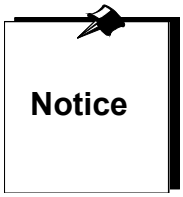
US-0320 Upright Reel Slot

USER/REFERENCE MANUAL

28-00268-01
April 2001

CDS Gaming



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This manual applies to the CDS model US-0320 reel slot machine. The following games are associated with this model:

- Big Cheese™
- Big Cheese 5 Line™
- Big Shot™
- On the Money™
- Pick Pocket™
- Razzle Dazzle™
- Spintastic™
- Five Times Fruit™

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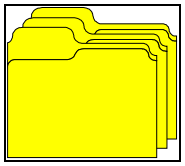


Contents

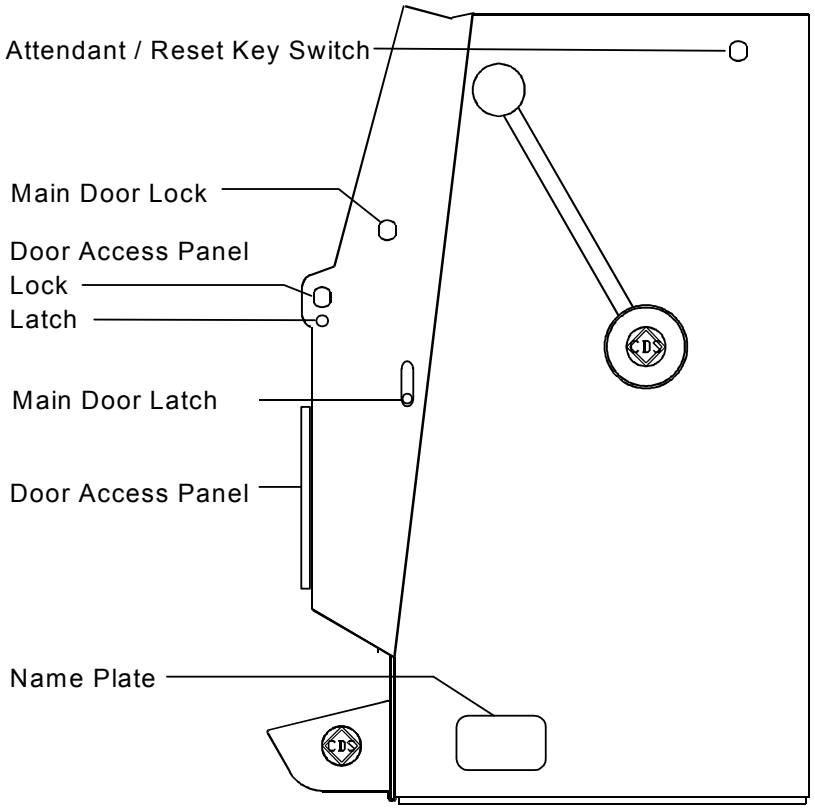
Operator Interface

Operator menus may be accessed using the game buttons. Game meters are used to display various game parameters and values. These menus and meters are used to:

- Set up game and machine parameters.
- View and reset soft meter values.
- View historical game and machine data.
- Test machine input and output devices.
- View game and machine error conditions.

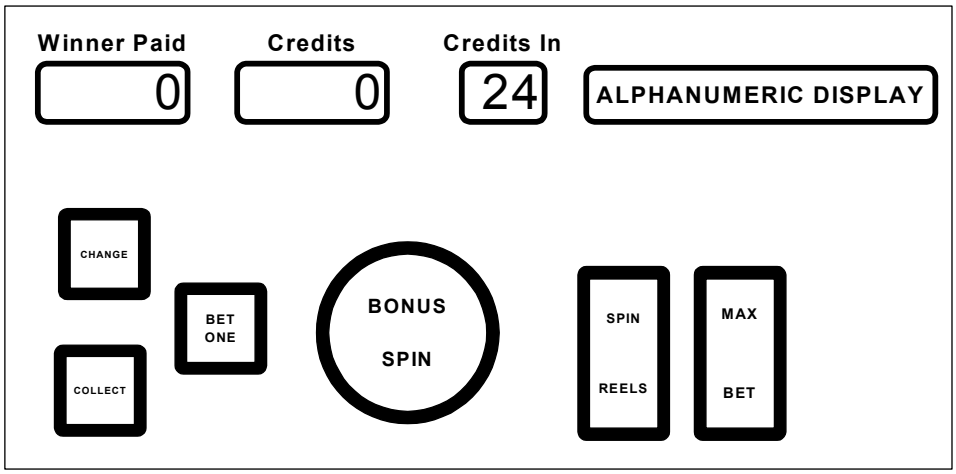
Operator Main Menu Access

To activate the operator menus, insert the attendant/reset key in the switch on the right side of the machine and turn it counterclockwise.



US-0320 Side View

Access various menus and parameters by pressing specified game buttons and observing game meters as shown and described below.



Buttons

Buttons that are enabled for various menu and parameter selection are illuminated. Buttons that are *not* illuminated serve no function when accessing operator menus and parameters.

Press **SPIN REELS** and **MAX BET** to navigate up and down through the range of menu items and parameters.

Press **BET ONE** to select a menu item or parameter that is shown on the alphanumeric display.

Press **COLLECT** to return to the top of a submenu or advance to the next higher-level menu.

Meters

The alphanumeric display indicates the associated menu items and parameters.

The Credits In meter displays the menu item number for primary menu items. The menu item number is referenced in brackets [ ] throughout this document.

The Credits meter displays the menu item number for secondary menu items.

The Winner Paid meter displays values associated with various machine tests and setup values.

Main Menu

The first game operator menu displayed is commonly referred to as the "Main menu". Access the Main menu as follows:

1. Rotate the attendant key counterclockwise. The first menu item **COIN IN** will appear on the door alphanumeric display and the corresponding menu item [1] is displayed on the **Credits In** meter.
2. Press **SPIN REELS** to navigate downward through the remaining menu items. Note that the **Credits In** meter will increment each time that the button is pressed and the corresponding menu item appears on the alphanumeric display.
3. Press **MAX BET** to navigate upward through the Main menu. Note that the Credits In meter will decrement each time that the button is pressed, indicating the present location in the menu list.
4. Press **BET ONE** to access a selected menu item.
5. Press **COLLECT** to return to the Main menu.

The table below shows all menu items that are available in the Main menu.

ITEM	NAME	DESCRIPTION
1	COIN IN	Total number of coins or credits wagered on the game since the last periodic meter reset.
2	COIN OUT	Total number of coins or credits paid (including hopper and/or ticket pays) since the last periodic meter reset.
3	COIN DROP	Total number of coins diverted to the drop container since the last periodic meter reset.
4	BILL DROP	Total number of credits accrued from bills inserted since the last periodic meter reset.
5	GAMES PLAYED	Total number of games played since the last periodic meter reset.
6	HANDPAY	Total game credits paid in handpay jackpots since the last periodic meter reset.
7	SUM ACCOUNT	Sub menu that provides game related information such as game firmware version, name, denomination, theoretical/actual pay and hit values and schedules.
8	SOFT METERS	Two meter menus that display game and machine values. The Periodic Meters can be reset to zero from within this menu. The Lifetime Meters can be reset to zero only by clearing game RAM.
9	WIN DIST	Display the number of line pays, scatter pays, bonus award wins, and total number of games played.

ITEM	NAME	DESCRIPTION
10	BILL VAL	Displays periodic and lifetime meter values for the number of valid bills accepted and the total dollar amounts by denomination. Periodic meters can be reset to zero from the Soft Meter menu.
11	EVENT HISTORY	Date and time stamped history of the previous 100 machine and game events. These include normal operational events such as door opening and closure as well as out of service events such as system RAM failure.
The shaded options shown below are available only when main door is open		
12	PREV GAMES	Detailed summary of up to 100 previous game results.
13	CONFIGURE	This menu displays the current game and machine configuration options and allows the operator to change various options ranging from audio volume level to external communications parameters.
14	MACHINE TEST	This menu allows the operator to test various machine functions and components associated with troubleshooting or preventative maintenance.
15	OUT OF SERVICE	This option allows the operator to place the machine in an “Out of Service” condition for any number of reasons and return it to an “In Service” condition.
16	INIT GAME	This option is available under the following conditions: 1. Birthing chips U63 & U64 have been installed on the logic board. 2. A system error has occurred and the game must be reinitialized. 3. A game EEPROM option such as game schedule or denomination has changed.
17	INIT/PRN LOG	Date and time stamped history of the previous 35 ticket printer events. This option is shown on game firmware version 1.17 or higher. This log can be accessed only when an unrecoverable system error has occurred, or when a DIP jumper header or game EPROM option setting such as game denomination or schedule has been changed.

Summary Account

Select this menu option to view various game related parameters (see table below) including game version, pay table, denomination and schedule information. This menu option is read-only and does not allow the operator to change any game parameters.

To access this option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **SUM ACCOUNT** option [7] on **Credit In** meter.
2. Press **BET ONE** to access the menu of summary accounts parameters.
3. Press **SPIN REELS** or **MAX BET** to scroll through the fourteen parameters listed in this menu.
4. When the desired parameter is selected, press **BET ONE** to view the parameter value.
5. To return to the Main menu, press **COLLECT**.

Parameter Descriptions

PARAM	ITEM	DESCRIPTION
VERSION	1	Displays the installed game EPROM version.
GAME TYPE	2	Type of game. Example: RS-V005 = Reel Slot
GAME NAME	3	Displays the installed game name.
GAME SCHEDULE	4	Displays the current game schedule.
DENOM	5	Displays the current game denomination.
CASHLESS STATUS	6	Displays the status (ON/OFF) of the optional cashless EFT feature of the game.
BONUSING STATUS	7	Displays the status (ON/OFF) of the optional bonusing feature of the game.
THEO PAY	8	The theoretical % payout per the installed game schedule.
ACTUAL PAY	9	The actual % payout since game initialization.
THEO HIT	10	The theoretical hit % per the installed game schedule.
ACTUAL HIT	11	The actual % payout since game initialization.
THEO HIT FREQ	12	The theoretical hit frequency per the installed game schedule.
ACTUAL HIT FREQ	13	The actual hit frequency since game initialization.
SCHEDULES	14	A listing of all available schedules with the installed game firmware. The current selected schedule is displayed in menu item 4 above.

Soft Meters

Select this Main menu option to view the Lifetime and Periodic soft meters.

The Lifetime meter values displayed are accrued since game initialization (can only be reset when game RAM is cleared). The Periodic meter values displayed are accrued since the previous meter reset. The Periodic meters can be reset to zero from Soft Meter menu option **CLEAR METERS [40]**.

To access this option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **SOFT METERS** option [8] on **Credit In** meter.
2. Press **BET ONE** to access the soft meters menu.
3. Press **SPIN REELS** or **MAX BET** to select **LIFETIME** or **PERIODIC** meters.
4. Press **BET ONE** to access the meter menu.
5. Press **SPIN REELS** or **MAX BET** to select the desired meter.
6. Press **BET ONE** to view the selected meter value.
7. If you are viewing the periodic meters and wish to reset them, press **SPIN REELS** or **MAX BET** to select **CLEAR METERS** option [40].
8. Open the machine door. The periodic meters cannot be reset when the machine door is closed.
9. Press and release **BET ONE**, then simultaneously press **SPIN REELS** or **MAX BET** to reset the meters.
10. To return to the Main menu, press **COLLECT**.

Soft Meter Descriptions

Note: All values displayed have accrued since game initialization unless otherwise specified.

METER	ITEM	DESCRIPTION
COIN IN	1	Total number of coins or credits wagered on the game since the last periodic meter reset.
COIN OUT	2	Total number of coins or credits paid (including hopper and/or ticket pays) since the last periodic meter reset.
HANDPAY	3	Total game credits paid in handpay jackpots since the last periodic meter reset.
COIN DROP	4	Total number of coins diverted to the drop container since the last periodic meter reset.
BILL DROP	5	Total number of credits accrued from bills inserted since the last periodic meter reset.
GAME DROP	6	Sum of bill drop and coin drop.
GAMES PLAYED	7	Total number of games played.

METER	ITEM	DESCRIPTION
GAMES WON	8	Number of games played that resulted in awards paid to player.
GAMES DOOR	9	Number of games played since last time the game door was closed.
GAMES RESET	10	Number of games played since game was last initialized (such as power cycled).
RESETS	11	Number of times that the game has been initialized since initial birthing.
MAIN DOORS	12	Number of times that the game door has been opened.
GDD DOORS	13	Number of times the gaming display door has been opened. *GDD doors not used on this machine.*
BILL DOORS	14	Number of times that the bill validator door was opened. The US-0320 has two switches that alarm the bill validator.
STACK DOORS	15	Number of times that the bill stacker access door was opened.
LOGIC DOORS	16	Number of times that the machine game logic door was opened.
CASH DOORS	17	Number of times that the bill validator cassette was inserted in the validator assembly.
DROP DOORS	18	Number of times that the optional drop door switch operated.
COINS VALID	19	Number of coins accepted by the coin comparitor.
PHSICAL CO	20	Number of coins dispensed by the coin hopper.
CANCEL CREDIT	21	Number of cancelled game credits from a handpay due to a credit collection.
COINS PST LK	22	Number of coins detected by the coin comparitor while the game was in a lockout condition.
COIN NO CRDT	23	Number of valid coins detected by the coin comparitor but not credited.
COIN IN ERR	24	Number of coin in errors detected.
COIN OUT ERR	25	Number of coin out errors detected.
PROG JP	26	Number of progressive jackpots detected.
PROJ HITS	27	Number of progressive hits detected.
The following meters are displayed only on the Periodic Meters menu		
PER CLR TIME	38	Time that the periodic meters were last reset.
PER CLR DATE	39	Date that the periodic meters were last reset.
CLEAR METERS	40	See the meter reset procedure in steps 7 – 9 above.

Win Distribution

Select this option to view the number of coins won by individual pay line. The payout values can be viewed by number of coins wagered.

To access the Win Distribution meters option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **WIN DIST** option [9].
2. Press **BET ONE** to select the **WIN DIST** option.
3. Press **SPIN REELS** or **MAX BET** to display the desired pay line.
4. Press **BET ONE** to display the number of coins won for a single coin wagered (displayed on **Credits In** meter).

   To view the coins won value for other coins wagered amounts, continue to press **BET ONE**. The number of coins wagered is displayed on the **Credit In** meter and the number won is shown on the alphanumeric display. Note: if no coins were won for a specific number of coins wagered, the **Credit In** meter will *not* display a value for that number wagered.

   Example: If coins were won for coin values wagered of 1 and 3, pressing **BET ONE** will increment the **Coin In** meter value from 1 to 3.

6. To return to the Main menu, press **COLLECT**.

Bill Validator

Select this menu option to view bill validator information. The following types of bill validator information can be accessed from this menu option:

- Number of bills accepted by denomination and total dollar value by lifetime or periodic count.
- Bill validator event history log. The last 100 bill validator events can be viewed.
- Bill validator error log.

To access the Bill Validator meters option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **BILL VAL** option [10].
2. Press **BET ONE** to select the **BILL VAL** option.
3. Press **SPIN REELS** or **MAX BET** to display the desired option from the following list:
    - BILL METERS option [1]
    - BILL EVENTS option [2]
    - BILL ERRORS option [3]
4. Press **BET ONE** to select the desired option.

Follow the steps below to navigate within the three options shown above.

Viewing Bill Validator Meters

1. Press **SPIN REELS** or **MAX BET** to display the desired bill denomination.
2. Press **BET ONE** repeatedly to display the following values for the selected denomination:
    - LC – Lifetime count
    - L$ – Lifetime dollar value
    - PC – Periodic count
    - P$ – Periodic dollar value
3. Press **SPIN REELS** or **MAX BET** to display other bill denominations.
4. To return to the Main menu, press **COLLECT**.

Note: The Periodic Meters can be reset to zero from the Soft Meters section of this document on page 6.

Viewing Bill Validator Events

1. Press **SPIN REELS** or **MAX BET** to display the desired event (alphanumeric display).

   Up to 100 events can be displayed. An event number is displayed on the Credits In meter; the smaller numbers represent the most recent events.
2. Press **BET ONE** to display the event **TIME** and **DATE** of the selected event.
3. To view other events, press **COLLECT** then **SPIN REELS** or **MAX BET** to scroll through the listing of events.
4. To return to the Main menu, press **COLLECT** twice.

The following table describes the possible bill validator events:

EVENT NAME	DESCRIPTION
$1 BILL STACKED	A $1 bill was accepted and stacked.
$2 BILL STACKED	A $2 bill was accepted and stacked.
$5 BILL STACKED	A $5 bill was accepted and stacked.
$10 BILL STACKED	A $10 bill was accepted and stacked.
$20 BILL STACKED	A $20 bill was accepted and stacked.
$50 BILL STACKED	A $50 bill was accepted and stacked.
$100 BILL STACKED	A $100 bill was accepted and stacked.
$500 BILL STACKED	A $500 bill was accepted and stacked.
$1000 BILL STACKED	A $1000 bill was accepted and stacked.
BV RESET ERROR	The bill validator did not reset correctly.
BV JAM	A bill jammed in the bill validator mechanism.
BV COMM ERROR	CPU could not communicate with the bill validator.
BV OUT OF SERVICE	The bill validator was set to the “Out of Service” condition from the Configuration menu.
BV IN SERVICE	Bill validator was set to the “In Service” condition from the Configuration menu.
BV CASHBOX REMOVED	Bill cassette was removed from the bill validator.
BV CASHBOX INSERTED	Bill cassette was inserted in the bill validator.
BV CASHBOX FULL	The bill cassette could not accept more bills.
BV GENERAL ERROR	A bill validator malfunction condition occurred.
BV CHEATED	A possible “Act of Mischief” condition was detected.
BV RESET OK	A bill validator fault occurred and it reset, or the bill validator was power up.

Viewing Bill Validator Errors

1. Press **SPIN REELS** or **MAX BET** to display the desired error category.
   - Operation Errors [1] – Errors regarding bill validator operation.
   - Failure Errors [2] – Errors regarding bill validator failures.
   - Rejection Errors [3] – Errors regarding the rejection of bills by the validator.
2. Press **BET ONE** to select the displayed error category.
3. Press **SPIN REELS** or **MAX BET** to scroll through the listing of events.
4. To view the number of events for the selected event, press **BET ONE**.
5. To return to the Main menu, press **COLLECT** twice.

The following tables describe the possible bill validator events

OPERATION ERRORS		
ERROR	**ITEM**	**DESCRIPTION**
Pwr Up/Acptr	1	The number of times the bill validator was powered-up with the bill validator in the accepting process of vending a bill.
Pwr Up/Stkr	2	The number of times the bill validator was powered-up with the bill validator in the stacking process of vending a bill.
Stacker Full	3	The number of times the bill stacker was full.
Stacker Open	4	The number of times the bill cassette was removed.
Jam Acceptor	5	The number of times a bill jam occurred in the bill acceptor head portion of the bill validator.
Jam Stacker	6	The number of times a bill jam occurred inside the bill stacker or bill transport unit.
Pause	7	The number of times the bill validator was unable to operate because a second bill was inserted while the first bill was being transported to the bill stacker.
Cheated	8	The number of times an event occurred, which may have been an act of mischief.
Failure	9	The number of times a failure occurred.
Commun-ication	10	The number of times an error was detected in the bill validator communication data.
Invalid Cmd	11	The number of times an invalid command was received by the bill validator from the controller.

FAILURE ERRORS		
ERROR	**ITEM**	**DESCRIPTION**
Stacking	1	The number of times the bill stacker failed to function correctly.
Transp Speed	2	The number of times the bill transport unit's speed failed to meet specifications.
Transp Motor	3	The number of times the bill transport unit's motor failed to function correctly.

Failure Errors Cont'd

ERROR	ITEM	DESCRIPTION
Cashbox	4	The number of times the cashbox failed to function correctly.
Val Head	5	The number of times the bill validator head failed to function correctly.
Boot ROM	6	The number of times the boot ROM failed to function correctly.
Extern ROM	7	The number of times the external ROM failed to function correctly.
ROM	8	The number of times the ROM failed to function correctly.
Ext ROM Write	9	The number of times the external ROM failed to write correctly.

REJECTION ERRORS		
ERROR	**ITEM**	**DESCRIPTION**
Insert Err	1	The number of times a bill was rejected because it was inserted incorrectly.
Magnetic Err	2	The number of times a bill was rejected because of a magnetic error.
Acceptor Head	3	The number of times a bill was rejected by the bill acceptor head portion of the bill validator.
Compensation	4	The number of times a bill was rejected because of a compensation error.
Transport	5	The number of times a bill was rejected by the bill transport unit portion of the bill validator.
Validation	6	The number of times an invalid bill was rejected by the bill validator.
Insert Direction	7	The number of times a bill was rejected because the bill was inserted in the wrong direction.
Double Insertion	8	The number of times a bill was rejected because more than one bill was inserted.
Denom Disabled	9	The number of times a bill was rejected because the bill denomination was disabled.
Max Credits	10	The number of times a bill was rejected because the bill denomination, if accepted, exceeds the maximum number of credits allowed.
Operation Err	11	The number of times a bill was rejected because of a bill validator operation error.
Bill Rejection	12	The number of times a bill was rejected because of a bill rejection operation error.
Bill Length	13	The number of times a bill was rejected because an invalid bill length was detected.
Photo Pattern	14	The number of times a bill was rejected because of a photo pattern error.
Mars Rejection	15	The number of times a bill was rejected (only when machine is equipped with a Mars bill validator).

Event History

Select this menu item to view up to 100 of the last game and machine events. The displayed events are time and date stamped for easy reference. These events are useful for diagnosing game/machine problems or resolving player disputes.

Note: Refer to Event Error and Event Code table in Appendix C of this document for a listing and definitions and recommended actions for all events.

Bill validator events are not included under this menu option. Refer to the Bill Validator Events menu item [10] from the Main menu to view bill validator events.

To access the Event History log option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **EVENT HISTORY** option [11].
2. Press **BET ONE** to select the **EVENT HISTORY** option.
3. Press **SPIN REELS** or **MAX BET** to scroll through the listing of events.

   Up to 100 events can be displayed. An event number is displayed on the **Credits In** meter, the smaller numbers representing the most recent events.
4. To view the **DATE** and **TIME** of the selected event, press **BET ONE**.
5. To continue to scroll through the listing of events, press **SPIN REELS** or **MAX BET**.
6. To return to the Main menu, press **COLLECT** twice.

Previous Games

Select this menu item to view up to 100 of the previous games. The reels rotate to the positions of each game conclusion as the games are selected. The values for each previous game are displayed on the Winner Paid, Credits In, and Credits meters. The previous game number starting with the last game played is shown on the alphanumeric display.

Note: The main machine door must be open to access the Previous Games option [12] from the Main menu. If the machine door is closed, the Previous Games option will not appear in the Main menu listing.

To access the Previous Games option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **PREV GAMES** option [12].
2. Press **BET ONE** to select the **PREV GAMES** option.
3. Press **SPIN REELS** or **MAX BET** to scroll through the listing of previous games.

   Up to 100 previous games can be displayed. To jump ten previous games, hold down **BET ONE** and press **SPIN REELS** or **MAX BET**.
4. Press **BET ONE** to view each of the following previous game details:
   - Bonus Win amount(s), if any.
   - Start Credits (credit amount at start of previous game).
   - Coins Inserted (0 if credits were played).
   - Bill Credits (0 if credits or coins inserted).
   - Coins or Credits collected.
   - Handpay Amount.
   - Date of previous game (mm/dd/yy).
   - Time of previous game (hh:mm:ss).
6. To return to the Main menu, press **COLLECT** twice.

Configure

Select this option to view and change various game and machine options.

Note: The main machine door must be open to access the Configure option from the Main menu. If the machine door is closed, the Configure option will not appear in the Main menu listing.

The following options are available from the Configure menu.

OPTION	ITEM	DESCRIPTION
PAY/CREDIT LIMITS	1	Displays the pay and credit limits for the game in number of coins. The single win threshold, maximum credits and maximum hopper pay values can be set from this menu option.
SOUND	2	Displays the current game audio volume levels for general win tunes, jackpots, security, effects and music. The individual volume levels for each can be changed from this menu option.
PROGRES-SIVES	3	Configured when operating as a multi-site progressive (MSP) game or locally when interfaced with a ProLink® controller. The progressive port is enabled in order to communicate with a preprogrammed MSP Data Port Unit (DPU). The game address must be programmed and is dependent upon the number of games in a bank. Consult with CDS Field Service for details.
MONITOR PORT	4	Displays the monitor port configuration for machines connected to a slot accounting/player tracking system. The monitor port protocol and address and lockout status can be changed from this menu option.
BILL VAL	5	Displays the bill validator configuration. The bill validator and individual bill denominations can be enabled or disabled from this menu option.
AUTO SPIN	6	Allows the operator to enable or disable the SPIN REBET function on multi-payline games with bet buttons with more than one coin bet per line.
SET TIME	7	Displays the current date and time configuration for the machine. The hour, minute, month, date and year can be changed from this menu option.
HARD MTR CHK	8	Enables or disables the automatic sensing of hard meter faults. The number of hard meters installed varies by gaming jurisdiction. Disabling sensing for those meters that are not equipped will prevent the system from reporting faulty meter events.
REEL ALIGN	9	Allows the operator to correctly align reel symbols with the payline.

Pay/Credit Limits

Select this option to view and/or change the current game configuration for the following game parameters:

- Maximum Win Threshold
- Maximum Game Credits
- Maximum Hopper Pay

To access the Pay/Credit Limits option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **CONFIGURE** option [13].
2. Press **BET ONE** to select the **CONFIGURE** option.
3. Press **SPIN REELS** or **MAX BET** to display the **PAY/CREDIT LIMITS** option [1].
4. Press **BET ONE** repeatedly to display the desired parameter from the menu of the following Pay/Credit Limits parameters:

PARAMETER	ACCEPTABLE RANGE
WIN THRHOLD	Range = 50 coins to $1200 coin value in 50 coin increments. Example: Nickels max = 1200 x .05 = 24,000 coins. *Note:* Some jurisdictions require game chips that limit maximum of $600 coin value.
MAX CREDITS	Range 0 to $2500 in 50 coin increments.
MAX HPR PAY	Range 0 to 50,000 coins in 50 coin increments.
MAX TKT PAY	Range 0 to $1199 in 50 coin increments.

The value is displayed on the winner paid meter.

7. Press **SPIN REELS** to decrease the value or **MAX BET** to increase the value.
8. To save the new value, press **COLLECT**.
9. To view or change another parameter, press **BET ONE** to display the desired option.
10. To exit to the Main menu, press **COLLECT**.

Sound

Select this option to view and/or change the current game audio volume levels for general Win, Jackpot, Security tunes, sound effects and music.

To access the Sound option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **CONFIGURE** option [13].
2. Press **BET ONE** to select the **CONFIGURE** option.
3. Press **SPIN REELS** or **MAX BET** to display the **SOUND** option [2].
4. Press **BET ONE** repeatedly to display the desired parameter from the menu of the following Sound parameters:

    - GENERAL VOL
    - SECURITY VOL
    - WIN TUNE VOL
    - EFFECTS VOL
    - JACKPOT VOL
    - MUSIC VOL

11. Press **BET ONE** to select the desired parameter.
12. The current volume level is displayed on the **WINNER PAID** meter.
13. Press **SPIN REELS** to decrease or **MAX BET** to increase the level.

    The volume level is shown on the Winner Paid meter where lower numbers represent lower volume levels. The sound level from the speakers is the actual level.
14. To save a changed value, press **COLLECT**.
15. To view or change another parameter, press **BET ONE** to display the desired option.
16. To exit to the Main menu, press **COLLECT**.

Progressives

Select this option to add or change the progressive jackpot system (optional) interface protocol and address.

To access the Progressives option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **CONFIGURE** option [13].
2. Press **BET ONE** to select the **PROGRESSIVES** option.
3. Press **SPIN REELS** or **MAX BET** to display the **PROGRESSIVES** option [3].
4. Press **BET ONE** to select the **PROGRESSIVES** option.
5. Press **BET ONE** to select the desired protocol from the following:
    - NONE
    - RBP
    - ACCT PORT
    - AUX 485

Note: Refer to the progressive system documentation to determine the correct protocol.

6. To view the current address for the selected protocol, press **BET ONE**.
7. The current machine address is displayed on the **Winner Paid** meter.
8. To change the address, press **SPIN REELS** or **MAX BET** until the desired address is displayed on the Winner Paid meter.
9. The address corresponds to a specific machine in the progressive bank and an address range of 1 – 32 is available. Each machine on the progressive bank must have a unique address.

Monitor Port

Select this option to add or change the current slot accounting/player tracking interface protocol and address.

To access the Monitor Port option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **CONFIGURE** option [13].
2. Press **BET ONE** to select the **CONFIGURE** option.
3. Press **SPIN REELS or MAX BET** to display the **MONITOR PORT** option [4].
4. Press **BET ONE** to select the **MONITOR PORT** options menu.
5. Press **SPIN REELS** or **MAX BET** to scroll through the list of Monitor Port protocol options.
6. Press **BET ONE** to select one of the following protocols
    - None
    - GDAP (8-Bit – early CDS OASIS® protocol)
    - GDAP (9-Bit – current CDS OASIS protocol)
    - SAS (Acres, EDT, IGT®, Mikohn® protocol)
    - BESS (Bally® protocol)
    - SMS

Note: Refer to the slot accounting/player tracking system documentation to determine the correct protocol.

7. Press **BET ONE** to view the current **ADDRESS**.

    The address corresponds to a specific bank of machines connected to the accounting/player tracking system. An address range of 1 – 32 is available.

8. Press **BET ONE** to view the current **ENB LOCKOUT** status.

    The lockout status indicates if the machine is enabled or disabled from communicating with the accounting/player tracking system. A value of "0" on the **Winner Paid** meter indicates the game is locked out. A value of "1" indicates the game is unlocked. To change the lockout status press **SPIN REELS** or **MAX BET** to change the value on the Winner Paid meter.

9. Press **BET ONE** to view the current machine ID (address). Each machine must have a unique address to identify it on the accounting/player tracking system. An ID range of 0 – 65,535 is available. Press **SPIN REELS** or **MAX BET** to select the desired machine ID.
10. To save the changes, press **COLLECT**.
11. To return to the Main menu, press **COLLECT** again.

Bill Validator

Select this option to view the current status of the bill validator and each bill denomination. The bill validator or any bill denomination can be disabled from this menu.

To access the Bill Validator option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **CONFIGURE** option [13].
2. Press **BET ONE** to select the **CONFIGURE** option.
3. Press **SPIN REELS** or **MAX BET** to display the **BILL VAL** option [5].
4. Press **BET ONE** to select the **BILL VAL** option.
5. Press **BET ONE** to view the status of each of the following options on the Winner Paid meter (0 = disabled, 1 = enabled):
    - BV ENABLE (enables or disables bill validator)
    - BILLs ($1, $2, $5, $10, $20, $50, $100)
6. To change the status of any of these parameters, press **SPIN REELS** or **MAX BET** to toggle the **Winner Paid** meter to the desired value.
7. To save the changes, press **COLLECT**.
8. To return to the Main menu, press **COLLECT** again.

Auto Spin

Allows the operator to enable or disable the SPIN REBET function on multi-payline games with bet buttons with more than one coin bet per line. When enabled, pressing the desired bet per play button will start the game. When disabled, the desired bet per play button is pressed first followed by the SPIN REBET button to start the game.

Set Time

Select this option to view and/or set the game internal clock/calendar.

To access the Set Time option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **CONFIGURE** option [13].
2. Press **BET ONE** to select the **CONFIGURE** option.
3. Press **SPIN REELS** or **MAX BET** to display the **SET TIME** option [7].
4. Press **BET ONE** to select the **SET TIME** option. The **HOUR** parameter is shown on the alphanumeric display and the current hour value is shown on the **Winner Paid** meter.
5. To change the hour value, press **SPIN REELS** or **MAX BET** to increment the value to the desired hour.
6. Press **BET ONE** to display the **MINUTE** parameter and corresponding value.
7. To change the minute value, press **SPIN REELS** or **MAX BET** to increment the value to the desired minute.
8. Press **BET ONE** to display the **MONTH** parameter and corresponding value.
9. To change the minute value, press **SPIN REELS** or **MAX BET** to increment the value to the desired month.
10. Press **BET ONE** to display the **DAY** parameter and corresponding value.
11. To change the day value, press **SPIN REELS** or **MAX BET** to increment the value to the desired day.
12. Press **BET ONE** to display the **YEAR** parameter and corresponding value.
13. To change the year value, press **SPIN REELS** or **MAX BET** to increment the value to the desired year.
14. To save the changes, press **COLLECT**.
15. To return to the Main menu, press **COLLECT** again.

Hard Meter Check

Select option to enable or disable automatic testing of various hard meters.

The CPU checks each meter for the correct current flow when a meter increment is called for. Installation of mechanical meters varies by gaming jurisdiction. If a hard meter is not installed, the operator can turn off the automatic current verification for that meter to prevent unnecessary meter failure events from occurring.

The hard meter check can be disabled for the following meters:

- Coin-In
- Coin-Out
- Coin-Drop
- Games Played
- Jackpots
- Bill Drop

To access the Hard Meter Check option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **CONFIGURE** option [13].
2. Press **BET ONE** to select the **CONFIGURE** option.
3. Press **SPIN REELS** or **MAX BET** to display the **HARD METER CHK** option [8].
4. Press **BET ONE** to select the **HARD METER CHK** option
5. Press **BET ONE** to select the desired meter.
6. The status of the meter check function is displayed on the Winner Paid meter. Where 0 = meter check is disabled and 1 = meter check enabled.
7. Press **SPIN REELS** or **MAX BET** to toggle the meter check status to 0 or 1 on the Winner Paid meter.
8. To return to the Configure menu, press **COLLECT**.
9. To return to the Main menu, press **COLLECT** again.

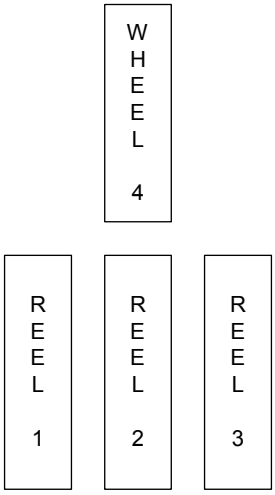
Reel Alignment

Select this option to verify that the alignment of the machine reel symbols to the payline is correct. The alignment can also be adjusted from this menu option.

To access the Reel Alignment option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **CONFIGURE** option [13].
2. Press **BET ONE** to select the **CONFIGURE** option.
3. Press **SPIN REELS** or **MAX BET** to display the **REEL ALIGN** option [9].
4. Press **BET ONE** to select the **REEL ALIGN** option.

   The three reels and the bonus wheel will rotate to the home position and REEL #1 will appear on the alphanumeric display.



5. Close the machine door and check to see if the reel #1 symbol is aligned correctly with the payline. If not, press **SPIN REELS** or **MAX BET** until the symbol is correctly aligned with the payline.
6. To check the alignment of the remaining reels and top wheel, press **BET ONE** to select the desired reel or wheel. If necessary repeat step 5 to adjust any symbols that are not correctly aligned with the payline.
7. To save the changes, press **COLLECT**.
8. To return to the Main menu, press **COLLECT** again.

Machine Test

Select this option to test various machine and game hardware and functions.

Note: The main machine door must be open to access the Machine Test option from the Main menu. If the machine door is closed, the Machine Test option will not appear in the Main menu listing.

The following options are available from the Machine Test menu.

OPTION	DESCRIPTION
DIRECT INPUT	This option allows the operator to test the following functions: Coin In, Coin In Error, Coin Out, Hopper Full, Handle Pull and Handle Release.
MUX INPUTS	This option allows the operator to test the following switches: Cashout (Collect), Bet 1, Spin Wheel, Change, Attendant Key, Menu Key, Drop Door, Main Door, Bill Door and Logic (CPU) door.
OPTIONS	Displays the hardware jumper and/or DIP switch settings on the VIG-II CPU board.
DIRECT OUTS	This option allows the operator to test the following machine output functions: coin comparitor enable, handle mechanism solenoid, and coin diverter operation. In addition, the following mechanical meters can be tested (when equipped): coin-in, coin-out, coin-drop, games played, jackpot and bills-in.
ALL LAMPS	This option illuminates all machine lamps including deck, tower and bill validator bezel.
SINGLE LAMPS	This option allows the operator to test each machine lamp individually or by automatic sequencing.
COMM TEST	This option allows the operator to test the communications between the game and external progressive systems and slot accounting/player tracking systems.
HOPPER TEST	This option allows the operator to test the coin hopper functions and timing.
BILL VAL	This option allows the operator to test the bill validator functions.
MEC REEL TST	This option allows the operator to verify reel symbols to the par sheet.

Direct Input Tests

Select this option to test the following game/machine functions:

- Coin-In
- Coin-In Error
- Coin Out
- Hopper Full
- Handle Pull
- Handle Release

To access the Direct Input option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **MACHINE TEST** option [14].
2. Press **BET ONE** to select the **MACHINE TEST** option.
3. Press **SPIN REELS** or **MAX BET** to display the **DIRECT INPUT** option [1].
4. Press **BET ONE** to access the **DIRECT INPUT** menu.
5. Press **SPIN REELS** or **MAX BET** to display the desired test option, and press **BET ONE** to select the option.
6. Refer to the table below for the procedure for testing the following functions:

FUNCTION	PROCEDURE
Coin-In	Drop a coin of the proper denomination for the machine into the coin slot. The COIN IN message should flash to indicate that the coin comparitor accepted the test coin.
Coin-In Error	This test is used to verify that the machine senses a Reversed Coin condition. Use a coin of the proper denomination that has a string attached. Drop the coin into the coin chute and pull it back out after it passes through the coin comparator. The COIN IN ERR message should flash to indicate that the reversed coin was detected. If a coin with string is unavailable, carefully remove the comparator from the bracket and turn it upside down. Drop a coin into the comparator's out chute. The COIN IN ERR message should flash.
Coin Out	Manually operate the hopper rocker roller coin-out switch. The COIN OUT message should flash to indicate that the switch is functioning properly.
Hopper Full	Connect a wire jumper between the hopper full probe and chassis ground. The HOPPER FULL message should flash to indicate that the probe circuitry is functioning correctly.
Handle Pull	Pull the game handle. The HANDLE PULL message should flash to indicate that the handle switch is functioning correctly.
Handle Release	Pull the game handle. The HANDLE RELEASE message should flash to indicate that the handle release solenoid is functioning correctly.

7. To return to the **DIRECT INPUTS** menu, press **COLLECT**.
8. To return to the Main menu, press **COLLECT** again.

Multiplexed Input Tests

Select this option to test the game button and switch functions:

- Cashout Button
- Bet One Button
- Spin Wheel Button
- Change Button
- Attendant Key
- Menu Key
- Drop Door Switch (optional)
- Main Door Switch
- Bill Door Switch
- Logic (CPU) Door Switch

To access the Multiplex Inputs option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **MACHINE TEST** option [15].
2. Press **BET ONE** to select the **MACHINE TEST** option.
3. Press **SPIN REELS** or **MAX BET** to display the **MUX INPUTS** option [2].
4. Press **BET ONE** to access the **MUX INPUTS** menu.
5. Press **SPIN REELS** or **MAX BET** to display the desired test option, and press **BET ONE** to select the option.
6. Refer to the table below for the procedure for testing the following functions:

INPUT	PROCEDURE
CASHOUT (COLLECT)	Press COLLECT. The CASHOUT message should flash to indicate that the button switch is functioning.
BET ONE	Press BET ONE. The BET 1 message should flash to indicate that the button switch is functioning.
SPIN WHEEL	Press SPIN WHEEL. The SPIN WHEEL message should flash to indicate that the button switch is functioning.
CHANGE	Press CHANGE. The CHANGE message should flash to indicate that the button switch is functioning.
ATTENDANT KEY	Rotate the key switch on the right side of the machine cabinet clockwise. The ATTENDANT KEY message should flash to indicate that the switch is functioning.
MENU KEY	Rotate the key switch on the right side of the machine cabinet counter-clockwise. The MENU KEY message should flash to indicate that the switch is functioning.
DROP DOOR SW	If an *optional* drop door switch is connected to the machine, open the drop door. The DROP DOOR SW message should flash to indicate that the switch is functioning.

INPUT	PROCEDURE
MAIN DOOR SW	Operate the main door Cherry® switch. The MAIN DOOR message should flash to indicate that the switch is functioning.
BILL DOOR SW	Two separate switches can initiate the bill door message. The first being a magnetic switch located near the hinge on the belly glass access panel that provides access to the bill validator housing without opening the main machine door. The second is a magnetic switch located inside the bill cassette compartment door. Test both switches by opening the doors. The BILL DOOR SW message should flash to indicate that the switches are functioning.
LOGIC DOOR SW	Open the door to the CPU board housing. The LOGIC DOOR SW message should flash to indicate that the switch is functioning.

7. To return to the **MACHINE TEST** menu, press **SPIN REELS** and **MAX BET** simultaneously.
8. To return to the Main menu, press **COLLECT**.

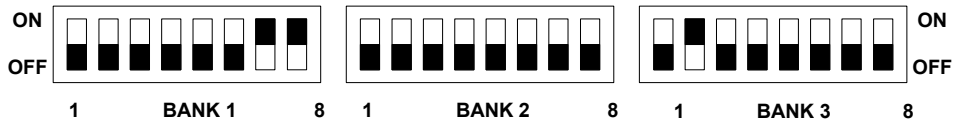
Options

Select this option to view VIG-II logic board DIP switch settings. This option provides a display of switch settings without removing the logic board from the logic housing. Actual switch setting must be made manually on the logic board.

To access the Options category from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **MACHINE TEST** option [14].
2. Press **BET ONE** to select the **MACHINE TEST** option.
3. Press **SPIN REELS** or **MAX BET** to display the **OPTIONS** option [3].
4. Press **BET ONE** to access the **OPTIONS** menu.
5. Press **SPIN REELS** or **MAX BET** to display the desired switch settings.

The three switches displayed correspond to the DIP switch locations on the logic board as shown below. 0 = OFF and 1 = ON



BANK	SWITCH	DESCRIPTION
1	1 – 6	Reserved for future use.
	7	**BILLS TO HARD DROP** – when set to ON and a valid bill is accepted, the COIN DROP hard meter will increment along with coin. *Example:* for a nickel denomination machine, one-dollar bill will increment the COIN DROP hard meter by 20. When switch 7 is set to OFF, the COIN DROP hard meter will only increment when coins are inserted. ***This option must be set to conform to property policy.***
	8	**COLLECT BILLS** – when set to ON (*as required in some gaming jurisdictions*), valid bills are immediately dispensed as coin from the hopper and are ***not*** shown on the Credits meter.
2	1 – 8	Reserved for future use.
3	1	Reserved for future use.
	2	**DISPLAY TYPE** – when a light emitting diode (LED) display is used (standard for US-0320 games) this switch must be set to 1. If a liquid crystal display (LCD) is used, this switch must be set to OFF.
	3 – 8	Reserved for future use.

6. To return to the **MACHINE TEST** menu, press **COLLECT**.
7. To return to the Main menu, press **COLLECT** again.

Direct Outputs

Select this option to test the following machine devices:

- Coin Comparitor Enable
- Handle Mechanism Solenoid
- Coin Diverter
- Coin In Meter
- Coin Out Meter
- Coin Drop Meter
- Games Played Meter
- Jackpot Meter
- Bills In Meter

To access the Direct Outputs option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **MACHINE TEST** option [14].
2. Press **BET ONE** to select the **MACHINE TEST** option.
3. Press **SPIN REELS** or **MAX BET** to display the **DIRECT OUTS** option [4].
4. Press **BET ONE** to access the **DIRECT OUTS** menu.
5. Press **SPIN REELS** or **MAX BET** to display the desired test option, and press **BET ONE** to select the option.
6. Refer to the table below for the procedure for testing the following functions:

Direct Output Tests	
BUTTON/SWITCH	**PROCEDURE**
COIN MECH EN	While observing the green light emitting diode (LED) on the coin comparitor, press BET ONE repeatedly. The LED should turn on and off to indicate that the comparitor is being enabled and disabled.
HANDLE MECH	Press BET ONE and pull down on the game handle. The handle should move freely, indicating that the solenoid has released properly. Release the handle and verify that the solenoid latches the handle.
COIN DIVERTER	Press BET ONE to toggle the coin diverter between the hopper-bowl to the drop chute position. The diverter solenoid should firmly position the diverter chute to the drop chute and the return spring should firmly force the diverter chute to the hopper bowl position.
COIN IN MTR	If the game is equipped with a Coin-In meter, press BET ONE. The meter should increment ½ digit. Press BET ONE again. The meter should increment another ½ digit.

Direct Output Tests Cont'd

Direct Output Tests	
BUTTON/SWITCH	**PROCEDURE**
COIN OUT MTR	If the game is equipped with a Coin-Out meter, press BET ONE. The meter should increment ½ digit. Press BET ONE again. The meter should increment another ½ digit.
COIN DRP MTR	If the game is equipped with a Coin-Drop meter, press BET ONE. The meter should increment ½ digit. Press BET ONE again. The meter should increment another ½ digit.
GAME PL MTR	If the game is equipped with a Games-Played meter, press BET ONE. The meter should increment ½ digit. Press BET ONE again. The meter should increment another ½ digit.
JACKPOT MTR	If the game is equipped with a Jackpot meter, press BET ONE. The meter should increment ½ digit. Press BET ONE again. The meter should increment another ½ digit.
BILLS IN MTR	If the game is equipped with a Bills-In meter, press BET ONE. The meter should increment ½ digit. Press BET ONE again. The meter should increment another ½ digit.

7. To return to the **MACHINE TEST** menu, **SPIN REELS** and **MAX BET** simultaneously.
8. To return to the Main menu, press **COLLECT**.

All Lamps Test

Select this option to test all game lamps simultaneously.

To access the All Lamps Test option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **MACHINE TEST** option [14].
2. Press **BET ONE** to select the **MACHINE TEST** option.
3. Press **SPIN REELS** or **MAX BET** to display the **ALL LAMPS** option [5].
4. Press **BET ONE** to access the **ALL LAMPS** option.
5. Press **BET ONE** to turn on all game lamps. The **COLLECT** lamp will flash.
6. After you have verified that all lamps are illuminated, press **COLLECT** to return to the **MACHINE TEST** menu.
7. To return to the Main menu, press **COLLECT** again.

Single Lamps Test

Select this option to test each game lamp individually or view each lamp as the system sequences through a preset pattern.

To access the Single Lamp Test option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **MACHINE TEST** option [14].
2. Press **BET ONE** to select the **MACHINE TEST** option.
3. Press **SPIN REELS** or **MAX BET** to display the **SINGLE LAMPS** option [6].
4. Press **BET ONE** to access the **SINGLE LAMPS** option.
5. To test each game lamp manually, press **SPIN REELS** and then **SPIN REELS** or **MAX BET** to illuminate each lamp.

   OR

   To let the system sequence each lamp in sequence, press **BET ONE**.
6. After you have verified that all lamps are illuminated, press **COLLECT** to return to the **MACHINE TEST** menu.
7. To return to the Main menu, press **COLLECT** again.

Comm Test

Select this option to test the communications between the game CPU and other devices such as the slot accounting/player tracking system, bill validator and progressive system. This diagnostic tool is useful when troubleshooting.

To access the Comm Test option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **MACHINE TEST** option [14].
2. Press **BET ONE** to select the **MACHINE TEST** option.
3. Press **SPIN REELS** or **MAX BET** to display the **COMM TEST** option [7].
4. Press **BET ONE** to select the **COMM TEST** option.
5. Press **SPIN REELS** or **MAX BET** to scroll through the Comm Test menu. This menu includes the following:
    - ACCNT (game accounting system interface).
    - BILL VAL (bill validator).
    - PROG (progressive system).
    - CLEAR ERRORS (resets communications parameters to zero, allowing detailed analysis when troubleshooting).

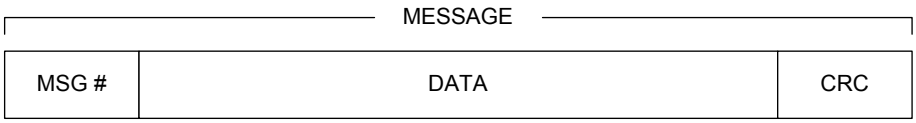
Note: If any of the above systems are not active (i.e. not setup from the configuration menu), the message "INVALID PORT #" is displayed.

6. Press **BET ONE** to select the desired menu option.
7. Press **SPIN REELS** or **MAX BET** to display the following communications parameters:

PARAMETER	DESCRIPTION
GOOD	Percent of total messages received that were good since last reset.
TOT GOOD MSG	Total number of good messages received since last reset.
TOT BAD MSG	Total number of bad messages received since last reset.
NO RESP ERRS	Total number of no response errors received since last reset. CPU sent a request for information but received no response.
BAD PACKETS	Total number of bad packets received since last reset.
CRC ERRORS	Total number of bad messages that were received with incorrect CRC checksum.
SEQUENCE ERR	Total number of bad messages that were received with a message number out of sequence.

The above totals are shown on the Credits meter except for % GOOD messages, which is shown on the game alphanumeric display.

The communications message structure is shown in the illustration below.



Message Structure

8. To reset the communications parameters counters, select **CLEAR ERRORS** and press **BET ONE**.
8. To return to the to return to the **MACHINE TEST** menu, press **COLLECT**.
9. To return to the Main menu, press **COLLECT** again.

Hopper Test

Select this option to test the coin hopper. This test dispenses coins from the hopper and measures the coin out pulse duration. This test provides a quick way to confirm suspect hopper operation.

To access the Comm Test option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **MACHINE TEST** option [14].
2. Press **BET ONE** to select the **MACHINE TEST** option.
3. Press **SPIN REELS** or **MAX BET** to display the **HOPPER TEST** option [8].
4. Press **BET ONE** to select the **HOPPER TEST** option.

   A scrolling message on the alphanumeric display instructs you to press **BET ONE** when you are ready to start the test. Verify that there are coins in the hopper and the coin tray is installed on the machine before starting.
5. Press **BET ONE** to start the test.

   Ten coins will be ejected from the hopper. The **Winner Paid** meter displays the coin out pulse duration (milliseconds) and the Credits meter displays the last coin pulse duration. The number of coins ejected is displayed on the **Credits In** meter

***Requirement*:** The average pulse duration must be between 30 and 300 milliseconds and the number of coins in the tray is the same as the number displayed on the **Credits In** meter. If the pulse duration requirement is not met or the number of coins ejected is different than the number displayed on the **Credits In** meter, adjust the hopper rocker-roller mechanism and repeat the test. Continue to adjust and retest until the requirements are met.

6. When you are satisfied that the hopper is functioning properly, press **COLLECT** to exit to the **MACHINE TEST** menu.

   A scrolling message on the alphanumeric display reminds you to return the ejected to the hopper.
7. To return to the Main menu, press **COLLECT** again.

Bill Validator Test

Select this option to test the bill validator. This option allows the operator to verify that the bill validator will accept enabled and reject non-enabled denominations. Bills are returned without being stacked in the bill cassette. When inserting bills, the system will reject the bill and display the reason for rejecting unacceptable bills or bills of a disabled denomination.

To access the Bill Validator Test option from the Main menu, follow these steps:

1. Open the machine door.
2. Press **SPIN REELS** or **MAX BET** to display the **MACHINE TEST** option [14].
3. Press **BET ONE** to select the **MACHINE TEST** option.
4. Press **SPIN REELS** or **MAX BET** to display the **BILL VAL** option [9]. Press **BET ONE** to select the **BILL VAL** option.

   If the bill validator has been enabled from the Configuration menu, the **IDLE** message is shown on the alphanumeric display. If it is disabled, the **OFF-LINE** message is shown.
5. To test the bill validator, insert bills of various denominations. Acceptable bill will be drawn into the validator.

   If the bill is accepted, the **ESCROW** message is displayed briefly and the bill is returned and the denomination displayed on the **Winner Paid** and **Credits** meters.

   If the bill is rejected, it will be returned and the reason for rejection is shown on the alphanumeric display.
6. To return to the **BILL VAL** menu, press **COLLECT**.
7. To return to the Main menu, press **COLLECT** again.

Mech Reel Test

Select this option to verify that the reel symbols match the game program reel stops. It is important to first check the reel alignment prior to the symbol mach. Refer to the Reel Alignment procedure accessible from the Configuration menu as detailed on page 23.

1. Open the machine door.
2. Press **SPIN REELS** or **MAX BET** to display the **MACHINE TEST** option [14].
3. Press **BET ONE** to select the **MACHINE TEST** option.
4. Press **SPIN REELS** or **MAX BET** to display the **MEC REEL TST** option [10].
5. Press **BET ONE** to select the **MEC REEL TST** option.
6. Press **SPIN REELS** or **MAX BET** to select the desired reel (displayed on the Credits meter).
7. Press **BET ONE** to spin the reel to the various symbols or blank reel stops.

Note: The **Winner Paid** meter displays the number of symbols that have been checked for the selected reel. This meter will reset when the maximum number of symbols has been checked. The values increment when reels 1 – 3 are selected. When the bonus wheel (#4) is selected, the values decrement from the maximum number of symbols.

8. To return to the **MACHINE TEST** menu, press **COLLECT**.
9. To return to the Main menu, press **COLLECT** again.

Game Service State

Making the Game Unavailable for Play

1. Open the main door.
2. Rotate the Attendant key counterclockwise to access the Main menu.
3. Press **SPIN REELS** or **MAX BET** to display the **OUT OF SERVC** option [15].
4. Press **BET ONE** to select the **OUT OF SERVC** option.
5. Close the main door.
6. Rotate the Attendant Key clockwise to the center position.

   The '**OUT OF SERVICE**' message is scrolled on the alphanumeric display.

Making the Game Available for Play

1. Open the main door.
2. Rotate the Attendant key counterclockwise to access the Main menu.
3. Press **SPIN REELS** or **MAX BET** to display the **IN SERVICE** option [15].
4. Press **BET ONE** to select the **IN SERVICE** option.
5. Close the main door.
6. Rotate the Attendant Key clockwise to the center position.

   The '**GAME RESET**' and '**DOOR CLOSED**' messages are scrolled on the alphanumeric display. The game is ready for play.

Initialize Game

This option is used to initialize the game for the first time or to change some game parameters such as denomination. This menu option is only displayed under the following conditions:

- The game initialization (birthing) chips U63 and U64 have been installed on the logic board.
- An unrecoverable system error has occurred.
- A game EPROM option has been changed (game, schedule or denomination).

To initialize the game, follow these steps:

1. Turn off the AC power to the machine.
2. Remove the logic board from the logic compartment.
3. Install the initialization chips for the desired game into IC sockets U63 and U64 on the logic board. Verify that the chips are inserted correctly in the appropriate socket.
4. Insert the logic board from the logic compartment.
5. Turn on the AC power to the machine.
6. Open the machine door.
7. Turn the Attendant key counterclockwise.

   The alphanumeric display will show the **INIT GAME** message.
8. Press **BET ONE** to sequence through the following parameters:
   - HOUR
   - MIN
   - MONTH
   - DAY
   - YEAR
9. Check the value of each parameter on the **Winner Paid** meter and if necessary, adjust the value by pressing **SPIN REELS** or **MAX BET**.
10. When you are satisfied with the time and date settings, press **COLLECT**.
11. Press **BET ONE** to sequence through the following parameters:
    - GAME
    - SCHEDULE
    - DENOMINATION
    - CASHLESS ON/OFF

Caution: ***When setting the denomination, verify that it matches the coin comparitor denomination, coin backing, hopper denomination, reel glass overlay and the tower light color.***

12. Check the value of each parameter on the **Winner Paid** meter and if necessary, adjust the value by pressing **SPIN REELS** or **MAX BET**.
13. When you are satisfied with the parameter values, press **COLLECT**.
14. Read the messages on the alphanumeric display and press the associated buttons until the **INIT GAME** option is displayed.
15. Turn the Attendant key to the center position.
16. Turn off the AC power to the machine.
17. Remove the logic board from the logic compartment.
18. Remove the Initialization chips from the logic board and install the matching game chips.
19. Install the logic board in the logic compartment.
20. Turn on the AC power to the machine.
21. Set game parameters as required.

Init Log

Select this option to view various game parameters prior to the last game initialization. This option provides information that was current prior to a game initialization caused by the following conditions:

- The game birthing process has just been completed.
- An unrecoverable system error has occurred.

To access the Init Log option from the Main menu, follow these steps:

1. Press **SPIN REELS** or **MAX BET** to display the **INIT LOG** option [17].
2. Press **BET ONE** to select the **INIT LOG** option.
3. Press **SPIN REELS** or **MAX BET** to scroll the list of game parameters prior to the last game initialization.

   The following parameters are displayed:

   - Game Title
   - Schedule
   - Denomination
   - Coin-In Meter
   - Coin-Out Meter
   - Coin-Drop Meter
   - Date
   - Time
   - Cashless Status (ON/OFF)
   - Bonusing Status (ON/OFF)

4. To return to the **INIT LOG** option, press **COLLECT**.
5. To return to the Main menu, press **COLLECT** again.

Appendix A: Tech. Compliance Summary

Electrical Interference Immunity

The game electronics and mechanical subcomponents have maximum immunity from static discharge. The device exhibits total immunity to electro-static discharges up to 28 kV on all exterior surfaces.

The game power supply design includes line filtering and metal oxide varistor (MOV) surge suppressors to provide immunity to noise spikes on the AC line. The device does not exhibit disruption of any kind when subjected to a 680 V noise spike discharged from a 1 microfarad capacitor at a repetition frequency of 30 Hz at any AC wave phase angle.

The game recovers from an interruption of AC power without loss or corruption of critical game data. Upon recovery from a power failure, the game completes a self-test sequence, and then returns to the game state in effect prior to the power failure.

The microprocessor-based random number generator (RNG) and reel symbol selection process is impervious to influences from outside the device. The following techniques are employed:

- All electronic subassemblies, including the microprocessor controlling the RNG, are shielded to provide immunity to electro-magnetic interference, electrostatic interference and radio frequency interference (RFI).
- Where necessary, I/O lines are protected against electrostatic-induced surges with the use of current-limiting resistors and reversed biased diodes.
- The firmware contains no instructions allowing data received from another device to affect the RNG or the reel symbol selection process.

Coin Acceptor and Receiver

The game uses a Coin Mechanisms Incorporated, Model CC-46, COIN COMPARITOR® to discriminate between valid and invalid coins and to provide countermeasures against known cheating methods. The CC-46 can detect valid coins over slugs or incorrect denominations. The detection process is based upon coin size, thickness and the metallic content of the coin. All coins inserted into the CC-46 are compared to a sample coin. Coins of similar size and makeup to the sample coin are passed to the coin counting optics. Slugs and coins of the wrong denomination are returned to the player.

Potential valid coins that pass the metallic content test are subjected to further testing by the coin counting optics. Coins must travel in the correct direction and must activate optic detectors for a prescribed period of time to be considered valid. The CC-46 sends a valid coin pulse (28 ms duration) to the electronics when all tests are successfully completed. Failure of any of the coin counting optic tests causes the CC-46 to *inhibit* further coin acceptance for 16 seconds. In addition, the CC-46 sends a *coin error* signal to the game electronics. The game then reverts to a REVERSE COIN-IN tilt condition that must be cleared by an attendant.

The game electronics also generates a COIN-IN ERROR tilt condition when the coin pulse received from the CC-46 is greater than 50 ms. For noise immunity, the game electronics ignore coin pulses of less than 10 ms in duration. Pulses between 10 ms and 50 ms are considered valid coins.

To protect against catastrophic failure modes occurring in the CC-46, the game electronics revert to an EXCESS COIN-IN tilt condition when more than 10 valid coin pulses per second are sent to the game electronics.

The game will not accept more than 250 coins or tokens before a wager is made.

Hopper

Winnings that fall below operator-selected thresholds are awarded to the credit meter. Players may either wager the credits and continue playing, or press the COLLECT button to be paid in coins for all accumulated credits from the hopper. The COLLECT button is active between games and is inactive in the middle of a game.

The game electronics includes several safeguard mechanisms to assure hopper payouts are correct. During a payout, the duration of the coin-out switch closure is monitored. Switch closures less than 30 ms due to switch bounce or some other noise source are not counted as valid coins. Coin-out switch closures greater than 300 ms in duration cause a HOPPER JAMMED tilt that must be cleared by an attendant.

The coin-out switch is monitored continuously, even when the game is not in a payout state. If a coin-out switch closure is sensed when the hopper drive signal is inactive, it is assumed the hopper is in a "runaway" state. In this situation, the game reverts to a HOPPER RUNAWAY tilt condition that must be cleared by an attendant. In the event an extra coin or coins are detected after a payout, the machine reverts to a HOPPER OVERPAY tilt condition.

A HOPPER EMPTY tilt condition occurs when the hopper drive signal is active for five seconds without a coin switch closure. The hopper motor is turned off until the error condition is cleared and the COLLECT button is pressed again.

A HOPPER FULL condition is detected when a predetermined number of coins activate a coin sensing level probe located in the hopper bowl. After sensing this condition, the game program orders the coin diverter to redirect incoming coins from the hopper bowl to the drop bucket. When the coin level in the hopper drops below the sensor, the coin diverter allows coins back into the hopper bowl until it is refilled to the predetermined level. The hopper bowl can reach its predetermined level either by game play or by a manual hopper fill.

Set the hopper payout limits by selecting the **PAY/CR LIMIT** option from the CONFIGURATION MENU.

Physical Security

The US-0320 Upright Reel Slot machine has an all-metal cabinet designed to minimize the possibility of illegal forced entry. The main door locking mechanism is fabricated of heavy gauge steel and includes three latching mechanisms resistant to prying. Similarly, the bill validator access door and bill stacker have latch mechanisms made of heavy gauge steel and are also designed to be pry-resistant.

The main machine door, bill validator doors, and bill stacker and the coin drop door (optional) have switch actuators used to sense door openings and closings. Opening the machine door, bill validator access door, bill stacker, or coin drop door causes the display of "MAIN OPEN," "BILL OPEN," "STACK OPEN" and "DROP OPEN" messages on the game alphanumeric display. These messages scroll on the alphanumeric display until the relevant door is closed and the next game is played. The messages "MAIN CLOSED," "BILL CLOSE," "STACK CLOSE" and "DROP CLOSE" display when the relevant door is closed. These messages scroll on the game alphanumeric display until the next game is played.

Critical game circuitry that controls the random reel symbol selection process is contained within a lockable metal enclosure. A single or double lock configuration may be used. The metal enclosure has an optional switch to sense logic door openings and closings. When the logic door is opened, the "LOGIC OPEN" message displays. The message "LOGIC CLOSE" displays when the logic compartment is closed.

When multiple messages of the above types occur, they are scrolled in sequence from right to left until all conditions have been cleared and operation has been returned to normal.

Communication with Associated Equipment

The game software supports serial communication to and from the following devices:

- Bill Validator
- Data Gathering System
- Optional Bonusing System

Serial communication to and from all these devices is interrupt-driven on transmitting and receiving lines. These interrupt routines contain the minimum amount of message processing. This approach eliminates delays in button response or screen displays, which could be noticeable to players.

The game firmware and software contain no instructions to cause information to be sent to or from these serial devices to affect random reel symbol selection processes, win decoding routines or other routines that might affect the play and outcome of the game.

Safety

The game complies with Underwriters Laboratories UL-22 standards for amusement and gaming machines.

All internal and external metal components are tied to earth ground in order to eliminate the possibility of electrical shock. A single main fuse on the AC line input protects components. Separate fuses are also included in the AC lines that provide power to the two DC supplies. The video monitor has a separate fuse.

With the AC ground disconnected, there is less than 1 mA of leakage current between the machine chassis and earth ground. The machine is designed to operate under environmental conditions found in casinos. The machine has a high contrast cathode ray tube (CRT) display that is readable in high and low ambient light conditions. The electronics are designed to maintain operation in ambient temperatures up to 100° F.

Tilt/Error Conditions

There are three types of error conditions detected and displayed by the machine: "soft" tilts, "hard" tilts and system errors.

Soft Tilts

Soft tilts are software tilt/error conditions and must be resolved by an attendant. There are two types of soft tilts: those that prevent game play and those that allow game play to continue.

Soft tilts cause error or status messages to be shown in capital letters on the game alphanumeric display. These messages are cleared at the completion of the subsequent game play sequence after the tilt condition is resolved. If multiple soft tilt errors of this type occur, they are scrolled from right to left on the alphanumeric display.

The following soft tilt conditions prevent game play until the condition is resolved either by attendant or play through:

MESSAGE	DESCRIPTION
BATTERY LOW	Non-volatile memory battery on logic board has failed.
BILL CLOSE	The bill validator door(s) is/are closed.
BILL OPEN	One or both bill validator doors (belly door and/or bill stacker door) is/are open.
BV COM ERR	The bill validator is not communicating with the CPU.
BV JAM	The bill validator has a bill jammed in the transport mechanism.
BV RSTERR	The bill validator did not reset properly and will not vend bills.
DIVERTER TILT	The coin diverter is not responding to a hopper or drop command.

MESSAGE	DESCRIPTION
DROP CLOSED	The optional drop door switch is closed.
DROP OPEN	The optional drop door switch is open.
GAME N LOCKOUT	Game #n (multi-game) has been locked out by the monitor port host system.
GMMS COMM DOWN	The GMMS host system is not communicating with the game.
GMMS LOCKOUT	The GMMS host system has locked out the game.
HOST COM DOWN	Communications with the host system has failed.
HOST LOCKOUT	Game play was disabled by from the host port.
ISOPWR BAD	The isolated power supply (+5V/+24V) is offline.
LIGHT BULB FAILURE	The system has sensed that a lamp failure has occurred.
LOGIC CLOSE	The logic door is closed.
LOGIC OPEN	The logic door is open.
MAIN CLOSE	The main machine door is now closed (following open condition).
MAIN OPEN	The main machine door is open.
METER ERR	Coil current was not sensed when the system attempted to increment a hard meter.
METER ERR CLR	A hard meter error has been cleared.
NETWORK LOCKOUT	Game play was disabled from the monitor port.
PRINTER COMM	The system is not communicating with the ticket printer.
PRINTER INK	A ‘low ink’ condition exists at the ticket printer.
PRINTER JAM	A ‘carriage jam’ condition exists at the ticket printer.
PRINTER LOW	A ‘low paper’ condition exists at the ticket printer.
PRINTER OUT	A ‘no paper’ condition exists at the ticket printer.
PRINTER RESET	The ticket printer has been reset.
PROG AMOUNT NOT RXED	The progressive controller is not sending an amount to the game.
PROG COM DOWN	The game is not communicating with the progressive controller.
PROG LOCKOUT	The game was locked out by a progressive system.
RESET	The game was reset.
STACK CLOSE	The bill validator cassette has been inserted.
STACK OPEN	The bill validator cassette has been removed.

Hard Tilts

Hard tilts are routine hardware machine maintenance conditions that prevent game play and must also be resolved by an attendant. Hard tilts cause error or status messages to display in large letters in a message box in the center of the screen.

An external attendant keyswitch, located on the right side of the machine cabinet, is used to perform various functions. The keyswitch is accessible without opening the game door. When rotated clockwise it resets errors and clears handpays and tilts. When rotated counterclockwise it accesses the Main menu which allows selection of various game options such as game meter displays, configuring game parameters and testing various machine functions.

The hard tilt messages are cleared after the tilt condition is resolved and the attendant turns the key in the attendant keyswitch to the center (OFF) position.

The machine detects and displays the following hard tilt/error conditions:

MESSAGE	DESCRIPTION
CI ERR	A coin-in condition occurred with the game disabled, or the coin-in pulse was greater than 50 milliseconds.
EEPROM BAD	Failed checksum in the game EEPROM.
EXCESS BILL CREDIT	More credits were added than should have been for the value of the last bill stacked.
EXCESS CI	More than 10 coins per second were detected.
FIRMWARE CHANGE	The EPROM version is different from the previous time the game was powered on.
GEN MEMORY ERR	A general memory error has occurred. Probable main logic board failure.
HANDPAY COLLECT	The game handpay threshold has been exceeded.
HANDPAY LOCKOUT	A win has occurred that has exceeded the single game threshold setting.
HOPPER DRY	The hopper has run out of coins during a payout, and the hopper probe indicates that the hopper was full.
HOPPER EMPTY	The hopper has run out of coins during a payout.
HOPPER JAM	The coin-out signal is too long (coin jam).
HOPPER OVERPAY	More coins were detected during the payout than were expected.
HOPPER RUNAWAY	The hopper was paying when it should not be paying.
HPRPAY DOOR OPEN	The main door was opened during a hopper payout.
INVALID BILL	The bill validator reported an invalid bill denomination.
LAST GAME CRC	The CRC check for the last game failed.
PRINT DENIED HANDPAY	A cashout request for a ticket has failed because the system did not authorize the print.

MESSAGE	DESCRIPTION
PRINT FAIL HANDPAY	The cashout ticket printer failed while a ticket was being printed.
PROG JACKPOT	A game progressive jackpot has been hit.
REEL TILT	A mechanical reel tilt occurred.
REVERSE CI	The coin comparitor error signal is active.
ROM CHKSUM	The game EPROM CRC is not correct. This usually indicates bad game EPROMs.
RTC BAD	The real-time clock on the CPU board indicates an invalid time.
SCHD CHANGE	The schedule has changed since the game's power was cycled.
SOFT SCHD	A CRC error occurred in the soft schedules.
VIRT REEL INDEX	The virtual reel index is out of range.
WIN DECODE	There was an error decoding the win, indicating a RAM failure or software error.
WIN TYPE	An impossible win was recorded.

System Errors

In the event of a serious error in program control or memory integrity, the game reverts to a system tilt/error condition that must be cleared by an attendant. The machine also indicates the precise source of the failure. Clearing system errors results in a reinitialization of the game's RAM. Soft meter and previous game data is lost during this process. Prior to reinitialization, the attendant is given the opportunity to review the soft meters, previous game and game configuration information.

MESSAGE	DESCRIPTION
BAD REEL INDEX	A CRC error occurred with the saved reel symbols.
BET OVER MAX	The current bet exceeds the maximum allowed for the game.
CONFIG BAD	The system has determined that the game configuration is defective.
CREDIT OVER MAX	The credit meter exceeds the configured maximum amount.
RAM GAME DATA	The game RAM is defective.
RAND SEED	A seed error occurred in the random number generator.
SCHD INDEX	The machine was configured with an invalid schedule.
WIN AMOUNT	A win amount greater than possible occurred.

Accounting Requirements

Award amounts for games associated with the US-0320 platform are hard-coded into the firmware. The game pay table may not be altered.

Accounting of Inappropriate Coin-ins

Unlike a typical game, all valid coins inserted are accumulated to the credit meter and are not counted as a wager for the current game. It is not necessary to lock out the coin comparitor after a game is started. In normal game play, the coin comparitor remains active. This greatly reduces the possibility of inappropriate coins in.

The coin comparitor is inhibited under conditions such as tilts and handpays. Even with the coin comparitor in a locked out state, the firmware continues to monitor the coin-in signal. Valid coin pulses received after the lockout signal is activated are added to the credit meter after the tilt condition is cleared. The “returned coins past lockout” soft meter is incremented. If the coin diverter is in the drop position, the drop meter is incremented accordingly. The coin-in meter increments when credits are wagered.

The possibility of coins being accepted after lockout is minimized by use of the fast-acting lockout mechanism on the CC-46 and by activating the lockout signal as soon as possible after a tilt condition occurs.

Accounting of Hopper Payouts

The coin-out meter increments when winnings are accumulated to the credit meter. The coin-out meter also increments when winnings are paid from the hopper and are not accumulated on the credit meter. This situation occurs when a win, if accumulated to the credit meter, causes the total credits to be greater than the maximum allowable credits. The total win amount is then paid from the hopper. The coin out meter does not increment when credits are redeemed for coin from the hopper after the **COLLECT** button is pressed.

As coins pass through and out of the hopper, any overpay or hopper runaway conditions are monitored. Such instances rarely occur, but when they do, invalid coins are recorded with a separate invalid coin out soft meter.

The maximum allowable win from a single game that may be accumulated to the credit meter is an operator-defined parameter in the game’s Configuration menu. This parameter cannot be set above $1,199. Thus, any single win exceeding $1,199 cannot be paid from the hopper and must be paid by an attendant.

Meters

The game uses seven (7) digit, non-reset hard meters to record coin in, coin out, coin drop, jackpot and other optional events as indicated. The counting error for the meters used is less than 0.1% of total counts accumulated. The hard meters are defined as follows:

METER	DESCRIPTION
COIN IN	Incremented once for each coin or credit wagered.
COIN OUT	Incremented once for each coin awarded to the credit meter. Also incremented when coins are paid from the hopper, should an award cause the credit meter to exceed the maximum allowable credit parameter set in the game configuration menu. The coin-out meter does not increment on a handpay resulting from a single win that is greater than the one-time award threshold.
COIN DROP	Incremented once for each valid coin seen by the coin-in sensor with the coin diverter commanded to the drop position. The Coin Drop hard meter is also incremented once for each credit added to the game from a bill inserted and accepted by the bill validator. See page 28 for the DIP switch setting that provides the BILLS TO HARD DROP option.

The game also has the ability to drive the following optional hard meters:

METER	DESCRIPTION
GAMES PLAYED	Incremented once for each game played.
JACKPOTS	Incremented once for each coin handpaid by an attendant.
BILLS	Incremented once for each dollar amount inserted in the bill validator. A $20 bill causes this meter to increment 20 times.

The mechanical design of the machine does not require replacement of the hard meters.

There are corresponding soft meters for each of the above hard meters. Soft meters are stored as 32-bit unsigned integers providing a range of 0 to 999,999,999 counts. The hard and soft coin-in meters accumulate all wagers. The coin-out meters accumulate all coins and credits paid from the game. Attendant pays are not accumulated to the coin-out meters but are counted by the handpay soft meter.

Lifetime and Periodic soft meters may be viewed from the Main menu by selecting the SOFT METERS option. Lifetime meters are reset only when the game's RAM is cleared upon game initialization. Periodic meters may be reset using the machine soft meters option from the Main menu. Soft meters are maintained for approximately 1.6 years without AC power.

The following meters are continuously displayed to the player:

Accumulated credits as **CREDITS**.

Coins wagered (last/current game) as **CREDITS IN** or **COIN IN**.

Coins won (last game) as **WINNER PAID**.

Credit Play Requirements

Collectible credits may be accumulated from these sources:

- The bill acceptor, JCM model types: WBA-13SU for USA currency and WBA-21SU for Canadian currency.
- The coin acceptor, manufactured by Coin Mechanisms, Inc., model CC-46, which selects valid coins on the basis of metallic content.
- Wins.
- Optional ticketing devices.

The bill validator is disabled when total credits exceed 2,500 coins. Thus, the aggregate total of collectible credits from currency is less than $2,500.

Appendix B

VIG II Error Codes and Events

(Sorted by Code #)

These error codes, error messages and event messages are built into all current VIG II firmware. Those codes and messages that are not applicable to a specific game are not implemented in such games. The game type (GM) codes are: V = video, S = reel slots, B = both video and reel slots.

CODE	MESSAGE	TYPE	GM	DEFINITION
1	**LOG ERR**	Event	B	An error occurred in the game event log or monitor port event log. After clearing the log, all prior events are erased.
2	**RESET**	Soft Tilt	B	The game was reset. This soft tilt is cleared when a game is played.
4	**RAM ERR CLR**	Event	B	The RAM was cleared either from the birth chip or the initialization option.
6	**PERIODIC CLEAR**	Event	B	The Periodic meters were cleared via the Soft Meters option.
9	**OUTPUT FAILURE**	Soft Tilt	B	A hardware error has occurred on the VIG-520 main board.
10	**GAME START**	Event	B	A reel spin or bonus re-bet has started.
11	**NO GDD COM**	Hard Tilt	V	The CPU cannot communicate with the Gaming Display Device (GDD). 1) Verify that all cables to the GDD are connected. 2) Replace the GDD.
12	**EEPROM BAD**	Hard Tilt	B	One or both of the game EEPROMs is/are defective. 1) Try to re-configure the game. 2) Replace EEPROMs. 3) Replace CPU board. **Subcode 14** (MACH WR ERR) – cannot write to EEPROM on the backplane board. **Subcode 15** (GAME WR ERR) – cannot write to EEPROM on the VIG II logic board.
13	**GDD INVALID**	Hard Tilt	V	The VIG II CPU cannot validate he Gaming Display Device (GDD). There may be a subcode 16 (INVALID GDD VERSION), which indicates the hard drive version is not correct for the installed VIG II EPROMs. Replace the hard drive with the correct one. Faulty QUARTs on the VIG II may also cause this error.
14	**ISOPWR BAD**	Soft Tilt	B	The isolated power supply (+5V/+24V) is offline. Cycle the game power. If still no power, replace power supply. If Power LEDs are on and the tilt remains, replace the sense opto-isolator (U49 for VIG II's up to V1.2) or the entire VIG II logic board.
15	**GDD VERIFY FAIL**	Hard Tilt	V	Could not verify the Gaming Display Device (GDD). This usually indicates a problem with the hard drive or BIOS chip on the GDD. Defective QUARTs on the VIG II may also cause these errors. **Subcode 1** Error with communications, check QUART, communications cable, GDD. **Subcode 17** Error with hard drive authentication. Replace drive. **Subcode 18** Error with hard drive authentication. Replace drive. **Subcode 19** Error with hard drive authentication. Replace drive. **Subcode 20** The wrong BIOS is installed.
16	**GDD BUSY**	Soft Tilt	V	The Gaming Display Device is taking too long to perform a task. This usually indicates a software error. If the problem persists, contact CDS Field Service.
17	**GDD OFFLINE**	Soft Tilt	V	The Gaming Display Device (GDD) is not communicating. Check the GDD and the □omm. cable.
18	**GDD ERR AUTO CLR**	Event	V	A version error was detected for the Gaming Display Device (GDD), however, a CRC check resolved the error.

CODE	MESSAGE	TYPE	GM	DEFINITION
19	**GDD MSG BLOCK**	Event	V	The Gaming Display Device GDD blocked a message. If only periodic, this is not a problem, but If it occurs regularly, there may be a problem with the GDD or the hard drive.
20	**CASHLESS CREDIT**	Event	B	Credits have been added from acceptance of a cashless ticket(s).
21	**CASHLESS COLLECT**	Event	B	Credits that were accrued from cashless ticket(s) have been collected.
22	**REEL TILT**	Hard Tilt	B	A mechanical reel tilt occurred. The subcode indicates the reel number.
23	**HANDPAY COLLECT**	Hard Tilt	B	The game handpay threshold has been exceeded. The game must be reset following the handpay.
24	**HPRPAY DOOR OPEN**	Hard Tilt	B	The main door was opened during a hopper payout.
25	**HOPPER START**	Event	B	An event indicating the start of a hopper pay.
26	**HOPPER RESART**	Event	B	The hopper pay was restarted after a hopper error was cleared.
27	**HPR PAY COMPLETE**	Event	B	The hopper has completed a payout.
28	**HOPPER OVERPAY**	Hard Tilt	B	More coins were detected during the payout than were expected.
29	**HPR OVERPAY CLR**	Event	B	An event that indicated that a hopper overpay has been cleared.
30	**HOPPER EMPTY**	Hard Tilt	B	The hopper has run out of coins during a payout. And the hopper probe status does ***not*** indicate that the hopper was full when this tilt occurred.
31	**HPR EMPTY CLR**	Event	B	The hopper empty tilt has been cleared.
32	**HOPPER JAM**	Hard Tilt	B	The coin-out signal is too long. This usually indicates a hopper jam occurred while collecting or the hopper coin-out switch was not adjusted properly.
33	**HOPPER JAM CLR**	Event	B	The hopper jam tilt was cleared.
34	**MENU EXIT**	Event	B	The keyswitch for the operator menu has been deactivated.
35	**PROG JACKPOT**	Hard Tilt	B	A game progressive jackpot has been hit.
36	**HOPPER DRY**	Hard Tilt	B	The hopper has run out of coins during a payout. And the hopper probe status indicates that the hopper was full when this tilt occurred.
37	**HPR DRY CLR**	Event	B	A hopper dry condition has been cleared.
38	**HOPPER RUNAWAY**	Hard Tilt	B	The hopper was paying when it should not be paying.
39	**HPR RUNAWAY CLR**	Event	B	A hopper runaway condition has been cleared.
40	**HANDPAY LOCKOUT**	Hard Tilt	B	A win has occurred that has exceeded the single game threshold setting. The amount must be hand paid.
41	**HANDPAY CLEAR**	Event	B	A handpay event has been completed.
42	**MENU ACCESS**	Event	B	The attendant keyswitch has been activated for the operator menu function.
43	**EXCESS CI**	Hard Tilt	B	This tilt occurs when more than 10 coins per second are detected.
44	**EXCESS CI CLR**	Event	B	An excess coin tilt has been cleared.
45	**CI ERR**	Hard Tilt	B	A coin-in condition occurred when the game was disabled, or the coin-in pulse was greater than 50 milliseconds.
46	**CI ERR CLR**	Event	B	A coin-in error condition has been cleared.

CODE	MESSAGE	TYPE	GM	DEFINITION
47	**REVERSE CI**	Hard Tilt	B	The coin comparitor error signal is active. This is caused by passing a coin in the wrong direction, passing the coin too slowly through the comparitor, passing the coin through the accept side of the comparitor when the comparitor is trying to reject the coin or there is no reference coin in the comparitor.
48	**REVERSE CI CLR**	Event	B	A reverse coin-in error condition has been cleared.
49	**COIN PULSE**	Event	B	The system has sensed a coin pulse from the coin comparitor that was too long or too short.
50	**MAIN OPEN**	Soft Tilt	B	The main machine door is open (game play is disabled)
51	**MAIN CLOSE**	Soft Tilt	B	The main machine door has been closed. This soft tilt clears following the first game play after the door is closed.
52	**BILL OPEN**	Soft Tilt	B	One or both bill validator doors (belly door and/or bill stacker door) is/are open (game play is disabled).
53	**BILL CLOSE**	Soft Tilt	B	The bill validator door(s) is/are closed. This soft tilt clears following the first game play after the door is closed.
54	**DROP OPEN**	Soft Tilt	B	The drop door is open. This soft tilt does not disable game play).
55	**DROP CLOSED**	Soft Tilt	B	The drop door is closed. This soft tilt clears following the first game play after the door is closed.
56	**LOGIC OPEN**	Soft Tilt	B	The logic door is open (game play is disabled).
57	**LOGIC CLOSE**	Soft Tilt	B	The logic door is closed. This soft tilt clears following the first game play after the door is closed.
58	**STACK OPEN**	Soft Tilt	B	The bill validator cassette has been removed (game play is disabled).
59	**STACK CLOSE**	Soft Tilt	B	The bill validator cassette has been inserted. This soft tilt clears following the first game play after the door is closed.
60	**METER ERR**	Soft Tilt	B	Meter current was not sensed when the system attempted to increment a (hard) meter. Either the meter coil is open, or the corresponding meter is not installed and the meter test function has not been disabled. Refer to the “Hard Meter Check” option in the Configuration section of this document. This soft tilt does not disable game play.
61	**METER ERR CLR**	Soft Tilt	B	A hard meter error has been cleared.
62	**SOFT MTR TST**	Event	B	There was a soft meter failure during test mode.
63	**SOFT MTR TST CLR**	Event	B	A soft meter error that occurred during test mode has been cleared.
64	**NETWORK LOCKOUT**	Soft Tilt	B	Game play was disabled from the monitor port. It can be reset from the monitor port device or by changing the monitor port protocol.
65	**RTC BAD**	Hard Tilt	B	The real-time clock on the CPU board indicates an invalid time. Check the system time from the Configuration menu. If the time cannot be set correctly, suspect a defective battery on the CPU board.
66	**RTC INIT**	Event	B	An event indicating that the real-time clock was set.
67	**BATTERY LOW**	Soft Tilt	B	Soft tilt (disables game play). Replace the battery on the VIG II CPU (logic) board. This battery maintains the non-volatile RAM and real-time clock when the main power is off.
68	**BATTERY LOW CLR**	Event	B	An event that indicates that the battery voltage is no longer in a ‘LOW’ condition.
69	**HOST LOCKOUT**	Soft Tilt	B	Game play was disabled by the host port.
70	**PROG LOCKOUT**	Soft Tilt	B	The game was locked out by a progressive system such as a multi-site progressive.
71	**GAME N LOCKOUT**	Soft Tilt	B	Game #n (multi-game) has been locked out by the monitor port.

CODE	MESSAGE	TYPE	GM	DEFINITION
73	**BILL TIMEOUT**	Hard Tilt	B	The bill validator timed out when attempting to stack a bill. This tilt is associated only with a Mars or DBV bill validator. The US-0320 uses the WBA bill validator.
74	**EXCESS BILL CREDIT**	Hard Tilt	B	More credits were added than should have been for the value of the last bill stacked.
75	**INVALID BILL**	Hard Tilt	B	The bill validator reported an invalid bill denomination.
76	**SOFT SCHD**	Hard Tilt	B	A CRC error occurred in the soft schedules.
77	**CONFIG BAD**	SYS Error	B	The system has determined that the game configuration is defective. Check the sub-code to determine the configuration type that is causing the error. Access the Configuration menu from the operator menu to verify and change the defective configuration. **Subcode 7** (CRC Error) – Logic board RAM is corrupt. Reinitialize the game. **Subcode 8** (Game Type Error) – the machine is configured with an invalid game. Use “birth” chip to initialize the game. **Subcode 9** (Denomination Error) – the machine is configured for an invalid denomination. Use “birth” chips to initialize the game. **Subcode 10** (Max Bet Error) – the machine is configured for a invalid max bet amount. Use “birth” chips to initialize the game. Use “birth” chips to initialize the game. **Subcode 11** (Schedule Error) – the machine is configured with an invalid schedule. Use “birth” chips to initialize the game. **Subcode 12** (Max Credit Error) – the machine is configured with an invalid max credit amount. Use “birth” chips to initialize the game. **Subcode 13** (Max Win Error) – the machine is configured with an invalid max win before handpay amount. Use “birth” chips to initialize the game. **Subcode 14** (Machine WR Error) – there was an error writing the machine configuration to the EEPROM on the backplane board. Replace the backplane board. **Subcode 15** (Game WR Error) – an error occurred when writing the game configuration to the EEPROM on the main logic board. Replace the logic board.
78	**WIN DECODE**	Hard Tilt	B	There was an error decoding the win, indicating a RAM failure or software error.
79	**WIN AMOUNT CHANGE**	Hard Tilt	B	The win decoder detected a change in pay amount for a specific win. This usually indicates a software error.
80	**BAD REEL INDEX**	SYS Error	B	A CRC error occurred with the saved reel symbols.
81	**ILLEGAL REEL MOVEMENT**	Hard Tilt	B	Reel or wheel movement detected when it should be idle. On video machines, this tilt is applicable only to games with a bonus wheel.
82	**WIN TYPE**	Hard Tilt	B	An impossible win was recorded.
83	**WIN AMOUNT**	SYS Error	B	A win amount greater than possible occurred.
84	**CREDIT OVER MAX**	SYS Error	B	The credit meter exceeds the configured maximum amount.

CODE	MESSAGE	TYPE	GM	DEFINITION
85	**BET OVER MAX**	SYS Error	B	The current bet exceeds the maximum allowed for the game.
86	**RAND SEED**	SYS Error	B	A seed error occurred in the random number generator.
87	**RAM OVERBOOKED**	Hard Tilt	B	Demo chips only. Not enough free RAM to run auto emulation.
88	**SCHD INDEX**	SYS Error	B	While determining the game results, the system detected that the machine was configured with an invalid schedule.
90	**RAM GAME DATA**	SYS Error	B	The game RAM is defective. The subcode indicates what portion of RAM is in error. The Initialization option in the Configuration menu allows the operator to clear the RAM to default values. All game data is lost as a result of initialization. **Subcode 1** (Game Meters) – the game meters are defective. **Subcode 3** (Machine State) – the machine state is defective. **Subcode 4** (General Game Data) – the game data is defective. **Subcode 5** (Specific Game Data) – the data specific to the game type is defective. **Subcode 6** (Previous Game Data) – the previous game data is defective. Note: this is not a system error.
91	**LAST GAME CRC**	Hard Tilt	B	The CRC check for the last game failed.
92	**FIRMWARE CHANGE**	Hard Tilt	B	The EPROM version is different from the previous time the game was powered on.
93	**SOFT MTR**	Event	B	A CRC error was detected in one of the soft meter data structures. The appropriate data structure is cleared.
94	**SCHD CHANGE**	Hard Tilt	B	The schedule has changed since the game was last powered on.
96	**VIRT REEL INDEX**	Hard Tilt	S	The virtual reel index is out of range.
97	**ROM CHKSUM**	Hard Tilt	B	The game EPROM CRC is not correct. This usually indicates bad game EPROMs.
99	**GEN ERR CLR**	Event	B	A general error has been cleared.
100	**CASHOUT REQ**	Event	B	The cashout (collect) button has been pressed.
101	**HOST COM DOWN**	Soft Tilt	B	Communications with the host system has failed.
102	**GAME OUT OF SVC**	Event	B	The game has been set via the Configuration menu to the 'Out of Service' condition. Setting the game to the 'In Service' condition form the Configuration menu is the only way clear this condition.
103	**PROG COM DOWN**	Soft Tilt	B	A communications failure has occurred between the game and the progressive controller.
104	**SMART REEL COM DOWN**	Hard Tilt	S	Only applicable to games with more than 6 reels/wheels. Loss of communications with the smart reel driver board.
105	**PRINT DENIED HANDPAY**	Hard Tilt	B	A cashout request for a ticket has failed because the system did not authorize the print. The player must be hand paid.
106	**PRINT FAIL HANDPAY**	Hard Tilt	B	The cashout ticket printer failed while a ticket was being printed.
107	**TICKET INFO REQUEST**	Event	B	The game has requested information to print a ticket from the monitor port.
108	**TICKET REQUEST**	Event	B	The game has requested authorization to print a ticket from the monitor port.
109	**TICKET PRINTED**	Event	B	A cashout ticket has been successfully printed.

CODE	MESSAGE	TYPE	GM	DEFINITION
110	**PRINTER COMM**	Soft Tilt	B	The system has detected a communications failure to the ticket printer.
111	**PRINTER LOW**	Soft Tilt	B	The system has sensed a 'low paper' condition at the ticket printer.
112	**PRINTER OUT**	Soft Tilt	B	The system has sensed a 'no paper' condition at the ticket printer.
113	**PRINTER RESET**	Soft Tilt	B	The ticket printer has been reset.
114	**PRINTER INK**	Soft Tilt	B	The system has sensed a 'low ink' condition at the ticket printer.
115	**PRINTER JAM**	Soft Tilt	B	The system has sensed a 'carriage jam' condition at the ticket printer.
116	**TICKET FAILED**	Event	B	The system has sensed that a printed ticket was not dispensed.
120	**SYSTEM BONUS**	Event	B	A bonus play win has occurred.
The shaded events below are provided for use with the Bally slot accounting system (BESS protocol)				
192	**COIN PLAY**	Event	B	A game has started from coins inserted.
193	**CREDIT PLAY**	Event	B	A game has started from credits.
194	**CI TO CREDIT**	Event	B	Coin in has been added to the credit meter.
195	**COIN DROP**	Event	B	Coin in has gone to the drop and the drop meter has incremented.
196	**HPR PAY WIN**	Event	B	A win has resulted in a hopper payout.
197	**CREDIT WIN**	Event	B	A win has been added to the credit meter.
198	**CREDIT COLLECT**	Event	B	Credits have been cashed out as a hopper payout.
199	**CREDIT VAL**	Event	B	Credit value has been reported to BESS.
200	**EVENT LOG OVERFLOW**	Event	B	The event log has exceeded the 100-event capacity. The oldest events are being overwritten.
201	**SERVICE REQ ON**	Event	B	The service/change button has been pressed once to activate tower light.
202	**SERVICE REQ OFF**	Event	B	The service button (change) has been pressed again to extinguish tower light.
203	**HOPPER LOW**	Event	B	Not implemented as of 02/01/2001 (reserved for future use)
204	**DIVERTER TILT**	Soft Tilt	B	The system has sensed that the coin diverter is not responding to a hopper or drop command.
205	**GEN MONITOR TILT**	Soft Tilt	V	The system has sensed a 'monitor failure' condition.
206	**TOUCH ERR**	Soft Tilt	V	The touch screen is not communicating with the CPU. Check the cable connections and the touch screen controller. Note: the US-0320 is a reel-slot game and does not use the touch screen technology. Game play is not disabled because deck buttons are available.
207	**LIGHT BULB FAILURE**	Soft Tilt	B	The system has sensed that a lamp failure has occurred.
208	**MONITOR COMM ERR**	Soft Tilt	B	The monitor is not communicating with the game. Check game configuration, connections and the monitor. Game play is not disabled. Note: the US-0320 game does not use a monitor.
209	**PROG JACKPOT NO AMT**	Event	B	A progressive award has been won, but the game does not know the amount yet.
210	**PROG AMOUNT NOT RXED**	Soft Tilt	B	The progressive controller is not sending an amount to the game. Check the progressive controller setup and the cable connections.
211	**GEN MEMORY ERR**	Hard Tilt	B	A general memory error occurred. Replace the logic board.
212	**GAME CONFIG CHANGED**	Event	B	An event that indicates that a game parameter was changed.
213	**GAME DENOM CHANGED**	Event	B	The game denomination has changed.

CODE	MESSAGE	TYPE	GM	DEFINITION
214	BV VEND 1	Event	B	A $1 bill was accepted and stacked. This event is stored only in the bill validator log.
215	BV VEND 2	Event	B	A $2 bill was accepted and stacked. This event is stored only in the bill validator log.
216	BV VEND 5	Event	B	A $5 bill was accepted and stacked. This event is stored only in the bill validator log.
217	BV VEND 10	Event	B	A $10 bill was accepted and stacked. This event is stored only in the bill validator log.
218	BV VEND 20	Event	B	A $20 bill was accepted and stacked. This event is stored only in the bill validator log.
219	BV VEND 50	Event	B	A $50 bill was accepted and stacked. This event is stored only in the bill validator log.
220	BV VEND 100	Event	B	A $100 bill was accepted and stacked. This event is stored only in the bill validator log.
221	BV VEND 500	Event	B	A $500 bill was accepted and stacked. This event is stored only in the bill validator log.
222	BV VEND 1000	Event	B	A $1000 bill was accepted and stacked. This event is stored only in the bill validator log.
223	BV RSTERR	Soft Tilt	B	The bill validator did not reset properly and will not vend bills. This may be caused by a full stacker box or communications error. Game play is not disabled.
224	BV JAM	Soft Tilt	B	The bill validator has a bill jammed in the transport mechanism. Game play is not disabled.
225	BV COM ERR	Soft Tilt	B	The bill validator is not communicating with the CPU. Game play is not disabled.
226	BV OUT OF SERVICE	Event	B	The bill validator has been set to the 'Out of Service' mode in the game configuration.
227	BV IN SERVICE	Event	B	The bill validator has been set to the "In Service" mode in the game configuration.
228	BV CASHBOX REMOVED	Event	B	The bill validator cassette has been removed.
229	BV CASHBOX INSERTED	Event	B	The bill validator cassette has been inserted.
230	BV CASHBOX FULL	Event	B	The system has sensed a 'bill stacker full' condition.
231	BV GEN ERR	Event	B	A general bill validator error has been sensed. Refer to the bill validator error log for details.
232	BV CHEATED	Event	B	The bill validator sensed a possible attempt to cheat.
233	BV RSTOK	Event	B	The bill validator has reset and is ready to accept bills.
234	COUPON VEND	Event	B	The bill validator has successfully vended a coupon.
235	COUPON REQUEST	Event	B	A coupon has been inserted into the bill validator.
236	COUPON REJECT	Event	B	The monitor port system did not respond with the value of a coupon, or the game could not accept the coupon.
237	COUPON INCOMPATIBLE	Event	B	The coupon value is too large for the game to accept, or is incompatible with the game's denomination.
The following shaded events and tilts are provided for use with the VLC® Advanced Gaming System® (GMMS)				
238	GMMS LOCKOUT	Soft Tilt	B	The GMMS host system has locked out the game.
239	GMMS COMM DOWN	Soft Tilt	B	The GMMS host is not communicating with the game.
240	GDD DOOR OPEN	Soft Tilt	V	The Gaming Display Device (GDD) door is open.
241	GDD DOOR CLOSE	Soft Tilt	V	The Gaming Display Device (GDD) door has been closed.
242	MEM SIG COMPLETE	Event	B	The GMMS game signature calculation is complete.
243	LOG FULL	Event	B	The GMMS event log is full.
244	GAME PLAYABLE	Event	B	The GMMS system has returned the game to a playable condition.

CODE	MESSAGE	TYPE	GM	DEFINITION
245	**GMMS DISABLE**	Event	B	The GMMS system has disabled game play.
246	**GMMS POLL TO**	Event	B	The GMMS system has locked out the game because of the time of day.

Appendix C

VIG II Error Codes and Events

(Sorted by Message Name)

These error codes, error messages and event messages are built into all current VIG II firmware. Codes and messages not applicable to a specific game are not implemented in such games. The game type (GM) codes are: V = video, S = reel slots, B = both video and reel slots. Events and tilts with 'GMMS only' in the definition are unique only to the VLC® Advanced Gaming System® (GMMS). Message type 'BESS Event' are event messages that are used only by the Bally slot accounting System (BESS).

MESSAGE	CODE	TYPE	GM	DEFINITION
BAD REEL INDEX	**80**	SYS Error	B	A CRC error occurred with the saved reel symbols.
BATTERY LOW	**67**	Soft Tilt	B	Soft tilt (disables game play). Replace the battery on the VIG II CPU (logic) board. This battery maintains the non-volatile RAM and real-time clock when the main power is off.
BATTERY LOW CLR	**68**	Event	B	An event that indicates that the battery voltage is no longer in a 'low voltage' condition.
BET OVER MAX	**85**	SYS Error	B	The current bet exceeds the maximum allowed for the game.
BILL CLOSE	**53**	Soft Tilt	B	The bill validator door(s) is/are closed. This soft tilt clears following the first game play after the door is closed.
BILL OPEN	**52**	Soft Tilt	B	One or both bill validator doors (belly door and/or bill stacker door) is/are open (game play is disabled).
BILL TIMEOUT	**73**	Hard Tilt	B	The bill validator timed out when attempting to stack a bill. This tilt is associated only with a Mars or DBV bill validator. The US-0320 uses the WBA bill validator.
BV CASHBOX FULL	**230**	Event	B	The system has sensed a 'full' bill stacker condition.
BV CASHBOX INSERTED	**229**	Event	B	The bill validator cassette has been inserted.
BV CASHBOX REMOVED	**228**	Event	B	The bill validator cassette has been removed.
BV CHEATED	**232**	Event	B	The bill validator sensed a possible attempt to cheat.
BV COM ERR	**225**	Soft Tilt	B	The bill validator is not communicating with the CPU. Game play is not disabled.
BV GEN ERR	**231**	Event	B	A general bill validator error has been sensed. Refer to the bill validator error log for details.
BV IN SERVICE	**227**	Event	B	The bill validator has been set to the 'In Service' mode in the game configuration.
BV JAM	**224**	Soft Tilt	B	The bill validator has a bill jammed in the transport mechanism. Game play is not disabled.
BV OUT OF SERVICE	**226**	Event	B	The bill validator has been set to the "Out of Service" mode in the game configuration.
BV RESTOK	**233**	Event	B	The bill validator has reset and is ready to accept bills.
BV RSTERR	**223**	Soft Tilt	B	The bill validator did not reset properly and will not vend bills. This may be caused by a full stacker box or communications error. Game play is not disabled.
BV VEND 1	**214**	Event	B	A $1 bill was accepted and stacked. This event is stored only in the bill validator log.
BV VEND 10	**217**	Event	B	A $10 bill was accepted and stacked. This event is stored only in the bill validator log.
BV VEND 100	**220**	Event	B	A $100 bill was accepted and stacked. This event is stored only in the bill validator log.
BV VEND 1000	**222**	Event	B	A $1000 bill was accepted and stacked. This event is stored only in the bill validator log.
BV VEND 2	**215**	Event	B	A $2 bill was accepted and stacked. This event is stored only in the bill validator log.
BV VEND 20	**218**	Event	B	A $20 bill was accepted and stacked. This event is stored only in the bill validator log.

MESSAGE	CODE	TYPE	GM	DEFINITION
BV VEND 5	**216**	Event	B	A $5 bill was accepted and stacked. This event is stored only in the bill validator log.
BV VEND 50	**219**	Event	B	A $50 bill was accepted and stacked. This event is stored only in the bill validator log.
BV VEND 500	**221**	Event	B	A $500 bill was accepted and stacked. This event is stored only in the bill validator log.
CASHLESS COLLECT	**21**	Event	B	Credits that were accrued from cashless ticket(s) have been collected.
CASHLESS CREDIT	**20**	Event	B	Credits have been added from acceptance of a cashless ticket.
CASHOUT REQ	**100**	Event	B	The cashout (collect) button has been pressed.
CI ERR	**45**	Hard Tilt	B	A coin-in condition occurred when the game was disabled, or the coin-in pulse was greater than 50 milliseconds.
CI ERR CLR	**46**	Event	B	A coin-in error condition has been cleared.
CI TO CREDIT	**194**	BESS Event	B	Coin-in has been added to the credit meter.
COIN DROP	**195**	BESS Event	B	Coin-in has gone to the drop and added to drop meter.
COIN PLAY	**192**	BESS Event	B	A game has started from coins inserted. (BESS event)
COIN PULSE	**49**	Event	B	The system has sensed a coin pulse from the coin comparitor that was too long or too short.
CONFIG BAD	**77**	SYS Error	B	The system has determined that the game configuration is defective. Check the sub-code to determine the configuration type that is causing the error. Access the Configuration menu from the Operator menu to verify and change the defective configuration. **Subcode 7** (CRC Error) – Logic board RAM is corrupted. Reinitialize the game. **Subcode 8** (Game Type Error) – the machine is configured with an invalid game. Use “birth” chip to initialize the game. **Subcode 9** (Denomination Error) – the machine is configured for an invalid denomination. Use “birth” chips to initialize the game. **Subcode 10** (Max Bet Error) – the machine is configured for a invalid max bet amount. Use ‘birth’ chips to initialize the game. Use “birth” chips to initialize the game. **Subcode 11** (Schedule Error) – the machine is configured with an invalid schedule. Use ‘birth’ chips to initialize the game. **Subcode 12** (Max Credit Error) – the machine is configured with an invalid max credit amount. Use ‘birth’ chips to initialize the game. **Subcode 13** (Max Win Error) – the machine is configured with an invalid maximum win before the handpay amount. Use ‘birth’ chips to initialize the game. **Subcode 14** (Machine WR Error) – there was an error writing the machine configuration to the EEPROM on the backplane board. Replace the backplane board. **Subcode 15** (Game WR Error) – there was an error writing the game configuration to the EEPROM on the main logic board. Replace the VIG II logic board.

MESSAGE	CODE	TYPE	GM	DEFINITION
COUPON INCOMPATIBLE	**237**	Event	B	The coupon value is too large for the game to accept, or is incompatible with the game's denomination.
COUPON REJECT	**236**	Event	B	The monitor port system did not respond with the value of a coupon, or the game could not accept the coupon.
COUPON REQUEST	**235**	Event	B	A coupon has been inserted into the bill validator.
COUPON VEND	**234**	Event	B	The bill validator has successfully vended a coupon.
CREDIT COLLECT	**198**	BESS Event	B	Credits have been cashed out as a hopper payout (BESS event).
CREDIT OVER MAX	**84**	SYS Error	B	The credit meter exceeds the configured maximum amount.
CREDIT PLAY	**193**	BESS Event	B	A game has started from credits (BESS event).
CREDIT VAL	**199**	BESS Event	B	Credit value has been reported to BESS (BESS event).
CREDIT WIN	**197**	BESS Event	B	A win has been added to the credit meter (BESS event).
DIVERTER TILT	**204**	Soft Tilt	B	The system has sensed that the coin diverter is not responding to a hopper or drop command.
DROP CLOSED	**55**	Soft Tilt	B	The optional drop door is closed. This soft tilt clears following the first game play after the door is closed.
DROP OPEN	**54**	Soft Tilt	B	The optional drop door is open. This soft tilt does not disable game play).
EEPROM BAD	**12**	Hard tilt	B	One or both of the game EEPROMs is defective. 1) Try to re-configure the game. 2) Replace EEPROMs. 3) Replace CPU board. **Subcode 14** (MACH WR ERR) – cannot write to EEPROM on the backplane board. **Subcode 15** (GAME WR ERR) – cannot write to EEPROM on the VIG II logic board.
EVENT LOG OVERFLOW	**200**	Event	B	The event log has exceeded the 100-event capacity. The oldest events are being overwritten.
EXCESS BILL CREDIT	**74**	Hard Tilt	B	More credits were added than should have been for the value of the last bill stacked.
EXCESS CI	**43**	Hard Tilt	B	This tilt occurs when more than 10 coins per second are detected.
EXCESS CI CLR	**44**	Event	B	An excess coin tilt has been cleared.
FIRMWARE CHANGE	**92**	Hard Tilt	B	The EPROM version is different from the previous time the game was powered on.
GAME CONFIG CHANGED	**212**	Event	B	An event that indicates that a game parameter was changed.
GAME DENOM CHANGED	**213**	Event	B	The game denomination has changed (multi-denominational games only).
GAME N LOCKOUT	**71**	Soft Tilt	B	Game #n (multi-game) has been locked out by the monitor port.
GAME OUT OF SVC	**102**	Event	B	The game has been set (Configuration menu) to the 'Out of Service' condition. Setting the game to the 'In Service' condition form the Configuration menu is the only way clear this condition.
GAME PLAYABLE	**244**	Event	B	GMMS system has returned the game to a playable condition. GMMS only.
GAME START	**10**	Event	B	A reel spin or bonus re-bet has started.
GDD BUSY	**16**	Soft Tilt	V	The Gaming Display Device is taking too long to perform a task. This usually indicates a software error. If the problem persists, contact CDS Field Service.
GDD DOOR CLOSE	**241**	Soft Tilt	V	The game logic door has been closed. GMMS only.
GDD DOOR OPEN	**240**	Soft Tilt	V	The game logic door is open. GMMS only.
GDD ERR AUTO CLR	**18**	Event	V	A version error was detected for the Gaming Display Device (GDD), however, a CRC check resolved the error.

MESSAGE	CODE	TYPE	GM	DEFINITION
GDD INVALID	**13**	Hard Tilt	V	The VIG II CPU cannot validate he Gaming Display Device (GDD). There may be a subcode 16 (INVALID GDD VERSION), which indicates the hard drive version is not correct for the installed VIG II EPROMs. Replace the hard drive with the correct one. Faulty QUARTs on the VIG II may also cause this error.
GDD MSG BLOCK	**19**	Event	V	The Gaming display device (GDD) blocked a message. If only periodic, this is not a problem, but if it happens regularly, there may be a problem with the GDD or the hard drive.
GDD OFFLINE	**17**	Soft Tilt	V	The Gaming Display Device (GDD) is not communicating. Check the GDD and the communications cable.
GDD VERIFY FAIL	**15**	Hard Tilt	V	Could not verify the Gaming Display Device (GDD). This usually indicates a problem with the hard drive or BIOS chip on the GDD. Defective QUARTs on the VIG II may also cause these errors. **Subcode 1** Error with communications. Check QUART, communications cable, GDD. **Subcode 17** Error with hard drive authentication. Replace hard drive. **Subcode 18** Error with hard drive authentication. Replace hard drive. **Subcode 19** Error with hard drive authentication. Replace hard drive. **Subcode 20** The wrong BIOS is installed.
GEN ERR CLR	**99**	Event	B	A general error has been cleared.
GEN MEMORY ERR	**211**	Hard Tilt	B	A general memory error has occurred. Replace the main logic board.
GEN MONITOR TILT	**205**	Soft Tilt	V	The system has sensed a 'monitor failure' condition.
GMMS COMM DOWN	**239**	Soft Tilt	B	The GMMS host is not communicating with the game. GMMS only.
GMMS DISABLE	**245**	Event	B	The GMMS system has disabled the game. (GMMS event).
GMMS LOCKOUT	**238**	Soft Tilt	B	The GMMS host system has locked out game play. GMMS only.
GMMS POLL TO	**246**	Event	B	The GMMS system has shut the game off because of the time of day. GMMS only.
HANDPAY CLEAR	**41**	Event	B	A handpay event has been completed.
HANDPAY COLLECT	**23**	Hard Tilt	B	The game handpay threshold has been exceeded. The game must be reset following the handpay.
HANDPAY LOCKOUT	**40**	Hard Tilt	B	A win has occurred that has exceeded the single game threshold setting. The amount must be handpaid.
HOPPER DRY	**36**	Hard Tilt	B	The hopper has run out of coins during a payout. And the hopper probe status indicates that the hopper was full when this tilt occurred.
HOPPER EMPTY	**30**	Hard Tilt	B	The hopper has run out of coins during a payout. And the hopper probe status does ***not*** indicate that the hopper was full when this tilt occurred.
HOPPER JAM	**32**	Hard Tilt	B	The coin-out signal is too long. This usually indicates a hopper jam occurred while collecting or the hopper coin-out switch was not adjusted properly.
HOPPER JAM CLR	**33**	Event	B	The hopper jam tilt was cleared.
HOPPER LOW	**203**	Event	B	Not implemented as of 02/01/2001 (reserved for future use).
HOPPER OVERPAY	**28**	Hard Tilt	B	More coins were detected during the payout than were expected.
HOPPER RESART	**26**	Event	B	The hopper pay was restarted after a hopper error was cleared.
HOPPER RUNAWAY	**38**	Hard Tilt	B	The hopper was paying when it should not be paying.
HOPPER START	**25**	Event	B	An event indicating the start of a hopper pay.
HOST COM DOWN	**101**	Soft Tilt	B	Communications with the host system has failed.

MESSAGE	CODE	TYPE	GM	DEFINITION
HOST LOCKOUT	**69**	Soft Tilt	B	Game play was disabled by the host port.
HPR DRY CLR	**37**	Event	B	A hopper dry condition has been cleared.
HPR EMPTY CLR	**31**	Event	B	The hopper empty tilt has been cleared.
HPR OVERPAY CLR	**29**	Event	B	An event that indicated that a hopper overpay has been cleared.
HPR PAY COMPLETE	**27**	Event	B	The hopper has completed a payout.
HPR PAY WIN	**196**	BESS Event	B	A win has resulted in a hopper payout.
HPR RUNAWAY CLR	**39**	Event	B	A hopper runaway condition has been cleared.
HPRPAY DOOR OPEN	**24**	Hard Tilt	B	The main door was opened during a hopper payout.
ILLEGAL REEL MOVEMENT	**81**	Hard Tilt	B	Reel or wheel movement detected when it should be idle. On video machines, this tilt is applicable only to games with a bonus wheel.
INVALID BILL	**75**	Hard Tilt	B	The bill validator reported an invalid bill denomination.
ISOPWR BAD	**14**	Soft Tilt	B	The isolated power supply (+5V/+24V) is offline. Cycle the game power. If still no power, replace power supply. If Power LEDs are on and the tilt remains, replace the sense opto (U49 for VIG II's up to V1.2) or the entire VIG II logic board.
LAST GAME CRC	**91**	Hard Tilt	B	The CRC check for the last game failed.
LIGHT BULB FAILURE	**207**	Soft Tilt	B	The system has sensed that a lamp failure has occurred.
LOG ERR	**1**	Event	B	An error occurred in the game event log or monitor port event log. After clearing the log, all prior events are erased. GMMS only.
LOG FULL	**243**	Event	B	The GMMS event log is full. GMMS only.
LOGIC CLOSE	**57**	Soft Tilt	B	The logic door is closed. This soft tilt clears following the first game play after the door is closed.
LOGIC OPEN	**56**	Soft Tilt	B	The logic door is open (game play is disabled).
MAIN CLOSE	**51**	Soft Tilt	B	The main machine door has been closed. This soft tilt clears following the first game play after the door is closed.
MAIN OPEN	**50**	Soft Tilt	B	The main machine door is open (game play is disabled)
MEM SIG COMPLETE	**242**	Event	B	The GMMS game signature calculation is complete. GMMS only.
MENU ACCESS	**42**	Event	B	The attendant keyswitch has been activated for the Operator menu function.
MENU EXIT	**34**	Event	B	The attendant keyswitch for the Operator menu has been deactivated.
METER ERR	**60**	Soft Tilt	B	Current was not sensed when the system attempted to increment a (hard) meter. Either the meter coil is open, or the corresponding meter is not installed and the meter test function has not been disabled. Refer to the "Hard Meter Check" option in the Configuration section of this document. This soft tilt does not disable game play.
METER ERR CLR	**61**	Soft Tilt	B	A (hard) meter error has been cleared.
MONITOR COMM ERR	**208**	Soft Tilt	B	The monitor is not communicating with the game. Check game configuration, connections and the monitor. Game play is not disabled. Note: the US-0320 game does not use a monitor.
NETWORK LOCKOUT	**64**	Soft Tilt	B	Game play was disabled from the monitor port. It can be reset from the monitor port device or by changing the monitor port protocol.

MESSAGE	CODE	TYPE	GM	DEFINITION
NO GDD COM	**11**	Hard Tilt	V	The CPU cannot communicate with the Gaming Display Device (GDD). 1) Verify that all cables to the GDD are connected. 2) Replace the GDD.
OUTPUT FAILURE	**9**	Soft Tilt	B	A hardware error has occurred on the VIG-520 main board.
PERIODIC CLEAR	**6**	Event	B	The Periodic meters were cleared via the Soft Meters option.
PRINT DENIED HANDPAY	**105**	Hard Tilt	B	A cashout request for a ticket has failed because the system did not authorize the print. The player must be hand paid.
PRINT FAIL HANDPAY	**106**	Hard Tilt	B	The cashout ticket printer failed while a ticket was being printed.
PRINTER COMM	**110**	Soft Tilt	B	The system has detected a communications failure to the ticket printer.
PRINTER INK	**114**	Soft Tilt	B	The system has sensed a 'low ink' condition at the ticket printer.
PRINTER JAM	**115**	Soft Tilt	B	The system has sensed a 'carriage jam' condition at the ticket printer.
PRINTER LOW	**111**	Soft Tilt	B	The system has sensed a 'low paper' condition at the ticket printer.
PRINTER OUT	**112**	Soft Tilt	B	The system has sensed a 'no paper' condition at the ticket printer.
PRINTER RESET	**113**	Soft Tilt	B	The ticket printer has been reset.
PROG AMOUNT NOT RXED	**210**	Soft Tilt	B	The progressive controller is not sending an amount to the game. Check the progressive controller setup and the cable connections.
PROG COM DOWN	**103**	Soft Tilt	B	A communications failure has occurred between the game and the progressive controller.
PROG JACKPOT	**35**	Hard Tilt	B	A game progressive jackpot has been hit.
PROG JACKPOT NO AMT	**209**	Event	B	A progressive award has been won, but the game does not know the amount yet.
PROG LOCKOUT	**70**	Soft Tilt	B	The game was locked out by a progressive system such as a multi-site progressive.
RAM ERR CLR	**4**	Event	B	The RAM was cleared either from the birth chip or the initialization option.
RAM GAME DATA	**90**	SYS Error	B	The game RAM is defective. The Sub-code indicates what portion of RAM is in error. The "Initialization" option in the Configuration menu allows the operator to clear the RAM to default values. All game data is lost as a result of initialization. **Subcode 1** (Game Meters) – the game meters are defective (i.e. bet, credits, etc.). **Subcode 3** (Machine State) – the machine state is defective. **Subcode 4** (General Game Data) – the game data is defective. **Subcode 5** (Specific Game Data) – the data specific to the game type is defective. **Subcode 6** (Previous Game Data) – the previous game data is defective. Note: this is not a system error.
RAM OVERBOOKED	**87**	Hard Tilt	B	Applicable only to demo chips. Not enough free RAM to run auto emulation.
RAND SEED	**86**	SYS Error	B	A seed error occurred in the random number generator.
REEL TILT	**22**	Hard Tilt	B	A mechanical reel tilt occurred. The subcode indicates the reel number.
RESET	**2**	Soft Tilt	B	The game was reset. This soft tilt is cleared when a game is played.

MESSAGE	CODE	TYPE	GM	DEFINITION
REVERSE CI	**47**	Hard Tilt	B	The coin comparitor error signal is active. This is caused by passing a coin in the wrong direction, passing the coin too slowly through the comparitor, passing the coin through the accept side of the comparitor when the comparitor is trying to reject the coin or there is no reference coin in the comparitor.
REVERSE CI CLR	**48**	Event	B	A reverse coin-in error condition has been cleared.
ROM CHKSUM	**97**	Hard Tilt	B	The game EPROM CRC is not correct. This usually indicates bad game EPROMs.
RTC BAD	**65**	Hard Tilt	B	The real-time clock on the CPU board indicates an invalid time. Check the system time from the Configuration menu. If the time cannot be set correctly, suspect a defective battery on the CPU board.
RTC INIT	**66**	Event	B	An event indicating that the real-time clock was set.
SCHD CHANGE	**94**	Hard Tilt	B	The schedule has changed since the game was last powered on.
SCHD INDEX	**88**	SYS Error	B	While determining the game results, the system detected that the machine was configured with an invalid schedule.
SERVICE REQ OFF	**202**	Event	B	The service button change/service button has been pressed again to extinguish tower light.
SERVICE REQ ON	**201**	Event	B	The service button change/service button has been pressed once to activate tower light.
SMART REEL COM DOWN	**104**	Hard Tilt	S	Only applicable to games with more than 6 reels/wheels. Loss of communications with the smart reel driver board.
SOFT MTR	**93**	Event	B	A CRC error was detected in one of the soft meter data structures. The appropriate data structure is cleared.
SOFT MTR TST	**62**	Event	B	There was a soft meter failure during test mode.
SOFT MTR TST CLR	**63**	Event	B	A soft meter error during test mode has been cleared.
SOFT SCHD	**76**	Hard Tilt	B	A CRC error occurred in the soft schedules.
STACK CLOSE	**59**	Soft Tilt	B	The bill validator cassette has been inserted. This soft tilt clears following the first game play after the door is closed.
STACK OPEN	**58**	Soft Tilt	B	The bill validator cassette has been removed (game disabled).
SYSTEM BONUS	**120**	Event	B	A bonus play win has occurred.
TICKET FAILED	**116**	Event	B	The system has sensed that a printed ticket was not dispensed.
TICKET INFO REQUEST	**107**	Event	B	The game has requested information to print a ticket from the monitor port.
TICKET PRINTED	**109**	Event	B	A cashout ticket has been successfully printed.
TICKET REQUEST	**108**	Event	B	The game has requested authorization to print a ticket from the monitor port.
TOUCH ERR	**206**	Soft Tilt	V	The touch screen is not communicating with the CPU. Check the cable connections and the touch screen controller. Note: the US-0320 is a reel-slot game and does not use the touch screen technology. Game play is not disabled because deck buttons are available.
VIRT REEL INDEX	**96**	Hard Tilt	S	The virtual reel index is out of range.
WIN AMOUNT	**83**	SYS Error	B	A win amount greater than possible occurred.
WIN AMOUNT CHANGE	**79**	Hard Tilt	B	The win decoder detected a change in pay amount for a specific win. This usually indicates a software error.
WIN DECODE	**78**	Hard Tilt	B	There was an error decoding the win, indicating a RAM failure or software error.
WIN TYPE	**82**	Hard Tilt	B	An impossible win was recorded.