



RESTORATION AND PRE-INSTALLATION

Restoration Guide for Bally Home Pinball Machines

A practical inspection, cleaning, and preparation guide for a machine that has been dormant for years.

Many of you will be waking up a machine that has been dormant for years, often because the original electronics became unreliable. If you have one of these machines, do yourself a favor: **do not just install new electronics and hope for the best.** A careful inspection now can make the restoration much easier and help protect both the machine and the replacement boards.

Safety first

Disconnect the machine from the wall before beginning. This equipment contains line-voltage wiring and components that may retain an electrical charge. If you are not comfortable working around AC power, have the power-cord and transformer-area inspection performed by a qualified technician. Never power the machine while wiring is exposed or while any cleaned part is still damp.

THE ORDER THAT SAVES TROUBLE

- Make the incoming power safe before working farther into the machine.
- Photograph and label connectors before removing old electronics.
- Repair damaged terminals and wiring before installing replacement boards.
- Clean carefully, then allow every part to dry completely.
- Confirm that all flippers, bumpers, and other mechanisms move freely.

1 Inspect the power cord and incoming wiring

One of the biggest concerns is safety. Check every inch of the power cord. Look for cracks, cuts, brittle insulation, mouse damage, moisture damage, and green corrosion. Pay close attention where the cord enters the cabinet and where it passes near metal edges.

If you find damage, replace the entire cord. Do not cut out only the damaged portion and splice it. Replace the cord all the way back to its first internal electrical connection, then reinstall the original strain-relief parts and secure the protective-ground connection exactly as designed.

Do not compromise the mains connection

Inspect every fuse and fuse holder. Confirm the specified amperage and fast- or slow-blow type, replace loose or corroded clips, and never install a larger fuse to stop one from blowing. Maintain the original wiring, routing, and strain relief so the cord cannot pull against its terminals.

2 Remove the old electronics and inspect every connector

With the machine unplugged, photograph the wiring and label every connector before disconnecting anything. Remove the old electronic boards, but leave the transformer in place unless it requires separate service.

Inspect every connector from the side. Each connector housing has long slots along one side that expose part of each terminal. Look through those slots and at both ends of the housing. Black or green terminals, loose contacts, or brown and heat-darkened spots on the plastic are signs that the affected terminals - and sometimes the housing - need to be replaced.

Replacing a connector terminal

- Use the correct replacement terminal and a proper ratcheting die crimper. A terminal-extraction tool is best; a small blunt pick can also depress the locking barb if used carefully.
- On the slotted side of the housing, locate the small raised metal barb that locks the terminal in place. Depress it while gently pulling the wire from the rear. The terminal should slide out without forcing the housing.
- Cut the old terminal off as close to its end as practical and strip approximately 1/4 inch of insulation, or the length specified for the replacement terminal.
- Place the bare conductor in the smaller crimp wings and the wire insulation in the wider support wings. Complete the ratcheting cycle so the crimper applies the correct pressure.
- Pull firmly on the wire after crimping. If it remains secure and the conductor is visible in the proper inspection area, insert the terminal until its locking barb clicks into the housing.

Never solder these connector terminals

Solder can damage the plastic housing, wick into the flexible wire, and hide a poor mechanical connection. These connectors were designed for serviceable crimp terminals. Done correctly, a new crimp should remain reliable for many years.

3 Inspect and clean the underside of the playfield

Inspect the light boards, wiring, and soldered traces under the playfield. White deposits can indicate contamination or corrosion around soldered areas. Green or black discoloration often indicates copper corrosion. Repair corroded traces, terminals, and wiring before the machine is powered.

Cleaning boards and wiring

For grimy boards, use a damp cloth with a small amount of mild soap. Keep moisture on the board surface and away from microswitches, coils, transformers, and connector housings. Water is difficult to remove from enclosed switches and can create more problems than it solves.

After cleaning, make absolutely sure the board is dry. On a removed, unpowered bare circuit board, a final rinse with 90 percent isopropyl alcohol can help displace residual water. Do not use alcohol on painted artwork, plastics, or labels. Even after the board looks dry, allow plenty of additional drying time before reinstalling it.

Use cleaner sparingly

Mean Green can work well for heavy grime, but apply it to the cloth rather than spraying the machine. Test a small, hidden area first, use only the amount needed, and never allow cleaner to soak into wood, switches, artwork, or wiring.

Bugs and other pests

Remove loose debris first, then clean affected cabinet surfaces as you would contaminated furniture, using soap and water carefully. Wear appropriate gloves and respiratory protection when dealing with droppings or nesting material. Avoid bug spray and other toxic chemicals inside the machine; residue can remain on wiring, wood, and parts that will later become warm.

4 Clean and protect the playfield and plastics

Remove the plastic covers and photograph the location of every post, spacer, and screw. Clean the plastics separately and set them aside where they cannot be scratched. Mean Green can be used sparingly on stubborn grime, but it can be harsh if overused. Test first, work in small areas, and never soak a painted or already-worn surface.

After the playfield is clean and completely dry, apply a thin coat of quality carnauba paste wax, such as Meguiar's, and buff it according to the product directions. Install a new pinball. An old ball can have tiny rust spots and surface damage that act like sandpaper on the playfield.

If the plastic light covers are scratched or have lost their gloss, Novus 2 can be used carefully on the plastics. Many restorers use Novus 2 on playfields protected by Mylar, but these Bally Home playfields were not originally covered with Mylar. For these machines, careful cleaning followed by wax is the better starting point.

5 Check every coil-driven mechanism by hand

Move every bumper, flipper, and other coil-driven mechanism by hand while the machine is unplugged. Each assembly should move freely and return without binding. Inspect coils for burned wrappers, melted sleeves, loose stops, and suspiciously low resistance.

Never lubricate a coil plunger or sleeve; oil attracts dirt and can make binding worse. Correct any fault before relying on a stronger pulse. A flipper rebuild kit is often worthwhile. These machines use standard Bally-style parts available from established pinball-parts suppliers.

6 Inspect the diodes installed across the coils

You will see diodes connected across many coils. Their purpose is to suppress the flyback voltage produced when a coil is switched off. A diode can fail shorted, fail open, or break away from its connection.

The replacement controller includes onboard flyback protection. If a coil diode is visibly broken or tests shorted, disconnect or replace the failed diode before operating the machine; the replacement board can provide the required protection while the failed diode is removed. If the original diode is intact and tests good, leave it in place. There is no advantage to removing a good coil diode.

A shorted diode can look like a shorted coil

Before applying power, investigate any coil that shows unusually low resistance at its wiring. Separate the diode from the circuit as needed for accurate testing, and verify the coil and wiring before reconnecting the machine.

FINAL CHECK BEFORE INSTALLING THE NEW ELECTRONICS

[]	The complete power cord, strain relief, grounding, and incoming wiring are safe.
[]	Every connector is clean, tight, correctly labeled, and free of burned or corroded terminals.
[]	Cleaned parts are completely dry, including enclosed areas around connectors and switches.
[]	All playfield mechanisms move freely and return normally.
[]	Broken or shorted coil diodes have been addressed; good diodes remain in place.
[]	A clean, new pinball is installed and no tools or loose hardware remain in the cabinet.

Take your time. A careful restoration now will make the new electronics easier to install, easier to troubleshoot, and much more likely to provide years of reliable play.

This guide supplements the machine's service information and the replacement-board user guide. Machine and game names are used only to identify compatibility. Pinball Replacement Boards is an independent aftermarket parts manufacturer.