California Antique Slots, Inc. – (805) 583-0785 (FAX)
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Maintenance, Electrical and Operational Checks

Maintenance Check

The optimal situation is to have a dedicated preventative maintenance crew that would focus on routine maintenance and cleaning but would also be available for bigger projects if needed.

Get dust masks (NIOSH 95). To safely clean the machines obtain an excellent vacuum cleaner with a HEPA filter. Have an array of attachments. Get an air compressor that is transportable and has excellent air capacity. Be sure it has a Flexilla hose at least 50 feet in length. Obtain ESS goggles for eye protection when working around compressed air and dust. Use hearing protection: over-the-ear, or foam ear plugs. Noise in an enclosed area is quite fatiguing to the workers and the guests, yet those working on each machine face the loudest noises.

Start at one end of the casino floor and work your way to the other end. Place an entire area of a slot floor out of service so that guests are not disturbed with excessive noise or dust.

Every similar cabinet type and slot type should be done the same way with the same standards. The following steps are generic and should be adapted to the particular machines in your casino. The maintenance process between differing cabinet types will vary somewhat; a list of steps must be created for each type.

Safety First!

Have one hand behind your back if you are working on live circuits. Line current is deadly! Work with a partner. Be sure he/she knows CPR and that there is an AED available nearby. Be sure there is a fire extinguisher and adequate smoke alarms and detectors throughout the casino floor. Train the staff to recognize (and respond to) emergencies. Be sure this training is performed consistently and regularly throughout the year.

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Electrical Check

The following list shows the order in which you should check components (with or without the schematic diagram or manual) based on the probability of them being defective:

1. First, look for components which burn out or have a tendency to wear out, i.e. mechanical switches, fuses , relay contacts, or light bulbs. (Remember, that in the case of fuses, they burn out for a reason. You should find out why before replacing them.)

2. The next most likely cause of failure are coils, motors, transformers and other devices with windings. These usually generate heat and, with time, can malfunction. Some of the causes of failure are: heat, over or under voltage, normal component aging. Some problems can be visible such as exploded components, or, more often, they could look perfectly good and require meter testing of each component.

3. Next, look at discrete components. These would be: electrolytic capacitors (replace these after five years in any 24-7 environment), power dissipating carbon or wire-wound resistors (1 watt or greater), switching transistors, power transistors, and diodes. Look for scorched, burned or discolored regions on PC boards, indicating excessive heat. Some burnt components, damaged through excessive current, cannot be seen easily, but a magnified visual inspection with a magnifying glass, light source (both white and UV) or the odor can indicate the presence of a damaged component. Bulging components are good indicators of multiple problems, especially for electrolytic capacitors. Look at the components nearby the failed ones.

4. Connections should be your fourth choice, especially screw type or bolted type. Over time these can loosen and cause a high resistance. In some cases this resistance will cause overheating and eventually will burn open. Connections on equipment that is subject to vibration are especially prone to coming loose. Look for connections that are held together with plastic Molex connectors. These plastic housings can be brittle after being in a high-heat area of a 24-7 machine.

5. Finally, you should look for defective wiring. Use your sense of smell! Burned insulation, plastic, components and solder all have a unique odor. Pay particular attention to areas where the wire insulation could be damaged causing short circuits. Don't rule out incorrect wiring, especially on a new piece of equipment. Inspect the PC board traces carefully. These are the conductive pathways, tracks or signal traces etched from copper/silver coated sheets and laminated onto the non-conductive substrate. Some of the causes are: power surges, lightning strikes, use of inappropriate acid core solder causing shorts, contamination such as metallic dust. Trace damage is often visible to the naked eye and can often, though not always, be repaired.

Although this is not an official step of the troubleshooting process it nevertheless should be done once the equipment has been repaired and put back in service. You should try to determine the reason for the malfunction.

- Did the component fail due to age?
- Did the environment the equipment operates in cause excessive corrosion, heat damage, etc?
- Did the component fail due to improper use?
- Did it fail due to incorrect soldering or mounting?
- Is the component in question incorrect for the installation?
- Are there wear points that caused the wiring to short out?
- Is there a design flaw that causes the same component to fail repeatedly?

Safety First!

Make all checks with the power off first, unless indicated otherwise. Work with a partner, be trained and be able to provide first aid, and CPR. Have an AED (Automated External Defibrillator) accessible. Have hospital, fire and urgent care clinic numbers posted and visible throughout the casino.

Operational Check

Start by vacuuming and blowing the machine in question. Use the maintenance checklist available here. It is important to eliminate dust/dirt as an operational factor.

The following steps should be done in the order given. This will help prevent "jumping around" to other areas. Stay extremely focused. Work from the top of the machine to the bottom. From coin in (ticket in) to coin out (ticket out). From the mains in the wall to the on/off switch inside the machine.

Safety First!

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Use a pen/pencil to write notes AS YOU PROCEED. This will help to keep your thoughts complete and thorough. Remember, this checklist will be seen by others. Spell correctly and be sure your handwriting is legible. Use everyday words, your technical jargon may or may not be understood by staff. Date and time must be entered in the spaces given. Keep this set of notes with the electrical check notes in chronological order.

Be aware that you may encounter a machine with after-market parts, assemblies and other components. It is entirely possible, for example, to find (on a machine from the 1990s) a spiral cam hopper unit with solenoids from a Bally machine made in 1970. When in doubt, the procedures in the slot machine manual made for the machine in question take precedence.

The temperature, pressure and humidity are sensed by the Kestrel 4500NV, an extremely accurate and NWS-certified measuring device. It is supplied by California Antique Slots, Inc.