

SERVICE BULLETIN

Smart Industries *Toy Chest* Crane Machine

Field reports suggest that some **Smart Industries** *Toy Chest* crane machines may experience operational problems when running in dry, static-prone environments.

The problems appear to be caused by static charge passed from a player to the console or coin mechanisms of the machine.

The problems observed have been blanking of the display on the console and an inability to operate the machine after game play credits have been purchased.

Proper operation of the machine can only be restored by removing power from the machine, then returning power to the machine.

If the DIP switches on a *Toy Chest's* main controller board have been set to store credits during a power loss, all credits purchased during the period when the machine was inoperable will be available when power is restored to the machine.

Once power is returned to the machine, the machine will operate without problems until another incident of static discharge occurs.

To reduce the occurrence of such problems, **Smart Industries** has implemented additional grounding measures for the console and coin mechanism areas of the *Toy Chest* crane machine.

The new grounding configuration more securely connects earth ground for the coin mechanism areas on the console door to earth ground for the console itself.

The grounding configuration then provides a more direct path to earth ground from the main console assembly.

The following pages provide directions for installation of the updated grounding configuration.

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Disconnect the *Toy Chest* crane

from any source of AC power

PRIOR to performing the ground harness update.

Failure to do this could result in serious injury or death!

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The following harnesses pieces are needed to update the earth grounding for **Smart Industries** *Toy Chest* crane machine:

- 1) 4" ground harness.

This harness consists of one 4" piece of 16 gauge wire terminated at both ends of the wire by ring terminals.

- 2) 6" ground harness.

This harness consists of one 6" piece of 16 gauge wire terminated at both ends of the wire by ring terminals.

- 3) 36" ground harness.

This harness consists of one 36" piece of 16 gauge wire terminated at one end of the wire by a ring terminal and at the other end of the wire by a spade terminal.

To perform the harness installation, the following tools will be needed:

- 1) A 7-mm wrench. (A 7-mm socket is recommended for best access).

- 2) A small scraping tool (such as a small knife).

This tool will be used to remove the powder-coating from small areas on the console door.

- 3) A 3/8" drill bit and a drill.

- 4) (Optional) A Phillips-head screwdriver.

Installation of ground harnesses to the console door

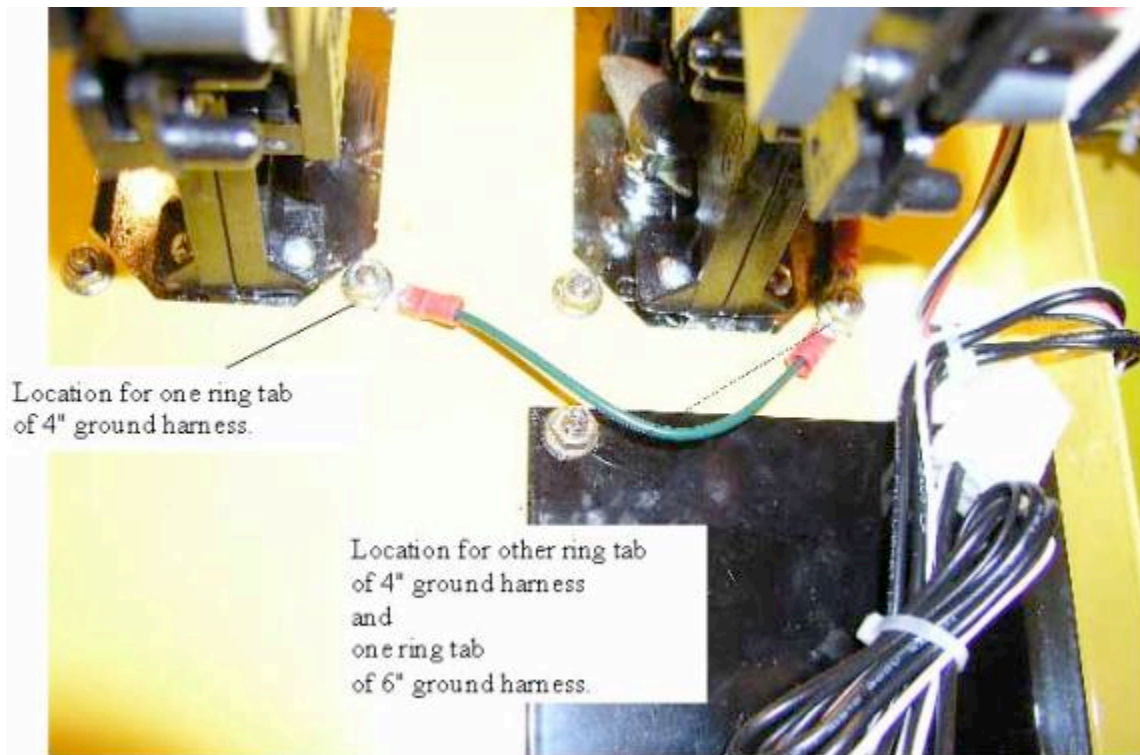


Figure 1

Figure 1 shows the connection of the 4" ground harness running from the mounting bolt of one coin mechanism to the corresponding mounting bolt of the other coin mechanism.

Additionally, Figure 1 shows connection of the 6" ground harness to the mounting bolt of one of the coin mechanisms.

To install these harnesses, remove the appropriate nuts (using a 7-mm metric wrench) from the coin mechanism mounting bolts.

Then, insure that the powder-coat material on the inside of the console door area is removed from around the bolt holes to allow a proper metal-to-metal contact between the coin mechanism door and the ring tabs on the ground harnesses.

Finally, place the ring tabs of the ground harnesses over the appropriate coin mechanism mounting bolts and resecure the entire assembly with the mounting nuts.

Note that one ring tab from the 4" ground harness AND one ring tab from the 6" ground harness are secured to the coin mechanism mounting bolt of the coin mechanism installed closest to the console door hinge.

Installation of ground harnesses to the main console

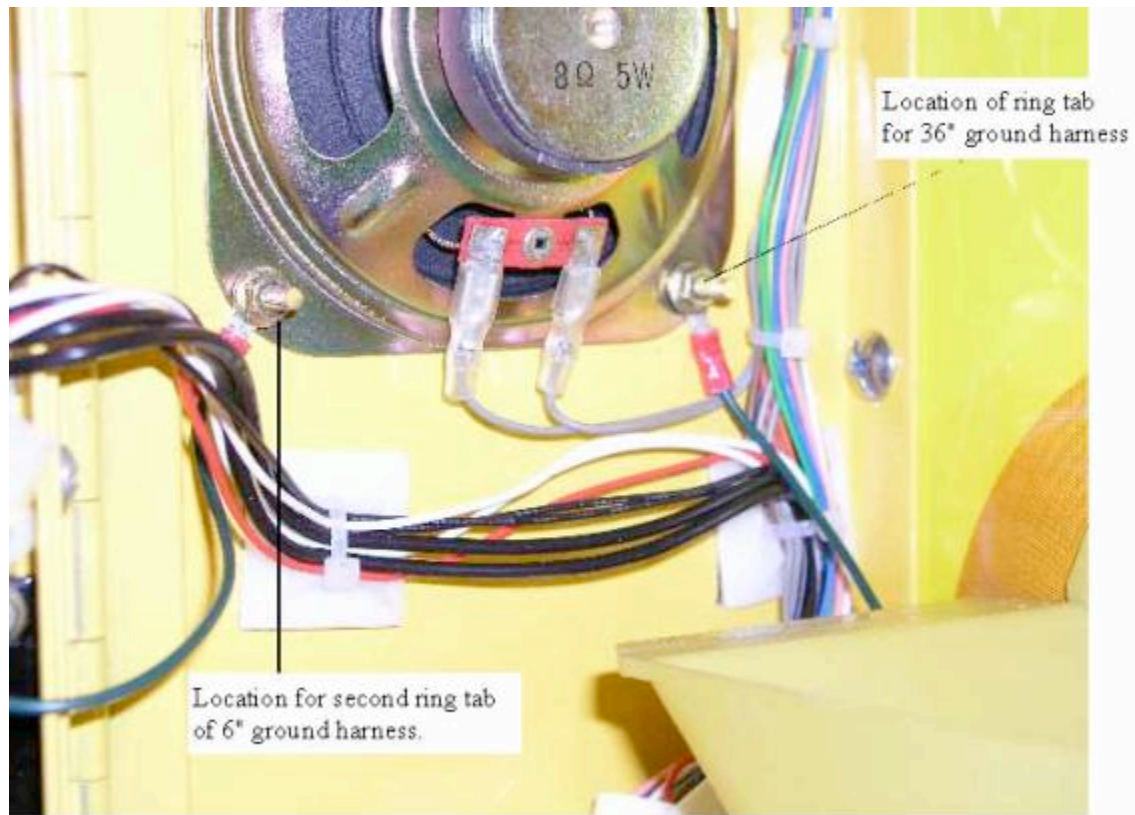


Figure 2

Figure 2 shows the connection for the second ring tab of the 6" ground harness and the ring tab of the 36" ground harness to the *Toy Chest's* speaker.

To install each ring tab, carefully remove the nuts (again using a 7mm wrench) securing the lower half of the speaker to the speaker's mounting bolts on the console.

Then, insert each ring tab on the ground harnesses over its corresponding mounting bolt.

(The mounting bolts are welded to the console assembly, insuring a secure electrical connection for the ground harnesses.)

Finally, reinstall the nuts on the mounting bolts to secure both the speaker and the added ring tabs of the ground harnesses to the console.

Creation of access hole to allow a short earth ground path

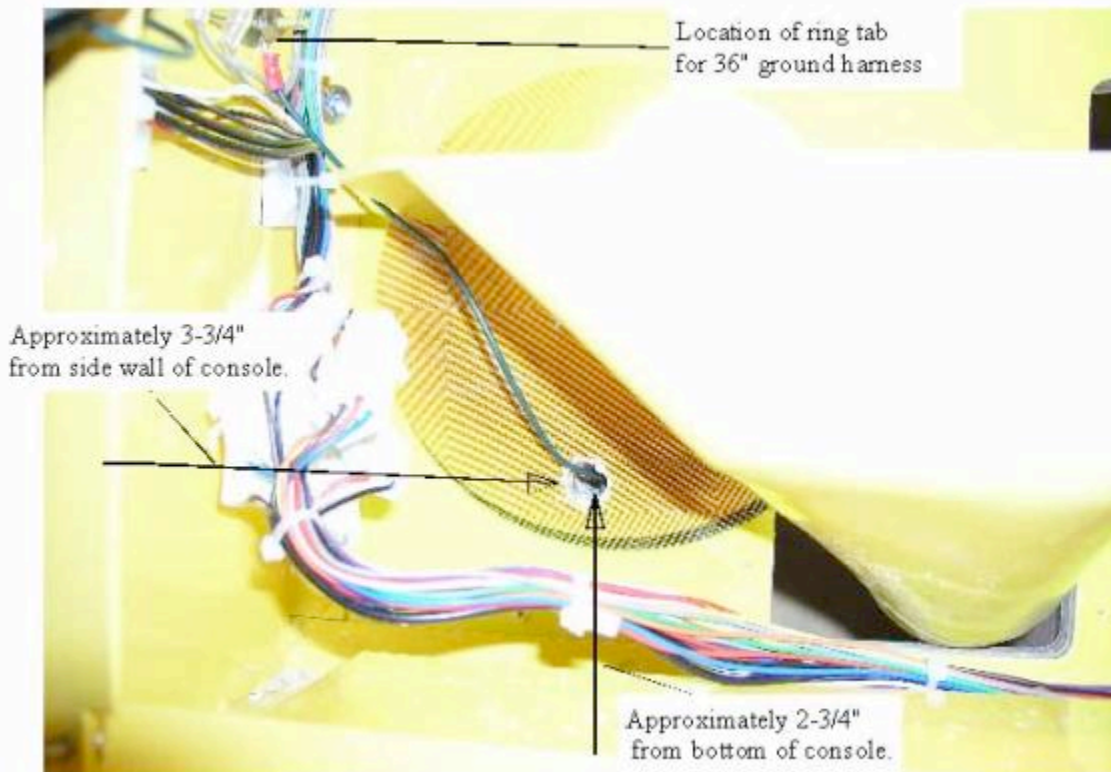


Figure 3

To provide a short path of console grounding to earth ground, and to prevent coupling of any signal on the earth ground wire with signals on the harnesses leading to the main controller board, an additional path is needed from the console area into the main cabinet area.

This path is provided by drilling a hole with a diameter of approximately $\frac{3}{8}$ " within the console box mounting area on the main cabinet into the main cabinet area.

Figure 3 shows the location of this hole.

(It may be convenient to remove the coin deflector chute from the front wall of the cabinet prior to drilling the access hole.)

The coin deflector chute is secured to the front wall of the *Toy Chest* cabinet with two phillips-head screws.)

Once the new access hole has been drilled, route the 36" ground harness and the attached spade terminal through this hole into the main cabinet area.

(Remember to reinstall the coin deflector chute to the front wall of the cabinet if this was removed to aid in drilling of the access hole.)

Routing of earth ground harness within the Toy Chest main cabinet



Figure 4

Figure 4 shows the routing of the 36" ground harness through the internal section of the main cabinet area.

To provide a short path from the main console to the earth ground tab of the AC input connector on the rear of the machine, and to prevent coupling of this ground harness with other machine harnesses, the ground harness is not routed with other harnesses nor is it routed along any of the inner machine walls.

Connection of 36" ground harness to AC input block

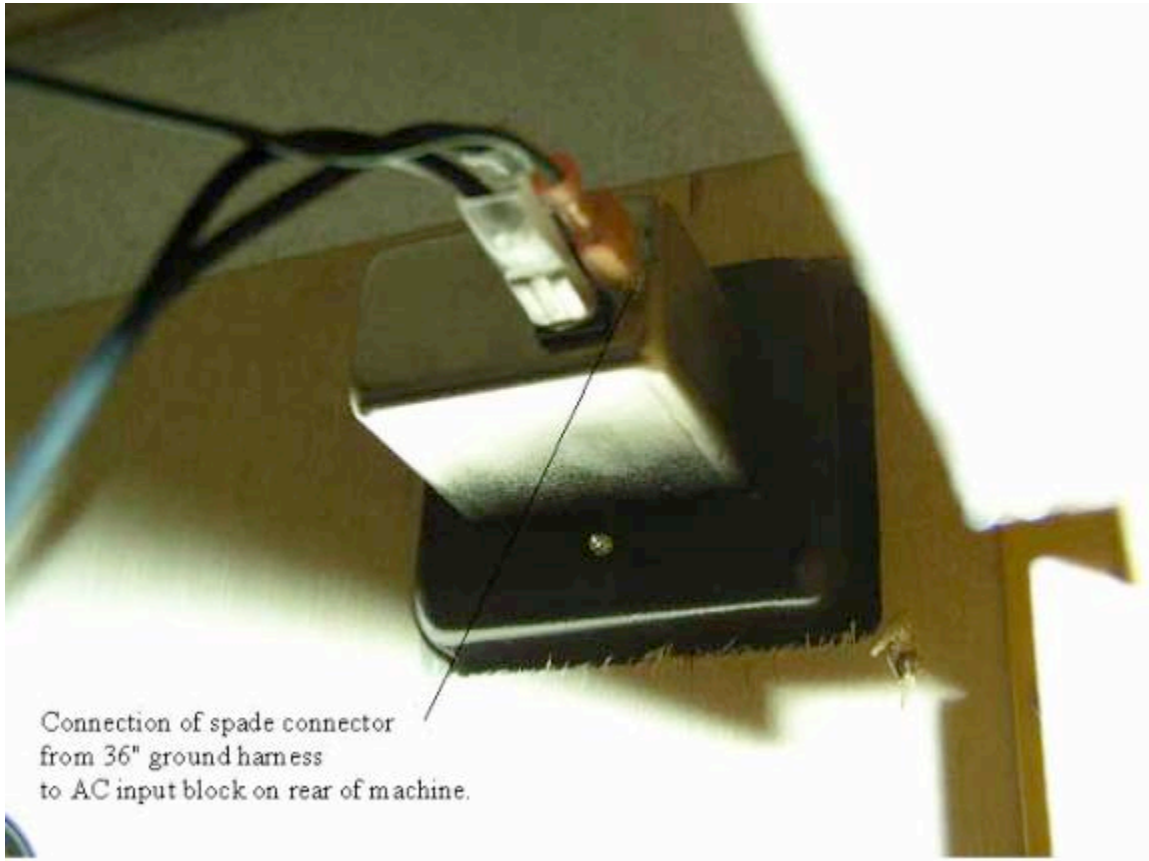


Figure 5

Figure 5 shows the placement of the spade connector of the 36" ground harness onto the earth ground tab of the AC input power block in the rear of the machine.

If any other wires are connected to the earth ground tab of the AC input power block, remove such wires from that tab prior to attaching the spade connector of the 36" ground harness.

Once the ground harness update has been completed, AC power can be returned to the *Toy Chest* crane machine.