SLOT TECH
MAGAZINE

Slot Machine Technology for the International Casino & Gaming Industry

Astra Games and Novomatic PC
Quick & Simple Repairs #71
Prism Series LED Panels
The Big One

WMS slot machine as shown at gaming expo in 2009.
Photograph © 2011 Slot Tech Magazine

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PATRIOT GAMING & ELECTRONICS INC.

February 2011

Cover: Photo -Pretty WMS slot machine shown at gaming expo. Photograph © 2011 Slot Tech Magazine

Randy Fromm

Our friends at Patriot Gaming have made a new push to let you know about their "service" service (see their new ad on the left). As a slot tech, having these types of services available can be extremely useful because it allows you to "cherry pick" your way through stacks and stacks of easy-to-repair units (that's 75% of them, in my opinion) and send the other 25% away to the highly experienced and specialized technicians at Suzo-Happ, CasinoTech or Patriot who likely have seen your mystery problem a hundred times before! If any of our readers has used any of these repair services, I would be interested to know how it worked out for you. Was it expensive? Was it worth it? Was it a good repair?

Randy Fromm - Publisher

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TechFest 22
Mystic Lake Casino
May 2011

Astra Games and Novomatic PC
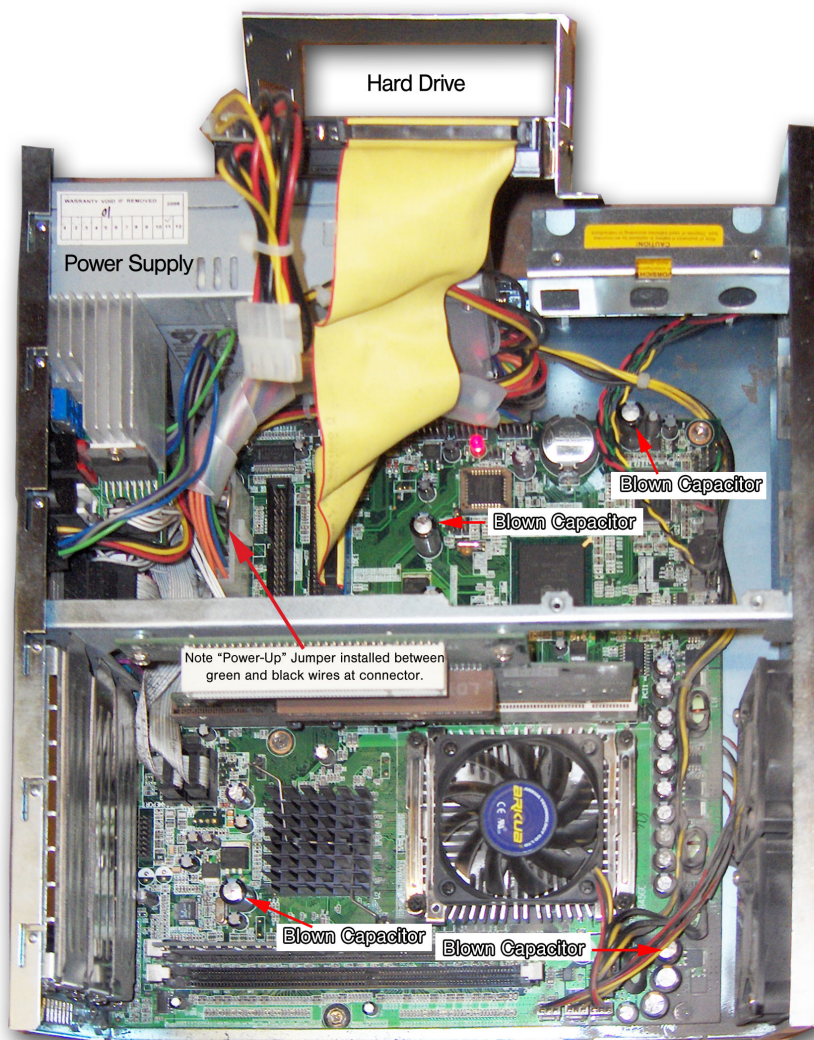
By Tony Clark

I have had a couple of these PCs drop dead over the last few months. Now, I am no super tech but will have a crack at replacing faulty parts (especially if it happens more than once) before sending it away. I like to use my best tools for this: eyes and ears

This fault involves the Astra games and Novomatic's notebook PC. The symptom is a dead, non-booting machine. Changing the notebook cured the machine so it's off to the bench with the machine. As these PCs have no on/off switch, first check is the BIOS, the Basic Input Output System. BIOS is the little "bootstrap" program that tells the CPU where to look for its Operating System and identifies things like the video card, hard drive(s), keyboard, mouse, etc. As the name implies, these are the basic input and output devices.

In order to start troubleshooting, I needed to power up the PC, so it's time to

open up the unit. This is done by removing the two screws at the rear of the unit, sliding the top then lifting off the top case. With the unit open, find the main power plug to the motherboard. In a PC, the motherboard is used to switch the power supply on however, this can be done manually by finding the

green wire and linking it to a black ground wire in the same plug. You're simply grounding the green wire. To gain good access to this plug, you need to lift the hard drive out of the way. This is easy to do. Four screws hold the hard drive cradle in place and can be seen and accessed easy enough from the top. After

Hard Drive

Power Supply

Blown Capacitor

Blown Capacitor

Note "Power-Up" Jumper installed between green and black wires at connector.
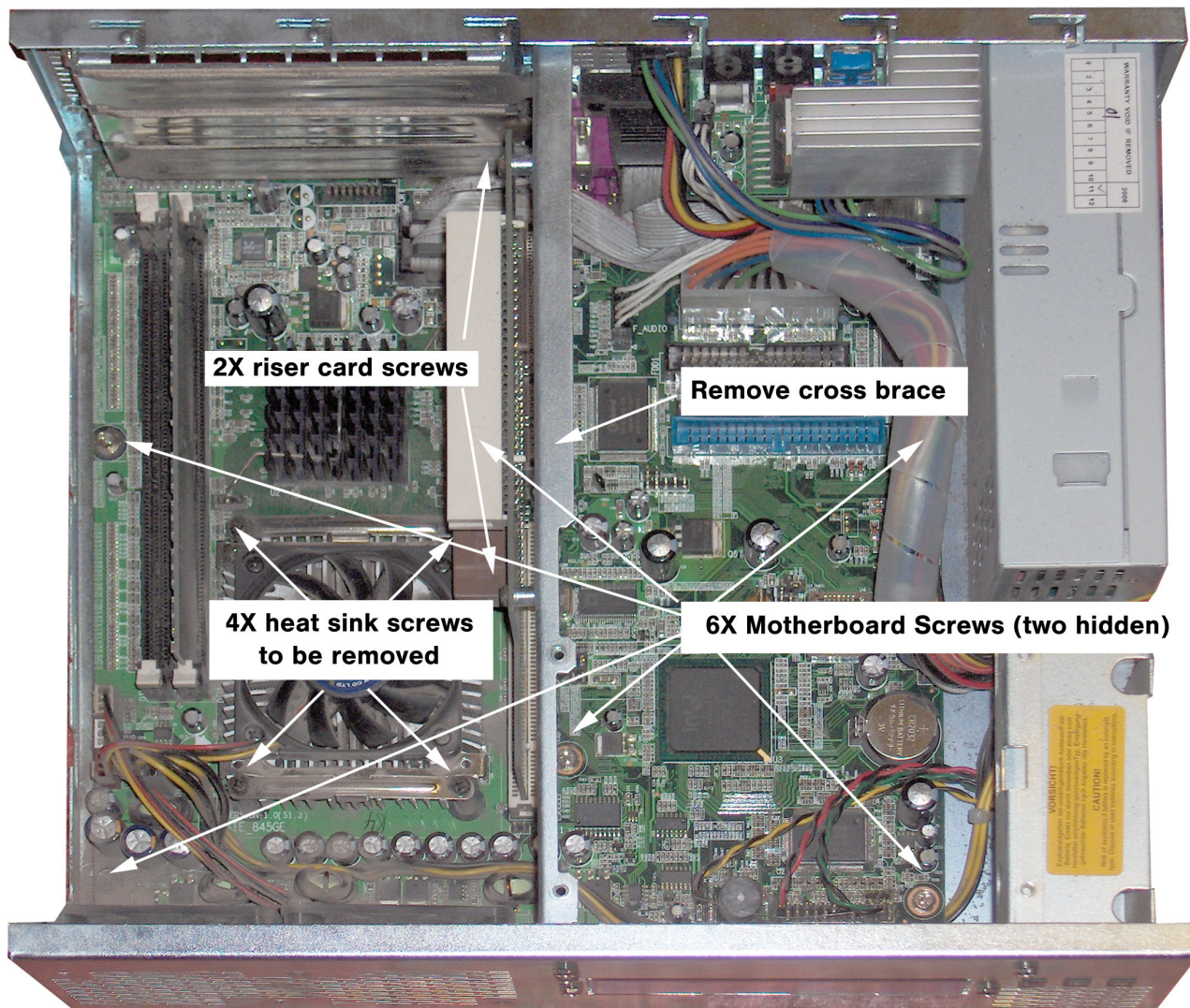
Blown Capacitor

Blown Capacitor

removing the screws, slide the cradle towards the middle of the unit and lift the non-connector end up and out exposing the remainder of the motherboard and giving access to the power plug.
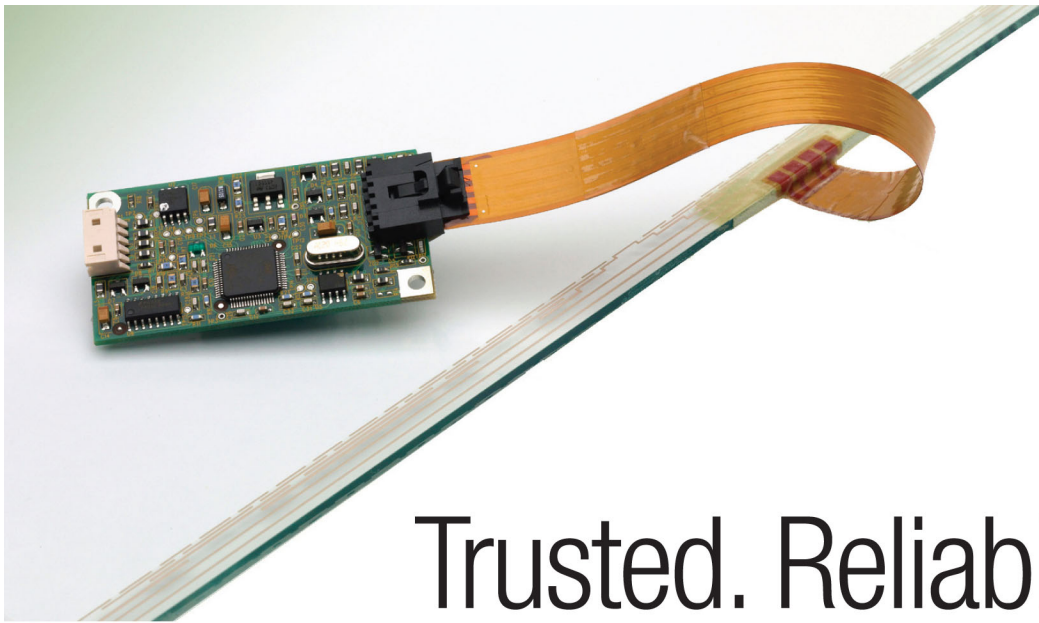
On this occasion, the power supply kicked in along with the case fans and CPU fan but still nothing. I was not even able to boot the BIOS. On removing the case top, the first thing I noticed was that capacitor CE76 (1500uf 16v) was nicely rounded on top. That's not a good sign. That got worse

when the hard drive was lifted out to gain access to the power plug. Four more capacitors had rounded tops as well: CE8, CE16, CE50 and CE51 (1500uf 6.3V). These would need to be changed for a start.

To change the capacitors requires the removal of the motherboard. That's not as easy as some as it's all packed in nice and tight. Making sure there is no power connected to the PC, disconnect the hard drive IDE and power connectors and remove it to a safe place. Remove the main

twenty-way power connector and the second four-way power connector next to the CPU, unclip the RAM and set aside. Remove the graphic card and riser card if fitted (two screws secure this) then the cross brace fitted from front to back. Again, two screws secure it at both ends. Disconnect the three LED leads that go to the front of the unit, the two case fans and CPU fan connector, two serial input/output connectors, and lastly the audio plug next to the power-in plug. The next removal sequence is down to personal preference. The motherboard is

2X riser card screws

Remove cross brace

4X heat sink screws to be removed

6X Motherboard Screws (two hidden)

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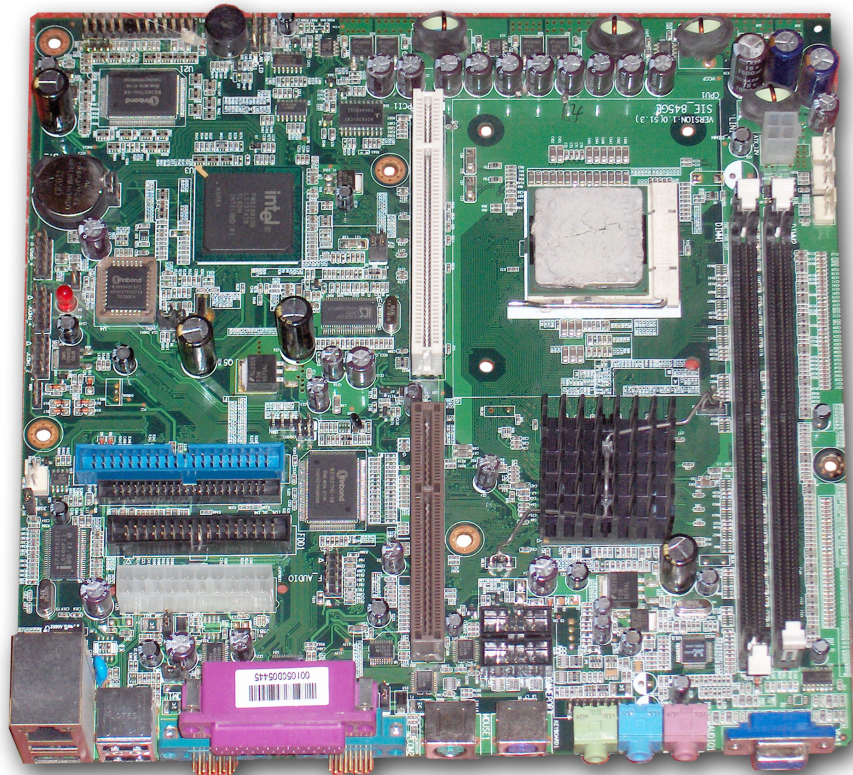**PATRIOT GAMING & ELECTRONICS INC.**

3M

held in place by ten screws, six directly on the motherboard and four that hold the CPU heat sink and fan in place. As this unit does not use a backplate, the four 'D' connectors are held in place by two hex screws at each end, a total of eight are fixed directly to the case. I start with the 'D' connectors first then loosen the six motherboard screws, remove the four that hold CPU fan and heat sink in place, then fully remove the six motherboard screws. This should see the motherboard loose and ready for removal. To make this easier, you can remove the two case fans. Once you have removed the motherboard, now is a good time to clean the inside of the case, fans and CPU heat sink
.

After replacing the five capacitors, replace the motherboard in the reverse order. Remember to use heat sink compound when refitting the CPU fan and heat sink. A quick double check that all connectors have been refitted correctly and power up, then that wonderful moment when everything comes on and a job well done.

 - Tony Clark
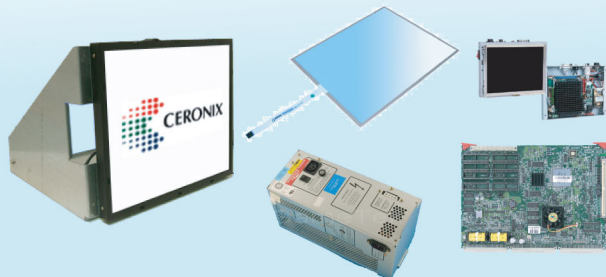tclark@slot-techs.com

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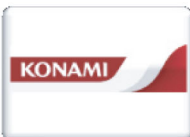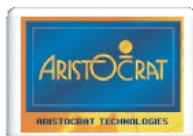**Motherboard cleaned and capacitors replaced**

Job done!

Quick & Simple Repairs #71

By Pat Porath

WMS 550 Upright Printer Problem

A call was received that a WMS 550 upright game (with the older type CPU) Had a ticket printer error. Since the game is an older one, it has an Ithaca 850 type printer. At first, the game would print the standard "void" ticket after a reboot and then it would print the ticket that was for the credits. After that, the game would go into a "printer error" tilt. Rebooting the game a few times didn't help and replacing the printer along with the com board didn't help either. It seemed like whatever I did, the error would not clear. I also went as far as reseating the CPU and I/O boards which didn't help.

By this time it was the end of the shift. I told them that my suggested next step was a RAM clear on the main processor board (CPU board). Since the game had credits on it, I was unable to gain access to the diagnostics of the game.

Neither the diagnostic button nor the key would work.

The following morning, I was told that the main processor had been replaced and the game was OK. It didn't quite work that way though. Early in the afternoon, a call was made to a tech and it was the same darned machine with a printer problem once again. As soon as I heard the game number come over the radio and the problem, a few choice words were spoken. For some reason "printer software version" popped into my head. When I arrived at the game and removed the paper tray along with the printer mother board cover, the problem was staring right at me. The printer did in fact have the wrong version of software installed. Ithaca calls it "Revision" number, I call it the "version" number. With an Oasis type player tracking system and in a WMS 550 (with an older

CPU board that has EPROMS not flash cards) the Ithaca printer must be a version 31 only. Aristocrat games use version 33 while WMS Bluebird games use version 37. After the cover was removed and I could see the number on the chip (which indicated 37 NOT 31 like it was supposed to) I knew the problem right away. I went to the shop and grabbed a spare that had the correct "version 31" chip and put it in the game. Of course, the power has to be turned off when swapping printers.

After power was turned back on it printed the "void ticket" like it was supposed to, and then the credit ticket like it was supposed to. Only this time, after the ticket came out for the credits the game did not have a printer error. The problem was the "wrong version" software. When I grabbed a spare the first time, I unfortunately didn't even think of the version number AND thinking that

version 31 chip for an Ithaca 850 ticket printer

it was correct, troubleshooting procedures went on from there. Tests were done on the game and it worked fine.

WMS Bluebird XD Main Door Lock Problem

I recently had a main door lock problem on a WMS Bluebird XD game. The XD cabinet is fairly new to the market and I haven't read much material about them yet so I'm learning as I go. On the screen, it displayed a "door open H" which means the hatch door is open (slant top main slot door). There are two door latches, one on each side. When I pushed on the door, the right hand side would not lock. I even firmly closed the door without success. Then we looked at the locking assemblies to see how they worked and if there were any adjustments
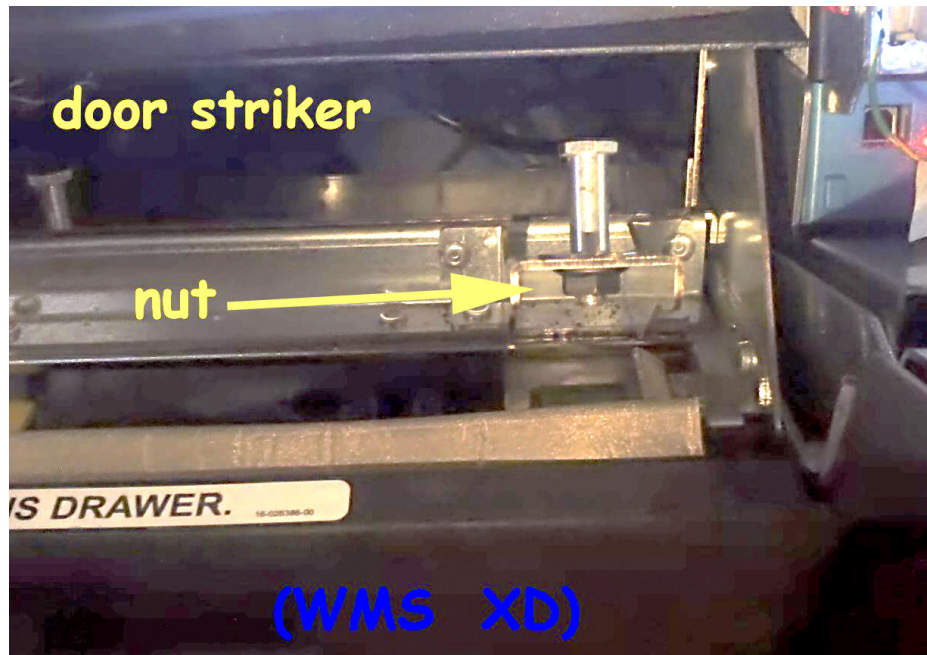
that could be made. At first glance, no adjustments were noticed at all for the latch striker, the latch itself or even the cherry switch. One would think there should be some type of adjustment somewhere, so we started looking at the latch again. It looked like a

real chore to take out so I loosened the latch striker a little and noticed something. Even though it did not look like it, the striker was in fact adjustable. I couldn't see it because there is a large washer that covers up the hole (see pictures). On the
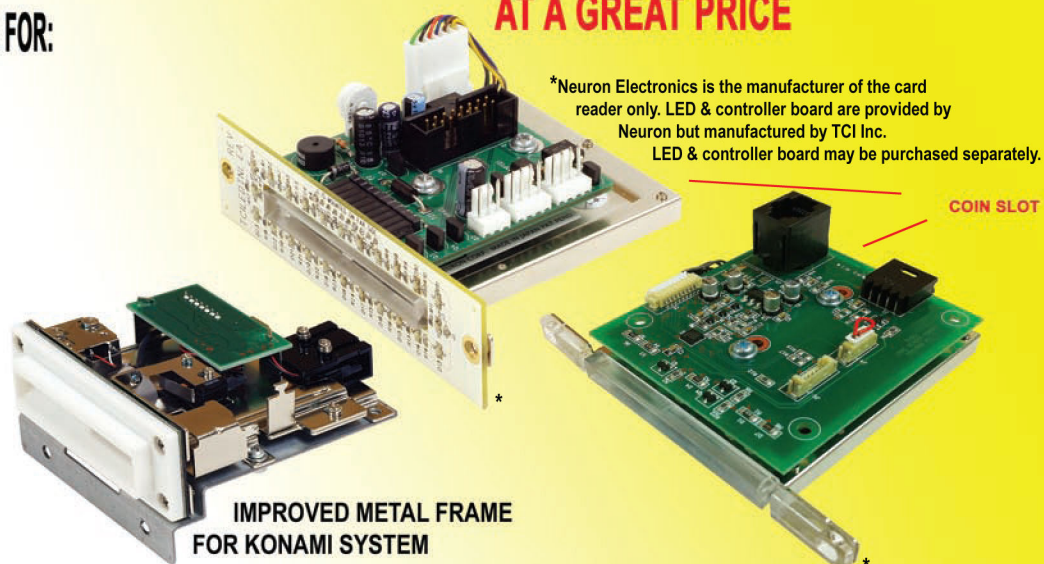
bottom of the striker is a fairly large nut with a washer on it so it wasn't seen from the bottom side either. Now that the nut was a bit loose, I moved it inward almost all the way, then tightened the nut back up. Next, the main slot door was closed. Bingo! This time it locked properly. The "door open H" cleared and the game was back online.

IGT AVP 3.0 Hard Drive Error

Have you ever run into an IGT AVP 3.0 that had a hard drive error or didn't want to read the hard drive? The following is some interesting information that I ran across and thought I'd pass along. First off, the AVP 3.0 (such as an "Amazing Race" or "Diamond Factory" game) uses a non-standard hard drive protocol. This basically means only a factory IGT hard drive will communicate with the game. Others just simply won't communicate and function.

If the "brain box" memory didn't get cleared after the manufacturer testing, or if it is corrupt, the AVP 3.0 "brain box" won't communicate with the hard drive. If this happens, the CMOS can be reset so the game WILL see the hard drive. To clear the CMOS, find the button type back up battery located toward the rear of the brain box. Right next to it is the three pin connector with a blue jumper on it. Move the jumper from its current

location (which should be closest to the rear of board) to the "clear" position. Move jumper one pin over so it is flush with the far side of the three pin connector. Leave the jumper in that position for about 30 seconds. Return it to its original position, put the brain box back into the game and turn the game on. Enter the "operators menu" (options) and be sure to set the time and date. If the date is not set, the game may come up with a "license key failure" error which would not be good at all. After the date and time are set, double check and/or set game options and the game should be back online.

Ainsworth Game Kept Rebooting Itself

What was the deal with this upright Ainsworth game? The symptom was that the game would continuously reboot itself. It would boot up all the way, then start

over again. After trying different things such as swapping software, individual sub-assemblies were disconnected such as the bill acceptor and ticket printer. When the bill acceptor was put back in the game, it would start rebooting again. The problem was with the bill acceptor. Somehow the jumpers that are located on the bottom of the UBA were in the wrong position and configured for a different type of game. Once they were in the correct position, the bill acceptor was put back into the game. This time it didn't reboot and the game was OK.

WMS Bluebird Monopoly "No Signal" on the Screen

I was told that a WMS Bluebird Monopoly Wide Area Progressive game had a "no signal" error on it. Since it was a wide area progressive, the field tech was called to take a look. When power was turned off

"hard drive error" on monitor
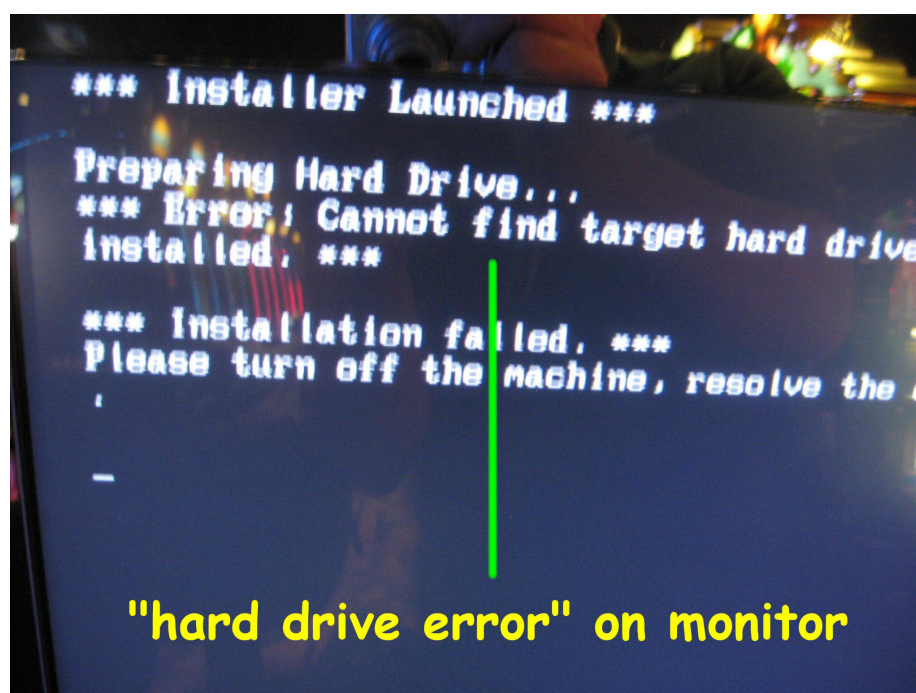
then back on again it was noticed that the power supply behind the reels appeared dead. How could we tell? The cooling fan wasn't spinning on it. An inoperative fan usually indicates a bad power supply (although the fan itself can fail, of course). A replacement was installed and when power was turned back on, the game started to boot up normally. The power supply behind the reels was the problem. Once the power supply was replaced, the game booted up and worked fine. When doing preventive maintenance on these games, try not to forget to blow the dust bunnies out of that unit also. It could save a down game in the future.

Other Fan Notes

On Bally Cinevision and Cinereel games, if the cooling fans aren't working on the 5/12v and 24v power supplies, they will get very hot and basically cook themselves and go bad. On an Atronic e-motion game (such as "Cash Fever") if the problem looks like a power issue and the fan on the power supply isn't turning, more than likely it needs to be replaced.

On an upright WMS Bluebird game, if the main LCD is black and the cooling fan isn't spinning, take a look at the power supply, located on the lower right side. If the fan isn't spinning, it needs to be replaced.

Atronic e-motion Wouldn't Boot

We had an e-motion game that was shut down. I was told that it wouldn't boot up all the way, it would only keep rebooting itself. When I turned the game on, boot up appeared normal. The CD drive appeared to be reading the disk because the light on the exterior was flashing rapidly (this also applies to other games that use a CD). If the light flashes very slowly and then stops, there is a good chance that it isn't reading the disk. Then, there may be a problem with the disk drive or with the CD itself.

During boot up, "press reset button" appeared on the screen, so I pressed it.

That didn't help the problem. I tried it a few times without any luck. Next, I took a look at the CD itself. There was a pretty good scratch across it which I thought might be an issue. Luckily, the game next door had the same program so the CDs were swapped. The game with the suspicious CD booted up fine. This told me even though it was fairly scratched, it worked. I was also told that the CD drive and power supply had already been replaced before my shift. I checked the connections to make sure they were snug on both the power supply and the drive (as well as other connections) but they all looked good.
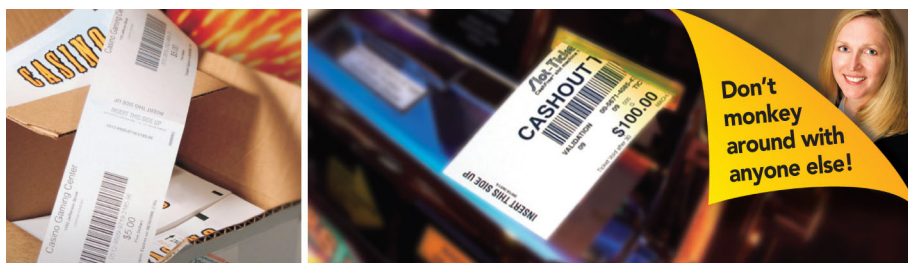
Cold Cathode Lamps and Related Supplies
From Pacific Illumination

ARISTOCRAT
9440	Single raw cold cathode lamp for 15 inch LCD monitor in Aristocrat games
9470	Single raw cold cathode lamp for 17 inch LCD monitor in Aristocrat games
9690	Single raw cold cathode lamp for 19 inch LCD monitor in Aristocrat games
1110	Single raw cold cathode lamp for 22 inch LCD monitor in Aristocrat games

ATRONIC
8690	Dual cold cathode lamp assembly for Atronic slot machine with 17" LCD monitor
9500	Single raw cold cathode lamp for 15 inch LCD monitor in Atronic games
9520	Single raw cold cathode lamp for 17 inch LCD monitor in Atronic games
9260	Single raw cold cathode lamp for 19 inch LCD monitor in Atronic games

BALLY
1240	Used 6.2" Hitachi LCD #TX16D11VM2CCA with attached 5 wire touch screen for Bally Iview
8460	NEW 6.2" Hitachi LCD #TX16D11VM2CCA with attached 5 wire touch screen for Bally I-View
8650	Single cold cathode lamp assembly for Bally I-View 6.2 inch "IDW" LCD
8680	Single cold cathode lamp assembly for Bally I-View 6.2" Hitachi LCD #TX16D11VM2CCA
8950	NEW 5 wire touch screen kit for Bally IView 6.2 inch "IDW" LCD, includes metal base & copper foam grommet
9890	NEW 5 wire touch screen for Bally IView 6.2" Hitachi LCD #TX16D11VM2CCA, DOES NOT include metal base or copper foam grommet
1060	NEW 5 wire touch screen for Bally IView 6.2" "IDW" brand LCD, DOES NOT include metal base or copper foam grommet
8320	Metal housing for Bally Iview "IDW" touch screen
1200	Copper foam grommet for the touch screen on Bally IView 6.2" "IDW" brand LCD
9800	Single output cold cathode lamp inverter for Bally IView 6.2" "IDW" brand LCD
1040	Single output cold cathode lamp inverter for Bally Iview 6.2" Hitachi LCD #TX16D11VM2CCA
9190	Protective Mylar sheet for Bally Iview 6.2 inch "IDW" LCD
9200	Protective Mylar sheet for Bally IView 6.2" Hitachi LCD #TX16D11VM2CCA
1090	Power supply for Bally Iview player tracking system that use the 6.2" "IDW" brand LCD
9250	Single raw cold cathode lamp for 15 inch LCD monitor in Bally games
9080	Single raw cold cathode lamp for 19 inch LCD monitor in Bally games
8770	Single raw cold cathode lamp for 20 inch LCD monitor in Bally games
1130	Single raw cold cathode lamp for 22 inch LCD monitor in Bally games
1140	Single raw cold cathode lamp for 26 inch LCD monitor in Bally games

IGT
8500	Single cold cathode lamp assembly for IGT NexGen 6.2" Hitachi LCD #TX16D11VM2CAA
1430	Single raw cold cathode lamp for IGT NexGen 6.2" Hitachi LCD #TX16D11VM2CAA
8610	Protective Mylar sheet for IGT NexGen 6.2 inch Hitachi LCD #TX16D11VM2CAA
1400	Single output 5 volt cold cathode lamp inverter for 6.2" IGT NexGen Hitachi LCD #TX16D11VM2CAA
8570	NEW 6.2" Hitachi LCD #TX16D11VM2CAA with 4 wire touch screen for IGT NexGen
1310	Used 6.2" Hitachi LCD #TX16D11VM2CAA with attached 4 wire touch screen for IGT NexGen
9090	Single raw cold cathode lamp for 6.2 inch Hitachi LCD #SX16H005-AZA in 1st generation IGT NexGen
9030	Protective Mylar sheet for IGT 1st generation NexGen 6.2" Hitachi LCD #SX16H005-AZA
8480	Single raw cold cathode lamp for IGT game with 10" LCD monitor
8920	Single raw cold cathode lamp for 15 inch LCD monitor in IGT games
9670	Single raw cold cathode lamp for 17 inch LCD monitor in IGT games
9290	Single raw cold cathode lamp for 19 inch LCD monitor in IGT games
1150	Single raw cold cathode lamp for 20 inch LCD monitor in IGT games
1160	Single raw cold cathode lamp for 22 inch LCD monitor in IGT games

KONAMI
8700	Dual cold cathode lamp assembly & 12 volt inverter for Konami belly glass that is edge-lit with cold cathode lamps
9870	12 volt dual output cold cathode lamp inverter for Konami belly glass that is edge-lit
1260	Dual cold cathode lamp assembly for Konami edge-lit belly glass
9240	LED edge- lit panel for belly glass in Konami K2V cabinet
8670	Single RAW cold cathode lamp for Konami belly glass that is back-lit with cold cathode lamps
9780	"L" shaped cold cathode lamp assembly for Konami 7 inch bonus screen LCD
1050	Single raw cold cathode lamp for 15 inch LCD monitor in Konami games
8600	Dual cold cathode lamp assembly for Konami slot machine with 17" LCD monitor
9680	Single raw cold cathode lamp for 17 inch LCD monitor in Konami games
9070	Single raw cold cathode lamp for 19 inch LCD monitor in Konami games
1100	Single raw cold cathode lamp for 22 inch LCD monitor in Konami games
1010	7 inch AU Optronics LCD #070VW01 for Konami bonus screen
1080	Cold cathode lamp inverter for 7" AU Optronics LCD #A070VW01 in Konami bonus screen
8550	Single "U" shaped cold cathode lamp assembly for Konami 7" LCD bonus screen
8590	Single cold cathode lamp assembly for Konami 1.5 video upright denomination back-lit panel

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MULTIMEDIA

9700	Single raw cold cathode lamp for 15 inch LCD monitor in Multimedia games
9710	Single raw cold cathode lamp for 17 inch LCD monitor in Multimedia games
9720	Single raw cold cathode lamp for 19 inch LCD monitor in Multimedia games
9850	Single raw cold cathode lamp for 23 inch LCD monitor in Multi Media games

SPIELO

9740	Single raw cold cathode lamp for 15 inch LCD monitor in Spielo games
9750	Single raw cold cathode lamp for 17 inch LCD monitor in Spielo games
9760	Single raw cold cathode lamp for 19 inch LCD monitor in Spielo games

WMS

8490	NEW 6.4" LG LCD #LB064V02 (TD)(01) for WMS Bluebird bonus screen **(does NOT come with touch screen)**
8470	Single cold cathode lamp assembly for 6.4" LG LCD #LB064V02 (TD)(01) in WMS Bluebird bonus screen
8510	Triple cold cathode lamp assembly for WMS Bluebird 17" LCD monitor
8520	Triple cold cathode lamp assembly for WMS Bluebird 18" LCD monitor
9300	Single raw cold cathode lamp for 19 inch LCD monitor in WMS games
9830	Single raw cold cathode lamp for 22 inch LCD monitor in WMS games

Lamp Testers

9220	Bench top cold cathode lamp tester **(includes A/C adapter & power strip with ON/OFF switch)**
9840	Bench top dual ccfl inverter & lamp tester

Miscellaneous

1280	Raw cold cathode lamp 2.0mm X 250mm
1320	Single raw cold cathode lamp 2.4mm X 245mm
1420	Raw cold cathode lamp 2.6mm X 294mm
1290	Raw cold cathode lamp 2.0mm X 300mm
9910	Raw cold cathode lamp 2.0mm X 310mm
9970	Raw cold cathode lamp 2.6mm X 316mm
1190	Single raw cold cathode lamp 2.6mm X 342mm
8420	Raw cold cathode lamp, color white, size 2.4mm x 381mm
1330	Single raw cold cathode lamp 2.6mm X 385mm
1340	Raw cold cathode lamp, color white, size 2.6mm x 390mm
8400	Raw cold cathode lamp, color white, size 2.4mm x 394mm
1350	Single raw cold cathode lamp 2.6mm X 420mm
1020	Single raw cold cathode lamp, **purple color,** 4.0mm X 580mmRaw
1070	Single raw cold cathode lamp for Wells Gardner 6.4" LCD
8450	Single raw cold cathode lamp for 15" LCD in Touchtunes Maestro Monitor
9920	Single raw cold cathode lamp for 15 inch LCD in Touchtunes Genesis General Touch monitor
9960	Single raw cold cathode lamp for 17 inch ELO LCD
8440	Single raw cold cathode lamp for 19" LCD in MackVision LCD Monitor
1210	Silicone end cap for 2.6mm cold cathode lamp
1220	Single "O" ring for 2.6mm cold cathode lamp
1230	Figure 8 "O" ring for 2.6mm cold cathode lamp
9980	24v single output ccfl inverter for Aristocrat Viridian belly light
1250	Sharp 7" LCD #LQ070T3AG02
1380	One set of touch screen tape for 6.2 inch LCD Includes 2 long pieces and 2 short pieces of tape
8620	24 volt single output cold cathode lamp Piezo inverter

For more information or to place an order contact one of our distributors or contact us at

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What next? How about trying a RAM clear? Nothing else is making any sense so far. I got the chips and started the procedure. This time it booted up normally but I had a hopper tilt. I thought I had disabled it, but maybe I had forgotten. Back into the game options we go, a few other things were set and checked again. Finally it was time to test "promo cash" to see what happens. So far so good, the game accepted "promo" and played normally. I won a few credits so I cashed out a ticket and tried to insert it into the bill acceptor. Now I had another error. The display read something like "redeem vouchers disabled." Now what the world was going on? Options were checked once again and I discovered "redeem vouchers" needed to be set to "redeem vouchers enabled." This tells the game to accept them. FINALLY a ticket (voucher) was inserted and it was accepted. After some time and good 'ole troubleshooting the game was back online.

Editor's note: Once again, we have a situation where a technician is working on something but the hardware is not at fault at all. As a hardware repair guy, this sort of thing frustrates me a bit. If it ain't broke, you can't fix it but isn't that what a technician is supposed to do? I just hate to think that the "correct" answer to so many of these "issues" is to RAM clear and re-set the options

but that sure seems to be the case. It just doesn't seem very "technician-y" to me. If my PC behaved in such a manner—"If you have a program hang, please re-install Windows. Thank you for your co-operation."—I'd take it out back behind the shed and put it out of its misery.

Ainsworth Power Supplies

From what I have read, there are some issues with "Ainsworth Ambassador" power supplies. Not all of them, only ones with Ainsworth part number 220027A. We have a bank of 7 games and they didn't have any power supply issues yet that I know of. We have power supplies with part number 220027B.

On the Ainsworth power supplies I would start by checking the filter capacitors. Be sure to check the two large 800uf 200v ones too. After all the caps test good and it still doesn't work, or blows a fuse, check and replace the following if bad. The voltage regulator UCC3817 (which is located next to the two large caps) Q101, Q103, Q106, and the diodes. If the power supply still doesn't work after all of these components are replaced, use A BIGGER HAMMER. LOL

IGT S2000 Fort Knox Cleopatra-No Sound

We had a customer complaint that an IGT "Fort Knox" game didn't have any sound. Many of the basics were checked out as to why. Both of the speakers

were plugged in, the volume was turned up in the game software, and all of the sound connections appeared to be OK. In the top box area of the game, the sound amplifier was swapped along with the wire harness. That wasn't the problem either. Numerous connections were checked on the backplane board; they all looked good too. Even the main processor board was replaced without success.

What was left? It's called the "flash board." This is the board that sits on top and connects to the main processor board. It was replaced and after the game booted up, the options were set and/or checked, the main door was closed and it was time for the test. We pressed the "player selectable volume" button on the screen and bingo! We now had game sound.

Figuring out the problem on this Fort Knox game was quite a bit more tricky than a sound problem I had on an IGT slant top I-game. Same kind of deal, a complaint was received of no sound, so I started checking it out. First I checked the software volume settings, then I checked out the speakers to see if they were plugged in. For some unknown reason, both of the speakers were unplugged. No wonder it didn't work at all. The speakers were simply plugged back in, a sound test was preformed, volume adjustments were made, and it was fine. On WMS Bluebird games, the

only sound problem that I ever heard of is a sound amplifier going bad. So far I've only heard of this problem a couple of times. Replaced the amp and the sound was OK.

Oasis Keypad Problem

I was in our South Shop when a floor call was received about a Sentinal II type keypad that was not working properly. I grabbed a spare keypad and a few tools I may need to change it out. When I arrived at the game, the numbers 1,2,3, and 4 weren't working; all the others were. This told me I may have a problem with the keypad cable. The end which is connected to the keypad appeared ok, so

the opposite end was checked. A couple of the wires that were inside of the connector looked to be a bit loose so I used my small flat tip screwdriver and pushed them downward so they were snug inside of the connector. This time when I tested the numbers on the keypad, they all worked. It was simply a couple of loose wires.

Bally Alpha 2 Ticket Jam Issue

I must admit these are neat games, from a tech's point of view. Three things caught my attention: 1. A 60 GIG hard drive 2. An external customer connector for headphones (a customer

Ainsworth power supply

can plug in a set of headphones and listen to the game sounds) 3. Only one bezel in the game that bills are inserted into AND tickets come out of. A pretty wild game in my opinion. After all of the normal installation procedures, the paperwork, setting game options, and all that jazz it was time to test the first game. It accepted a bill, all of the buttons worked as they should, and it was time to cash out a ticket. The cash out button was pressed and the ticket did not come out, it jammed. After clearing, the credits were cashed out again and once again another ticket jam.

Something was going on, but what was the problem? These are brand new games. What the . . .? A small screw was found that was slightly touching one of the gears in the Ithaca 950 ticket printer. The screw was removed, but the tickets continued to jam up. On the game next door, with the main slot door open, the feed button was pressed on the printer, this time it printed perfectly. A few more test tickets were pressed using the feed button, they came out fine too. With the slot door in the closed position, a demo ticket was printed and it would jam.

Here's what we found causing the problem: When the main slot door was in the closed position, the speaker cover would slightly push against the full 400 stack of tickets,

thus cause a ticket jam during printing. With the door in the open position, the speaker cover would not press on the stack of tickets. After the 400 stack of tickets was cut in half, now about 200 tickets, the height of them were also cut in half, allowing enough room for the speaker cover to clear the tickets. Now the games printed tickets just fine.

The Ithaca 950s also had a paper tray that I removed so it discouraged slot attendants from filling the games with the 400 stacks. (The tray is only held on with one small screw located in the back, then it snaps out.) Now it appears like the game only holds the 200 packs of paper. Kind of a crazy ordeal isn't it?

<div align="right">

- Pat Porath
pporath@slot-techs.com

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The Big One

By James Borg

People come and people go. Jobs are lost and found. Treasures are buried and dug up, whilst 'X' hardly ever indicates their hidden location. Friends and lovers fall out, only to make up again afterwards. Civilizations can easily be wiped out at the touch of a button, while a new born cries in the background. One can lose one's way and find it again. One can even lose one's precious sanity, but not quite sure if that can be found once it's gone.

However, when a jackpot comes your way, you want it to come again, and again, and yet again, as many times as possible (Multiple Jackpots?). You feel like you're on top of the world and want to start jumping up and down for joy. You want to go round kissing everybody in sight, including the ones you aren't really particularly fond of, especially if they might smell a bit.

You want pleasant things to occur while your mind and thoughts become scattered all over the place at full throttle. You think about that nice country cottage you'd like to retire to, or that car you've had your eye on for ages, the same one that comes with a guarantee to lure beautiful people into it like an industrial vacuum cleaner, or that round-the-world cruise you promised yourself years before, but unfortunately could never afford. You want to do so much with your new attained wealth. You want all the nice things you've yearned for to come your way, a possibility that a nice juicy jackpot can turn into a reality for you.

We all know just how elusive a jackpot can be, be it a little one, or be it THE BIG ONE. People prefer them BIG! The bigger the better, and certainly in this case, size certainly does matter. The targets are set on the one that everybody is so eager to strike, and to

Editor's Note regarding the unit, below: I held an LCD repair class in Florida last month. There were 36 techs in the class. We repaired dozens of units. Every one of them had bad electrolytic capacitors and this unit found them all. Wife, dog, CapAnalyzer 88A-rf
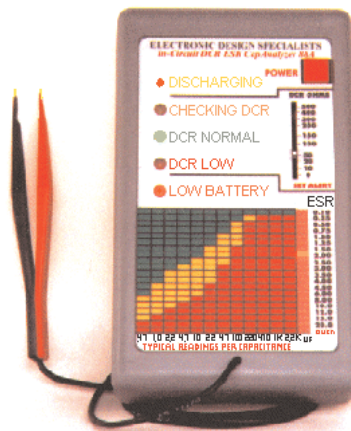
pocket its vast rewards. Some people make it their own personal war to go for it, like a vengeance, or their only scope in life, and won't rest before the ultimate prize is snatched. It can easily become an obsession, for they end up thinking about it first thing in the morning, all through the day, and it would be the last thing on their mind when they rest their head on their pillow, just before drifting off into slumber.

In a popular casino, jackpots of small amounts are struck all the time. It's a pleasant sensation hearing these particular beautiful noises, and hope against hope that the next one to strike will be the machine you're lovingly playing on, and feeding with your hard earned cash. Hoping that the next time your fingers hit the 'SPIN' button, similar beautiful noises are heard from your own machine, as a broad smile from ear to ear would effortlessly outshine all the bright lights being emitted by the machine you've been patiently playing on for countless hours, days, or in some cases, even weeks.

I don't think any words on this Earth can properly describe a person's feelings, and emotional storm, when the reels going round will slowly, as if in slow motion, commence to stop individually from left to right, with each sequential

reel indicating the JACKPOT… THE BIG ONE, on every reel on a played line.

You suddenly hold your breath as you yourself go into 'slow motion mode'. Your eyes start to bulge as you start to feel your practiced smile taking shape. You move your head closer to the screen by a couple of inches, just to make sure you're seeing the whole thing properly, quickly cross your fingers while everything and everybody around you seem to suddenly disappear. The only thing left in the whole of the casino is yourself, and the machine you're sat at. The very same machine that is making your red blood hit boiling point and every cell in your body to vibrate crazily. Your pupils turn into **$$** signs as your

mouth opens wide and you begin to foam at the mouth.

All the surrounding noises, the conversations, the music, and all the normal sounds you usually hear in a casino have also all gone quiet. All you can hear is your own heartbeat, which suddenly seems to have doubled in frequency, and beating so strongly, you're afraid the force it's exerting will blow your eardrums out.

When the last reel also showing the long awaited JACKPOT picture is about to stop just where you hoped it would… the screen suddenly goes blank! BLANK!!!

Aaarrgggghhhhh!!!! You feel yourself freeze and hold your breath. You're afraid to move a muscle until you know what's
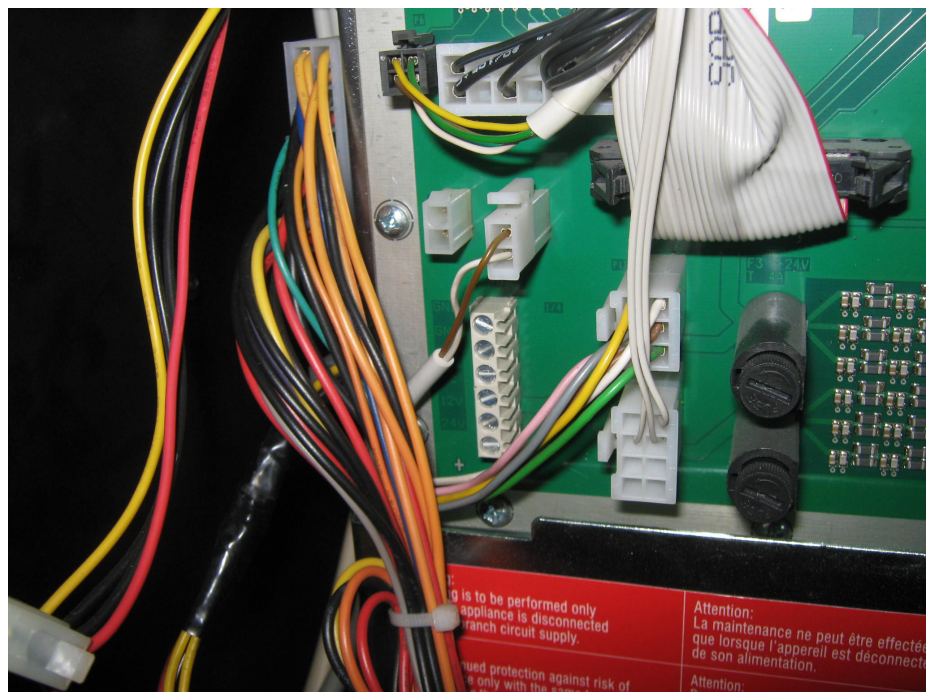

Fig. 1-Backplane showing test points.

going on. The only moving parts are your eyes, after having scanned the machine from top to bottom, without any tangible conclusion. The bill validator's running lights have gone out and there is no more music coming from the machine, while all the button lights have gone off. Only the neon lights remain on. The machine has died just before you very eyes, and along with it, your soul suddenly collapses on the floor out of sheer shock, coupled with a huge dose of terror.

You quickly try to regain your senses and equilibrium. You're totally confused as you've never even been this close to winning a BIG JACKPOT before, so you don't know what to expect. Could it be part of the sequence just before the JACKPOT music starts blaring loud enough to blow your brains out? Could it be the machine is teasing you? When will half the casino come running to congratulate you? You hold your breath again in earnest. You look around to see if anybody has noticed your machine is about to make you rich. You desperately look for a napkin, a tissue, or a handkerchief to wipe the perspiration beads off your forehead as you suddenly feel a hot flush coming up, while refusing to take your eyes off the machine for a second. Is this it? Is this

your lucky day? Is this the day of all days, the day you've been waiting all your life for? Will you become a millionaire overnight and all your problems will be solved shortly?

Sadly enough, the bitter taste of disappointment looms closer overhead. After minutes of waiting, minutes that seem like decades, the machine ignites back into life again with words that you've never seen before on the game. White words on a black background. You are not happy with what you see and call for a member of the staff to explain what is going on and what happens next. The words uttered by the attendant don't help your smile at all. Words to the effect of:

"I'm sorry, Sir, but, the machine seems to have developed a fault." You hear yourself repeat: "A FAULT????????? What about my JACKPOT??????"

You quickly start to explain to the attendant that the machine was about to hand you the BIG ONE on a silver platter. The attendant's answer to your frantic pleas isn't what you were hoping to hear as he goes on to add, "Unfortunately, malfunction nulls and all plays and wins."

As luck would have it, wonder of wonders, and other similar terms relating to the same thing, I happened to be on location at the time. The phone in my workshop came to life. After a quick explanation of the disaster from a voice at
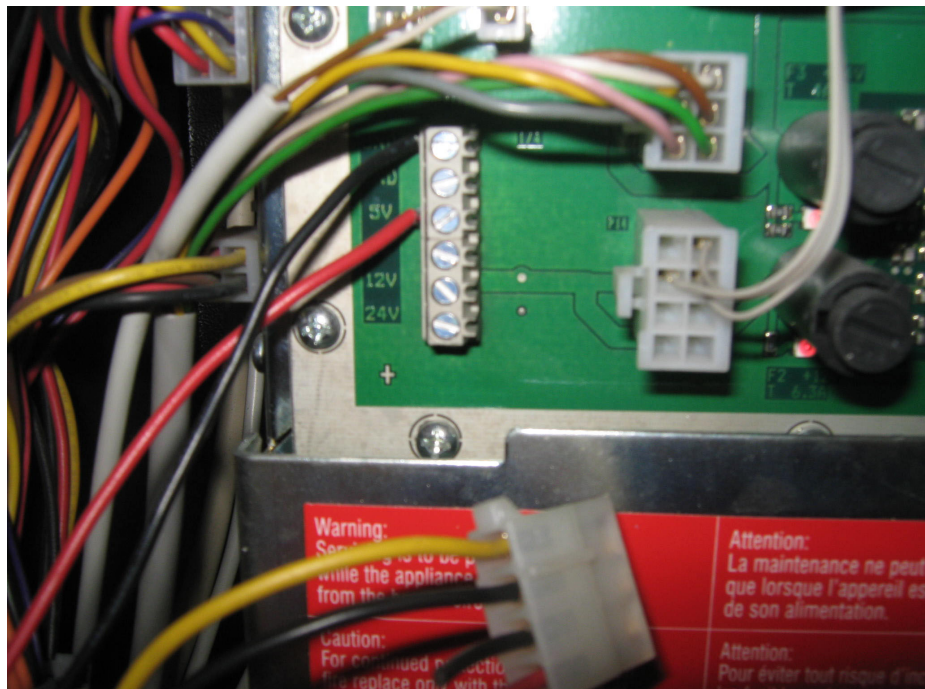

Fig. 2 Backplane showing +5v and Ground jumper points.

the other end, I decided I'd better have a look and see if I can control the storm before it hits hurricane levels. Terrible shame as I was enjoying my cup of tea while struggling round in a brave attempt to find the fault on a power supply unit that had been taking me for a ride for ages.

On arrival on the scene of the catastrophe, a man in his late forties, was sat looking at the machine with a look of total disbelief on his face. On closer inspection, I could have sworn he was trembling slightly. When I asked him what was wrong, he said that an attendant told him the machine had developed a fault and he will not be given his due winnings due to malfunction. He carried on telling me about reels nearly forming 'THE BIG ONE' combination before everything went blank on him. He then mentioned something about a country cottage, a car and a cruise, which I couldn't really follow.

The best thing to do would be to ask the client to vacate the machine for a while by suggesting that he goes for a coffee, or something a bit stronger to calm his nerves, while I can have a look at the problem at hand. I promised him that I would do nothing to change in any way the result of his last spin, and if THE BIG ONE was to pop

out for him, then pop out it will.

I turned off the machine, and then back on again after a few moments. It's not healthy flicking off the machine and turning it back on immediately. It might damage more than just your pride. After going through the whole process, the machine started up fine and started to repeat the JACKPOT sequence for me. As soon as the last reel was about to get into line with the others, the machine went dead on me, just like it went dead for that poor soul. I could fully understand his sense of panic and sheer horror at such a similar sight. Heaven knows what must have gone through his mind at the precise moment in time. I had to try and sort out this problem before the client collapses, or has a nasty turn.

Initial thoughts and conclusions are sometimes right, but at times they could also be wrong. Could the program be corrupt? Could the program have a bug in it and when THE BIG ONE's combination is about to form, the system goes bananas? It's a possibility worth noting, but I'm sure that whoever tested the program must have been a very dedicated and professional person, so the possibility of there being a bug in the software was quickly put aside.

Could the power supply unit be faulty? Could there be a curse on the machine? Could there be a curse on the man playing it or worse still, on me? I'm not a very suspicious chap, so the curse thing was put aside rather quickly. The best thing to do would be to roll up my sleeves and start digging.

I tried turning the machine off and back on (several times) and occasionally, it didn't even get to play the last games before actually going blank on me. Could it be a heating problem? Slot machines, for a fact, don't like the heat, and they have been known to do weird things once the temperature inside the unit rises to a certain level. On that line of thinking, I quickly had a look around the cooling fans. They were a bit dusty but all were going round as they should, so had to dig a bit deeper.

Checking the voltages coming out of the power supply was easy enough, as spare connectors proved to be a wonderful set of test points. Both the +5v and the +12v were fine. There were other voltages coming out of the unit, but nothing to worry about as they fed peripherals, like the printer, the hopper or the lamp ballasts. Still, I removed all the outputs from the PSU that wouldn't make any difference to my problem, leaving just the

+5v and the +12v present, and tried it out again. The same thing happened. It starts up nicely, and then the machine blanks out somewhere along the way. I then put everything back as it was in the first place and carried on.

I decided to creep in and do some more tests, as close to the motherboard as possible, for I was almost convinced that the symptoms were related to a power supply fault. I could feel it in my big toe but couldn't prove a thing as I hadn't found anything wrong yet.

The closest point I could get to the motherboard was on the backplane, which is basically part of the motherboard itself. The design here is superb, as test points are visible and accessible very easily, as shown in Figure 1.

At the bottom left side of the board, a connector with the supplies written on the print itself can be clearly seen. The +5v, +12v, and the +24v lines are easily accessed to be tested with a multimeter.

I monitored all the supplies individually all the way from start up, till the machine blanks out. The +24v line hardly shifted, just like the +12v held its ground, but the +5v wasn't so loyal, for it was fluctuating like crazy. Could this be what I was

looking for? It made sense, quite a bit of it, as on a logic board, this voltage rail has to be as close to perfect as can be. The strange thing about it was that even though the +5v was horrendously erratic on the backplane, the voltage level coming out from the actual PSU itself was nearly perfect. Shouldn't that be the same point? Just for the sake of it, a meter test on resistance between the PSU and the backplane didn't show a short circuit, although it should have. It showed a low resistance, but a low resistance on a low voltage and a high current combination can be disastrous.

There was only one way out of this, I decided to jumper both the +5v and a return, directly on to this connector, as shown in Fig 2. Afterwards, I monitored again this voltage rail through the whole process from start up, and it remained at a perfect level, without any fluctuations at all. The machine didn't blank out and it actually finished the spin and was awaiting somebody to hit the SPIN button for its next game.

There was a minor problem though. How was I going to tell the client that the last reel didn't stop on the JACKPOT's payline?

- James Borg
jborg@slot-techs.com

Prism Series LED Panels

In the past several years, as the casino industry moves toward green initiatives, there seems to be an acceleration and intensity toward implementation of the products. As more industries develop usable and practical environmental and energy-saving products, the casinos are receptive to finding the funds to implement so they can take advantage of the benefits.

Uniquely within the lighting industry, many new products being introduced into the marketplace have met with considerable resistance due to the high cost of conversions to solid state lighting. This economic roadblock has been reduced with maturity of product development, thus reducing the cost of product as well as greatly improving performance.

An LED that sold for $1.50 each just six years ago would now sell for less than 30 cents. But casinos don't buy the LED component

alone. They need complete systems and finished goods. LED solution-based manufacturers exponentially expanding in breadth and depth over the past couple years start with the raw LED components, build the circuitry to support it and add mechanical packaging that in turn solves challenging and specific applications. So now, that 30 cent LED component has been harnessed with major enhancements mechanically and electrically to provide the end user with a viable product.

Kiesub Electronics, a manufacturer in Las Vegas, is one of these solution-based companies, manufacturing LED lighting products including LED replacement boards and panels for slot machines for over eight years.

Involved in development of innovative LED solutions, Kiesub has identified the needs for optical, mechanical, and electrical requirements for gaming machines and then found practical solutions. Early on, printed circuit board assemblies worked well. The challenges for large-scale, high-brightness units forced yet further advancements. Early in 2010, the company took an old technology used in fiber optics and applied it to what is now called Planar LED Lighting. Using acrylic instead of glass fiber, and cutting it in the shape of the glass panels (thus the term "planar" for one plane), we are now able to produce lighted panels with very exciting results.

The challenge of lighting manufacturers (dating back to the original incandescent and fluorescent tubes) is getting enough light to fill the glass without creating "hot spots" (overly bright

spots with much dimmer areas at the edges). Using the indirect lighting of planar technology, the Kiesub-developed prism effect results in even light energy spreading to the all areas of the glass. Light travels on the opposite plane as the glass and then is bent 90% through the prism, diffracted and directed to the glass or plastic panel.

Another benefit of this concept is a virtually 100% transfer of light energy from the prism panel to the target or glass. Unlike conventional light fixtures, no light is absorbed or lost into the cabinet or directed anywhere except forward onto the glass panel and graphic. The fluorescent tubes also generate heat that over time, will fade the graphic, especially in small tubes like the side panel on an IGT slant top. Of course, with LEDs, there are no ballast failures to deal with, particularly with the WMS Bluebird and Atronic.

Each model and type of machine has its own unique mounting requirements as well as optics restrictions, special plugs, voltage considerations, etc. Since it is not a one-size-fits-all approach, Kiesub has analyzed each machine and type, and addressed the many challenges with simple to install, real solutions.

A Prism panel for an S2000 bottom (belly glass) arrives with the cable and plug

fully assembled. Remove the old fixture and discard it. Place the prism panel into the same slots, attach with two screws in existing holes, and plug in the harness to power cable originally supplying voltage to the ballast. The installatin is complete.

All of the Prism series panels use similar, easy-to-install designs with no modifications to the machine needed, and easy-to-understand instructions. Time, hassle and labor are saved when there is no drilling or cutting of wires needed to implement a change.

The theme and tone of each casino is unique and some properties will want different colorations of the slot machine than others. Some prefer super bright, robust machines that jump out at you. Others may prefer more subdued lighting in the machines. Kiesub offers the Prism series with three choices of coloration and brightness:Warm White (2900k – 3100k), Pure White (4200k-4400k), or Cool White (5400k-6000k) versions are available as standard product.

Because of the high efficiency of Prism technology, the energy cost differential from fluorescent to Prism is quite dramatic. Using the example of the Bally 6000, when you convert the entire machine from original lighting to LED technology, the difference is astounding.

127 watts of power is consumed for all the lighting in the Bally machine using original lighting. With an LED conversion, that is reduced to just 12 watts!

Let's look at how much energy and money is saved by an LED conversion: The Bally 6000 example saves 115 watts for one machine. 115 watts X 720 hours per month = 82.8 kW-h, or 993.6 kW-h per year. The commercial power rate for Las Vegas averages $.10/kW-h so the cost savings is $99.36 per year per machine when you make the LED conversion.

The changes to the LED and gaming industry as a whole will almost certainly evolve exponentially over the next decade. Make no mistake about it, the incandescent and flourescent lamps used in slot machines as we know them are fading into the sunset.

Kiesub currently offers over 50 LED solutions for the various brands and types of slot machines. Upper glass panels, belly glass, and reel lights, bill validator lights, side panels, and denominational displays are available to fit many different models of machines from IGT, Bally and WMS.

2011 will bring new Prism series products for Aristocrat, and Williams as well as for other models by IGT and Bally.

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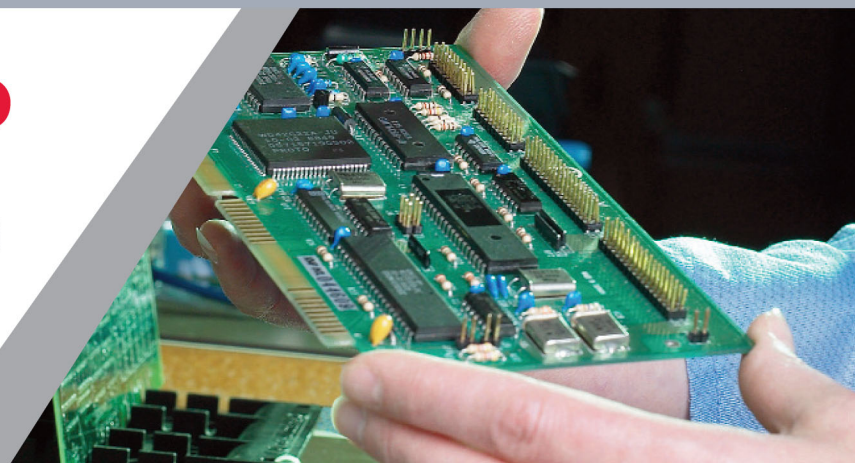## Contact Us

American Gaming & Electronics P: (702) 798-5752
4630 S. Arville Street   TF: (800) 727-6807
Suite E   F: (702) 798-5762
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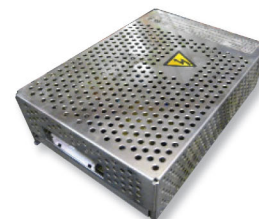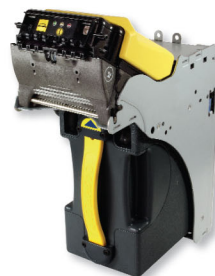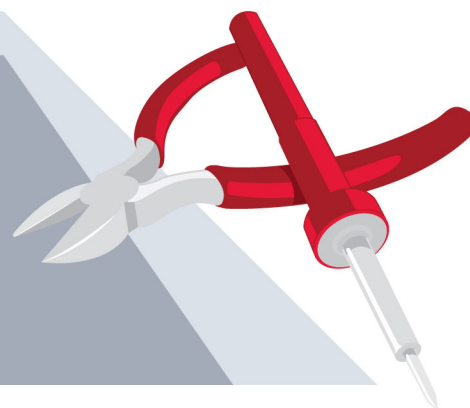Trusted and proven service quality from original equipment manufacturers to end users.

GAMING

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