING, under I/O MAP INPUT TABLE for exact signal description.

TEST #4 Hopper Test:

"HOPPER TEST" is displayed. The machine pays 10 coins from the hopper, updating the display as each coin is dispensed.

HOPPER TEST PAY 10

If an over pay problem occurs, the display continues to increment and the hopper continues to dispense coins.

The test stops if a problem occurs. One of the following messages appear on the lower line indicating the problem.

HOPPER EMPTY

COIN OUT JAM

Diagnostic Tests (cont'd)

TEST #5 Reel Function Test:

A "REEL FUNCTION TEST" message appears. The reels spin and stop sequentially at each of the 64 positions. The following message appears.

FUNCTION TEST GOOD
000000 000001

The left meter records the number of spins with a tilt. The right meter records the spins with no tilt. Upon entering this test, the meters reset to zero. On a spin with a tilt, a message appears indicating (1) which reel, (2) its designated position, and (3) the actual position where the reel stopped.

REEL 2 AT 3A RD 75
000001 000001

This spin/stop sequence continues until this test is exited.

TEST #6 Reel Tape Test: 'verify reel tapes

A "REEL TAPE TEST" message appears. The reels are stepped 1 position at a time. A message appears for each position as in the following example.

bottom to top
position 31 to 0

(position)	POS A C C	(symbol)
(stop in memory)	17 17 17 20	(physical stop)

To stop this test at any point, press and hold the pseudo coin button. Release it to continue.

TEST #7 Reel Tilt Record: works best with gas display.
partial clear of ram clears these meters.

A "REEL TILT RECORD" message appears. The meters appear on the Message Center with the number of occurrences per reel.

MISS END OF STOP
000 000 000

"MISS END OF STOP" records the tilt, "IMPROPER REEL SPIN". "REEL MOVEMENT TILT" records all of the reel movement tilts for each reel.

Diagnostic Tests (cont'd)

Actuate the key switch to see the meters in the **REEL METER RECORD TABLE.**

The meters increment with each occurrence in actual game play and in diagnostic test #5. The meters can only be reset to zero by clearing Safe RAM.

REEL METER RECORD TABLE

Meter	Description
STOP OFF CENTER BIT	The reel stopped on the correct position, but the position is not within the center of the stop. This does not result in a tilt.
ACCELERATION RUNNING DECELERATION	The center of a stop position is not read within the designated steps while the reels are accelerating, running, or decelerating.
WRONG POSITION	A wrong position is read.
MISS START OF STOP	The position to begin the stopping of the reel is not read.

TEST #8 Slot Communication:

A "SLOT COMMUNICATION" message appears with a revision number on the lower line.

If there are no dual universal asynchronous receiver transmitters (UART's) installed on the MPU board, a "UART's NOT INSTALLED" message flashes.

As the test for short circuits is run, a coin in tone sounds and the lower message flashes.

SLOT COMMUNICATION
TESTING FOR SHORTS

When this test is complete, a message similar to the following appears with the upper message flashing.

TEST WITH LOOPBACK
3:NA 1:NI 2:__ 0:NI

NA=not available **NI**=not installed **SH**=short in electrical connection

rep. bd. faulty if single reel or 243 runs funny 143 or 244 bad I/O bd. problem.

Diagnostic Tests (cont'd)

Plug the loopback (BALLY Part No. E-664-294) into each port(s) with blanks on the Message Center to test for good communications. A coin in tone sounds for each port tested. The ports on the Message Center correspond to the plugs on the backplane as follows:

PORT	PLUG
3	J25
1	J24
2	J23
0	J22

loopback-db 25 connector pins 2+3 tied together " 4+5 " " " 6+20 " " allows computer to send & recieve message

A message similar to the following appears after all tests are completed.

```
*TESTING COMPLETE*
3:NA  1:NI  2:OK  0:NI
```

If blanks remain next to a port, call a senior service technician.

TEST #9 Display Test:

A "DISPLAY TEST" message appears. This message alternates with all dots lighting simultaneously to show the display is working properly.

The following tests are for 400 series or later programs.

TEST #6 Reel Tape Test:

A "REEL TAPE TEST" message appears. The reels are stepped 1 position at a time. Two message screens appear as in the following examples.

```
POS     SYMBOL
        WEIGHT
```

```
30      A A C
        1 1 1
```

To stop this test at any point, press and hold the pseudo coin button. Release it to continue.

Diagnostic Tests (cont'd)

NOTE: The following test is in the 400 series or later programs.

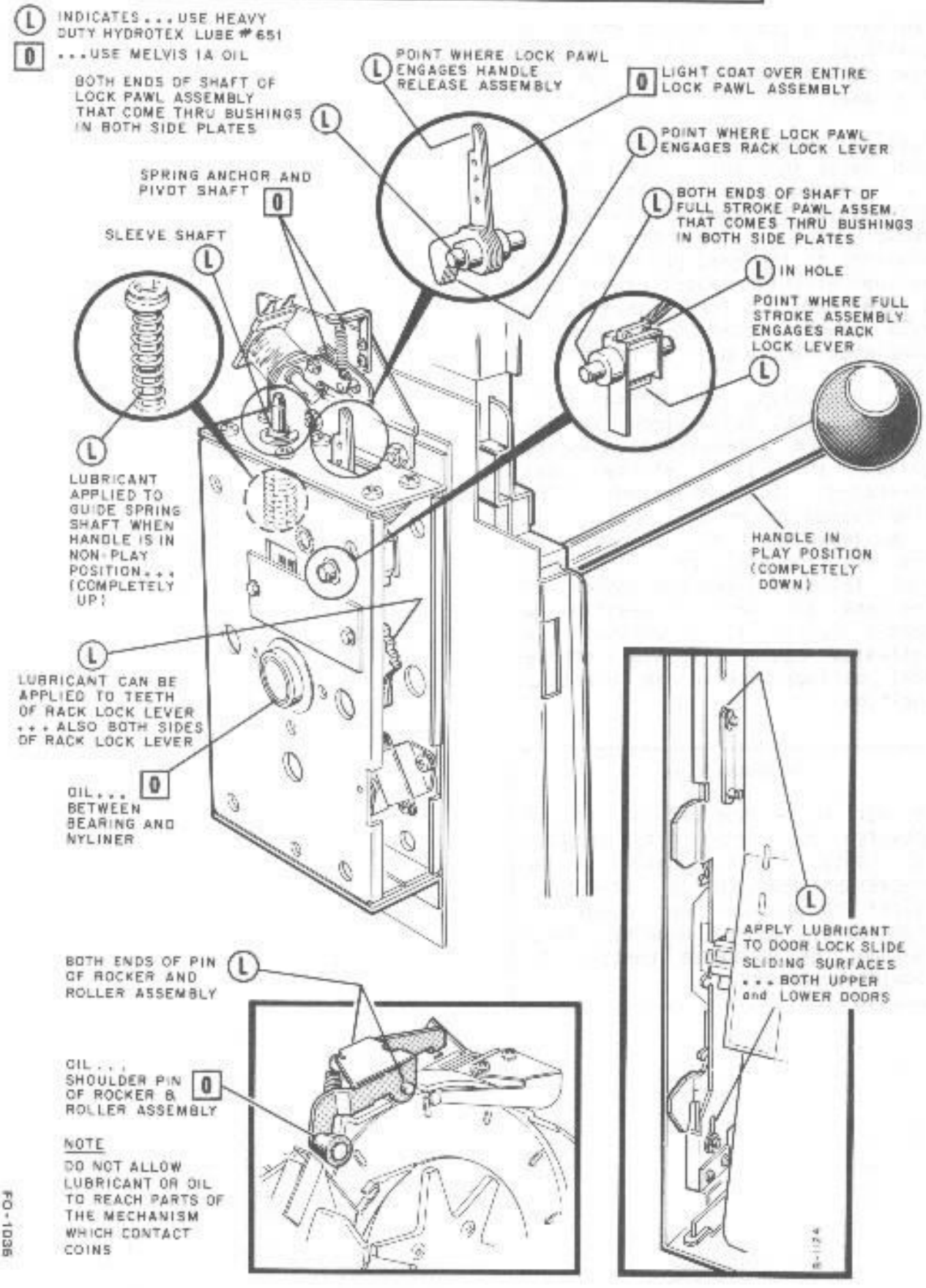
TEST #10 Payout Test: verify game information

A "PAYOUT TEST" message appears. By setting each reel position to the combination desired and using the pseudo coin in button to set the coins in, the win and payout amounts are shown and the jackpot signals are sent. (spin btn.)
√s lockup, + drop levels

SYM	B B B	
000010	000010	COIN IN 3

The progressive jackpot signals are only sent if command 80 is optioned.

LUBRICATION GUIDE



FO-5420

Enter Diagnostic Tests

To enter the diagnostic tests, the machine must first be in a Game Over state or a Tilt state. Then, follow these steps.

1. Unlock and open the lower door.
2. Connect the keypad to the backplane at J14. The Diagnostic Menu appears.
3. If the Diagnostic Menu does not appear, press "GAME".
4. Enter the 2-digit number before the desired item. The display for the item chosen immediately appears on the screen.
5. Press "GAME to end the item in progress and return to the Diagnostic Menu.
6. Press "KEYBD/CLR" to clear an option number, while leaving the command number on the screen.

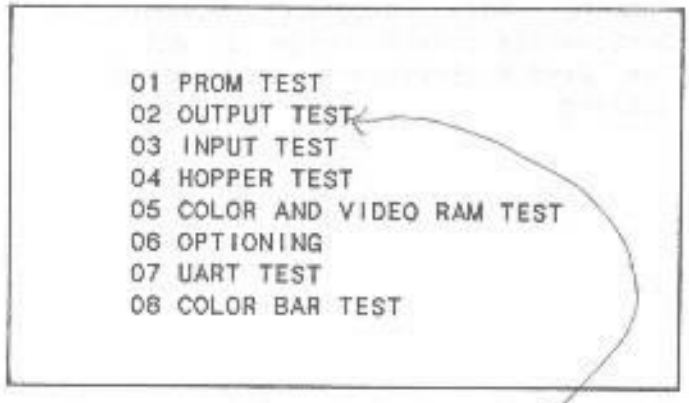


Fig. 21

pause with pseudo coin button

1-off > Dip Switch
0-on

Exit Diagnostic Tests

To exit the diagnostic tests, follow any of the following steps.

1. Press "GAME" when in the Diagnostic Menu.
2. Press the RESET button at any time.
3. Disconnect the keypad at any time.
4. Close the door.

Diagnostic Tests

TEST #01 PROM Test

This test displays the BALLY copyright message, machine model number, main program number, personality program number & date, the game's percentage and strap setting.

```
PROM TEST

C 1987
BALLY MFG. CO.
ALL RIGHTS RESERVED

MODEL: VJACOX
MAIN:  MV0400-0
PERSN: VJ0010FX-04  12-11-87
PERCENT: 102.00      102.00
```

Fig. 22

TEST #02 Output Test

The machine cycles through each outgoing signal (output), turning each output ON for 1 second. The ports are displayed while each bit toggles.

To stop the test on any output, press and hold the pseudo coin button. Release it to continue the test.

See TROUBLESHOOTING, under I/O MAP OUTPUT TABLE for exact signal description.

```
OUTPUT TEST

          7 6 5 4 3 2 1 0
PORT 78   0 0 0 0 0 0 0 0
PORT 79   0 0 0 0 0 0 0 0
PORT 7A   1 0 0 0 0 0 0 0
PORT 7B   1 0 0 0 0 0 0 1
PORT 7D   0 0 0 0 0 0 0 0
PORT 7E   0 0 0 1 1 1 1 1
```

Fig. 23

TEST #03 Input Test

An incoming signal (input) has to be manually activated.

As an input is activated and operating properly, the bit of that port toggles.

A normally closed switch must be opened before the bit toggles.

See TROUBLESHOOTING, under I/O MAP INPUT TABLE for exact signal description.

```
INPUT TEST

          7 6 5 4 3 2 1 0
PORT 78   0 0 0 0 0 0 0 0
PORT 79   0 0 0 0 0 0 0 0
PORT 7A   1 0 0 0 0 0 0 0
PORT 7B   1 0 0 0 0 0 0 1
PORT 7C   0 0 0 0 0 0 0 0
DIPSW     0 0 0 0 0 0 0 1   1-off
                        ON
```

Fig. 24

Diagnostic Tests (cont'd)

TEST #04 Hopper Test

The machine immediately begins paying 10 coins and updating the screen with each coin paid.

If an over pay problem occurs, the "10" rolls over to "0" and continues the sequence while the hopper continues to pay coins.

The test stops if either of the following problems occur with "HOPPER EMPTY" or "COIN OUT JAM" appearing on the screen.

TEST #05 Color and Video RAM Test

A blue screen appears.

1. Press the "TEST" key to move forward to the next screen. A grid appears over the blue screen.
2. Press "TEST" to continue the test through the red, green, and black screens.
3. Adjust the monitor screen with the controls located right below the screen.
4. Adjust the grid screens with the top door closed, but leave the tie channel out for access to the monitor controls.
5. Test the light pen. (For KENO only)

TEST #06 Optioning

The Options menu appears showing various commands that have options which are set using the keypad. See Initialize Options and the **Keypad Command/Option Table** in this Section.

Diagnostic Tests (cont'd)

TEST #07 UART Test

The Universal Asynchronous Receiver Transmitter (UART) circuitry is checked.

If UART component is not installed on the MPU board, "NOT INSTALLED" appears next to the Channel.

"SHORTED" appears if a short circuit is detected in a Channel. Each Channel has a transmit and receive line.

To test for loopback on a channel, follow these steps using the channel table.

1. Remove the connector.
2. Place a jumper on the pins.
3. "OK" appears next to the channel.
4. Remove the jumper.
5. Replace the connector.

Channel B (RX/TX) J15 pins 4 & 6
Channel C (UGDM) J17 pins 3 & 4
Channel D (MISER) J18 pins 2 & 3
Channel A (bill acceptor) can not be tested

After all channels are tested, the UART test automatically exists.

TEST #08 Color Bar Test

Enter this test before adjusting the monitor for color.

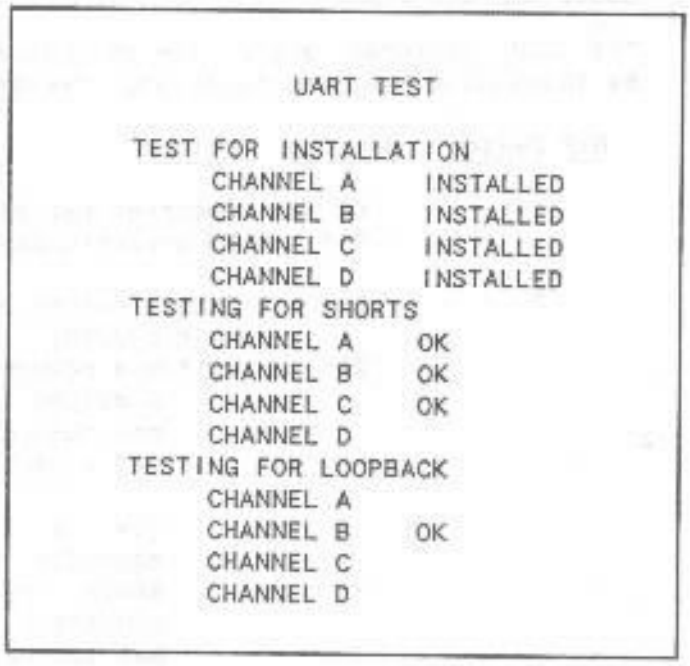


Fig. 25

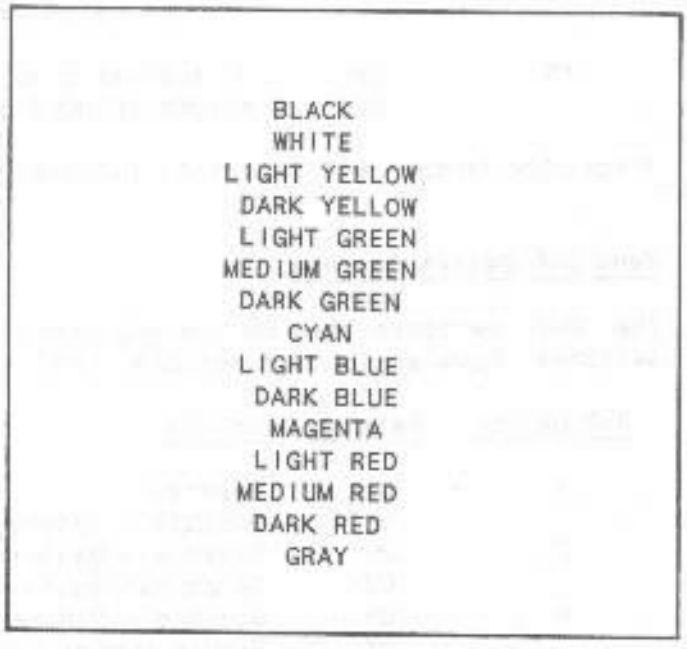


Fig. 26