

Instructions to Install Retrofit Kit

National 147 Machine

**** TURN POWER OFF OF MACHINE BEFORE INSTALLATION ****
READ ALL INSTRUCTIONS BEFORE STARTING INSTALLATION

RVMC-NATL147 Retrofit Kit Contents

PART NAME	QUANTITY	PART NUMBER
PCBA, RVMC National 145/146/147/148 Retrofit VMC	1	10-0259-00
Cable, Nat'l 147 Keypad	1	11-0190-21
Cable, Nat'l 147 Display	1	11-0194-21L
Cable, MDB Ext	1	11-1700-06
Cable, Nat'l 147 Pulse BV	1	11-0196-21
Cable, MDB Power Modification	1	11-0223-21
Assembly, Nat'l 147 Display	1	05-1131-00L
Lens, Nat'l 147 Display	1	05-0132-00
Assembly, Nat'l 147 DEX	1	05-1164-00
FOR DROP SENSOR OPTION		
Kit, Nat'l 147 Sensor	1	10-0069-00
Kit, Cable Clamp	1	05-0157-00

Tools Needed:

Screwdriver, Philips
Nut Driver, 1/4" and 3/8"

Installation Procedure:

1. Fully open the vending machine door.
2. Locate the sliding plate within the top right of the machine. Unplug the three cables connected to the Vending Machine controller (VMC) on "front" and "bottom" side. This will allow the bracket to fully slide out.

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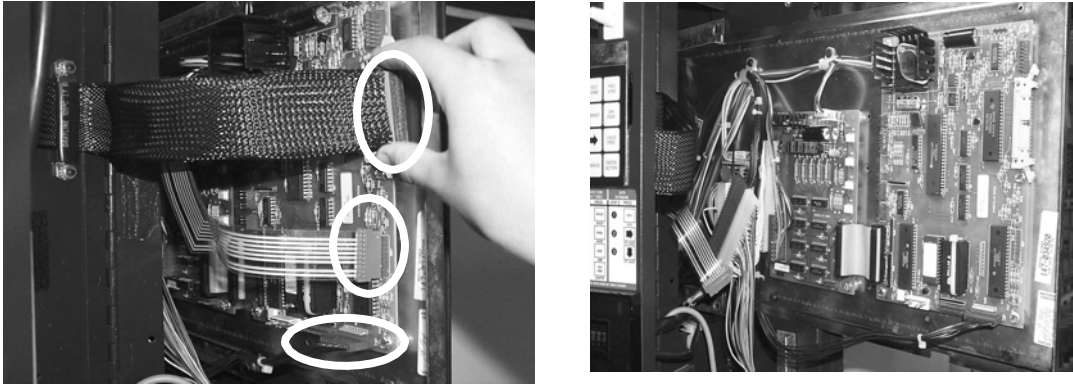


Figure 1

3. Remove all connections made on the first two boards on this sliding plate. Using a Philips screw driver, the original VMC and Motor Interface board, the board to the left of the control board, may now be removed. Set the boards safely aside. **Save all hardware for future use installing new control board.**

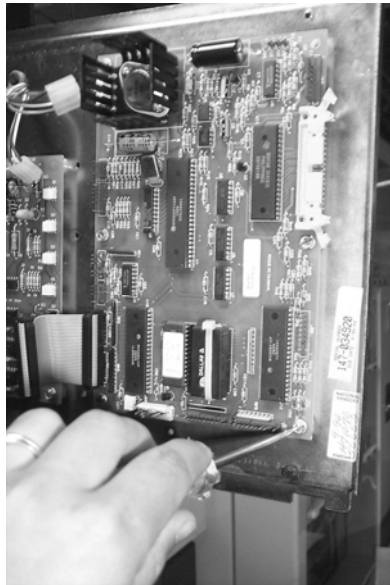


Figure 2

4. Locate the VMC in the kit. This will mount directly onto the existing standoffs using the same mounting holes. See **Figure 3** for correct orientation (board is labeled **147/148 BOTTOM** to indicate the proper direction). Use seven of the original screws for mounting.

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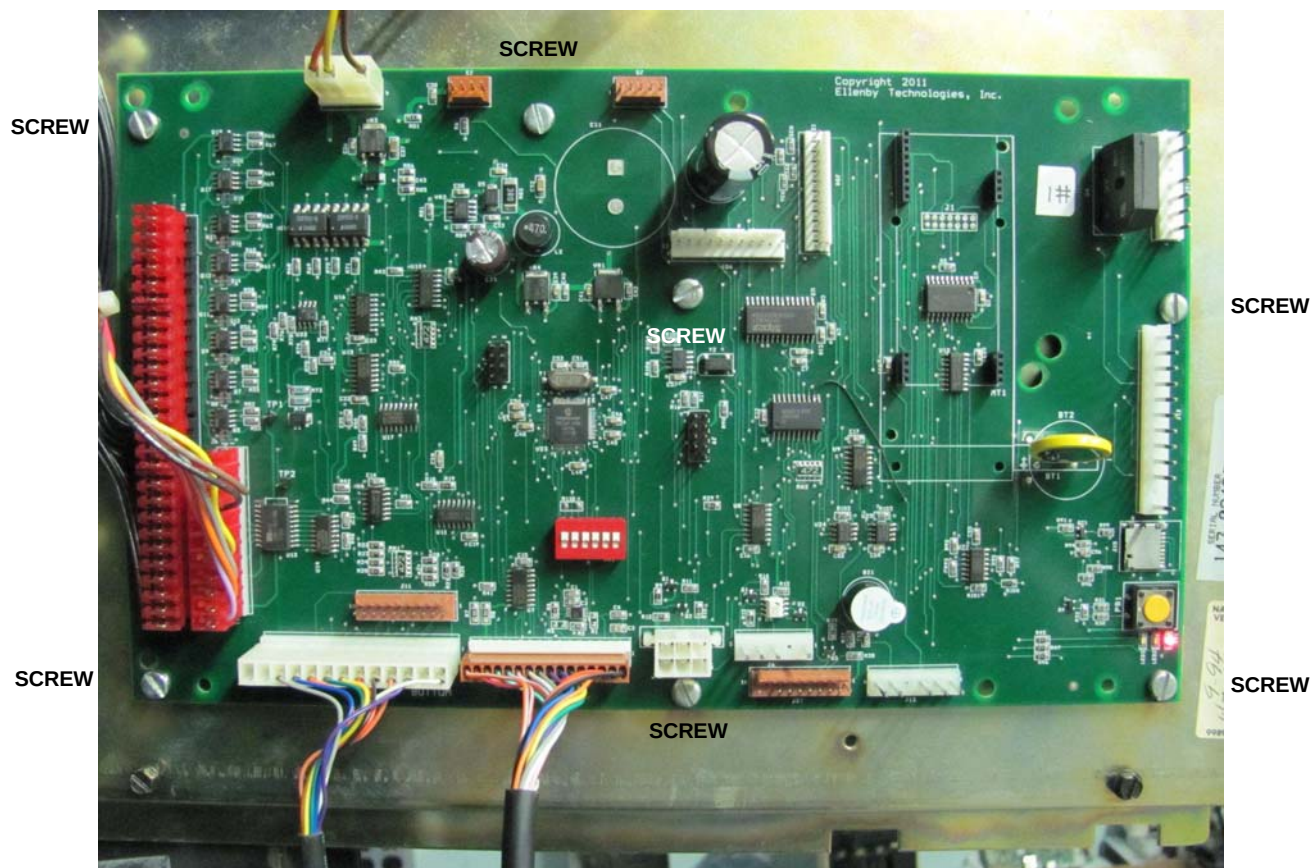


Figure 3

5. On the front panel of door, locate the aluminum cover mounted behind the display. This is mounted by two screw locations. Using a nut driver, remove the two screws and the cover. Refer to **Figure 4**.

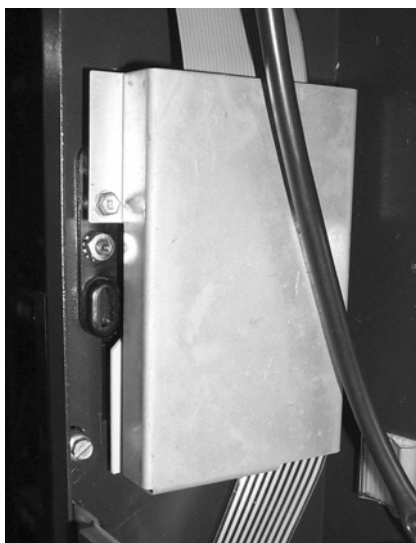


Figure 4

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6. Next, remove all connections to the display board and remove this board. The black plastic mounting bracket must also be removed, which is being held in place with two nuts. When removing these nuts, set them safely aside (they will be needed later).

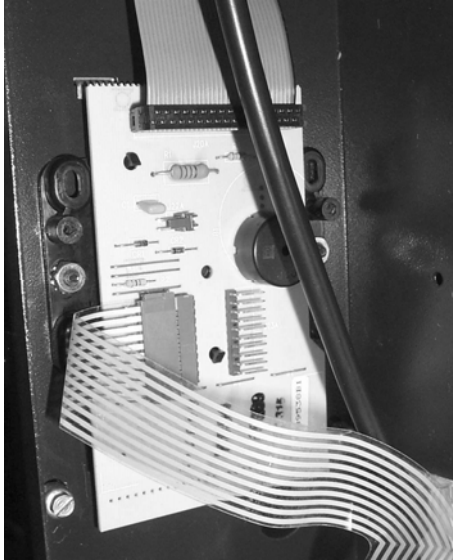


Figure 5

7. The bill validator will also have to be removed. This has four screw locations; all of which may or may not be used. Remove whatever screws are present so the validator can be removed from the machine.



Figure 6

8. Locate eight caps and screws along this front panel. These screws are attaching the front cover to the front panel. Using, a Philips screw driver, remove the screws and caps in order to remove the display lens, shown below in **Figure 7**.

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This will be replaced with **05-0132-00**, included in the kit and shown in **Figure 7**. Once the **05-0132-00** is in position, the caps and screws can be replaced. Please make sure it is secure in its place before securing the screws.

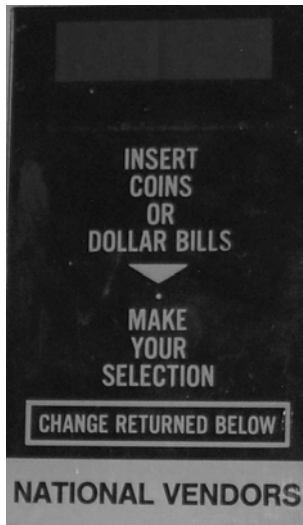


Figure 7



Figure 8

9. The display assembly, **05-1131-00**, must now be installed. Using the two threaded screws that held the black mounting bracket in place (from Step 8) and secure it with the two original nuts. Make sure the display is facing through the front of the machine. Refer to **Figure 9**.



Figure 9

10. Connections to the VMC can now be completed.

- **J36** - The **motor connection** is an existing cable with a large connector (20 pins) and a smaller one (6 pins) located near the left side of the board. These plug into **J36**. Pin 3 is keyed (Pin 1 toward the bottom of the VMC).

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- **J35** - The **gum & mint motor** connection is an existing cable with an 11 pin connector located near the left side of the board. This plugs into **J35**. Pin 3 is keyed (Pin 1 toward the top of the VMC).
- **J55-1** - The **power** connection is an existing cable with a 4 pin connector located near the top left of the board. This plugs into **J55-1**. Pin 3 is keyed (Pin 1 toward the left of the VMC). Note that the other existing connector bundled with the power connector should be left unconnected.
- **J56** - The **Micromech** connection is an existing 11 position cable coming from an existing adapter board. The cable plugs into **J56** which is directly below the large capacitor near the center top of the VMC. Pin 2 is keyed (Pin 1 toward the right of the VMC).
- **J10** - The **keypad** connection uses the kit supplied **11-0190-21** cable with a 10 pin male connector at 0.100" spacing on one end and a 13 pin connector at 0.156" spacing. The male connector plugs directly into the keypad tail. There will be a **triangle marking** on the tail connector and the cable connector to indicate pin 1. Please make sure these markings are matched up. The other end will plug into **J10** on the bottom left of the VMC.
- **J2** - The **display** connection uses the kit supplied **11-0194-22** cable with 16 pin connectors on both ends. Plug one end into **J2** near the bottom middle of the VMC. The other end will plug directly into the display. Make sure pin 1 (black wire) of each connector is matched up.
- **J13** – If a **pulse bill validator with escrow** is installed, its connection uses the kit supplied **11-0196-21** cable. There will be a ribbon cable coming from the bill validator with a small module at the end. On this module, there is a 2 x 9 header. There is a mating connector on one end of **11-0196-21** that will plug into this header. The other end will plug directly into **J13** near the right bottom of the VMC.
- **J4** – If **MDB money acceptors** are installed, their connection uses the kit supplied **11-1700-06** cable. This cable is needed to extend the 2 x 3 cable that will be coming from the MDB coin mech and/or bill validator.

11. For the sensor kit installation, locate item **10-0069-00** in the kit.

12. On either side of the bin, remove the deflector plate by removing three screws. Do this for both sides. Refer to **Figures 10 & 11**.

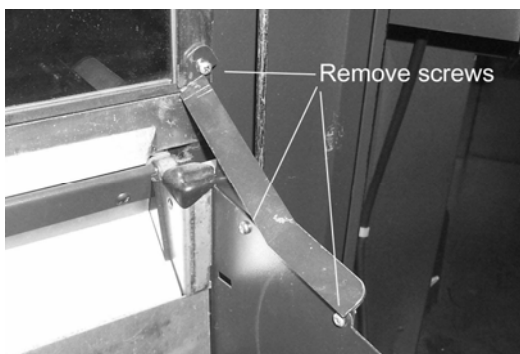


Figure 10

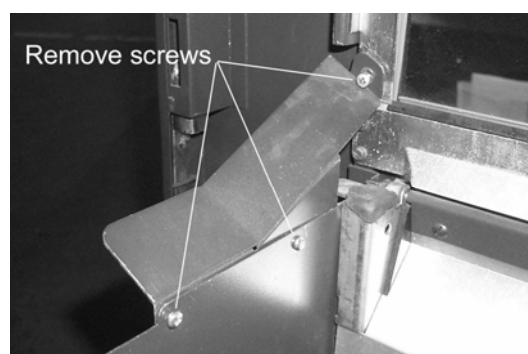
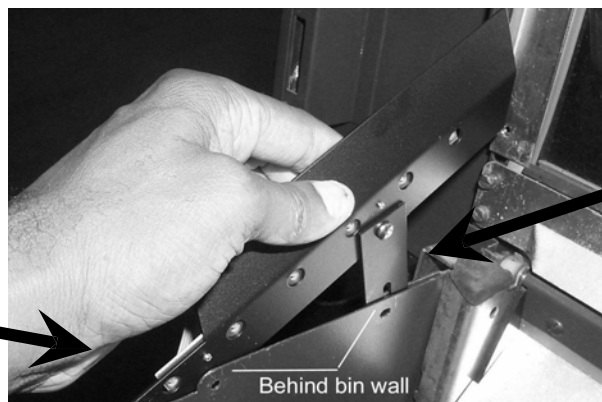


Figure 11

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13. Install National 147 Emitter Assembly using the 2 screws and 2 nuts provided. This assembly will include the smaller of the two sensor boards. It will mount to the outside edge of the bin. See **Figure 12** for mounting orientation. See **Figures 13 & 14** for correct completed assembly.

Emitter bracket should be on the outside of the bin wall when mounting.



Make sure the extension bracket is between the bin wall and brace.

Figure 12

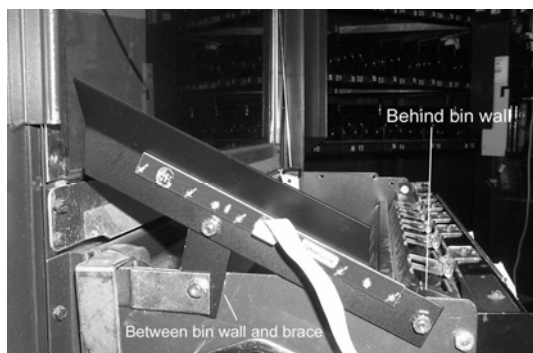


Figure 13

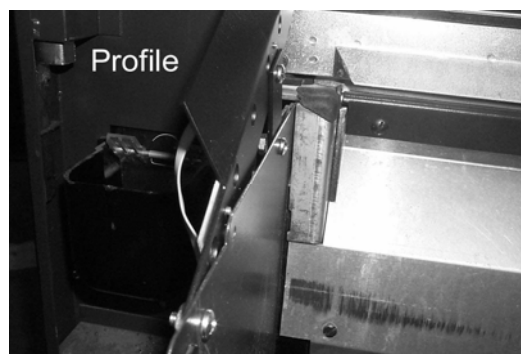


Figure 14

14. Install National 147 Receiver Assembly using the 2 screws and 1 nut provided. This will mount on the hinge side of bin. See **Figures 15 & 16** for mounting orientation. See **Figure 17** for a profile view.

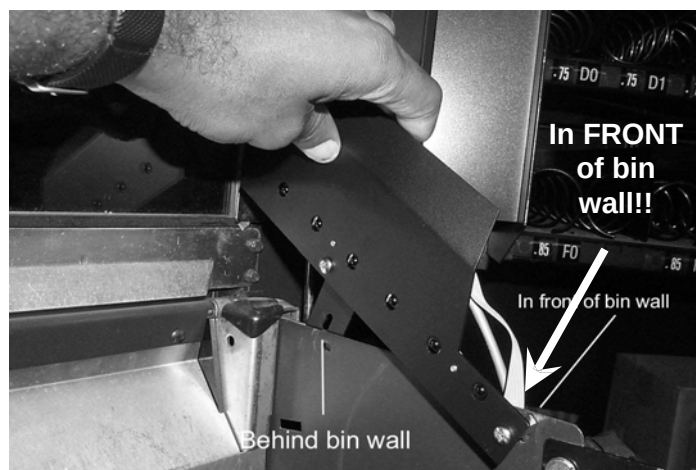
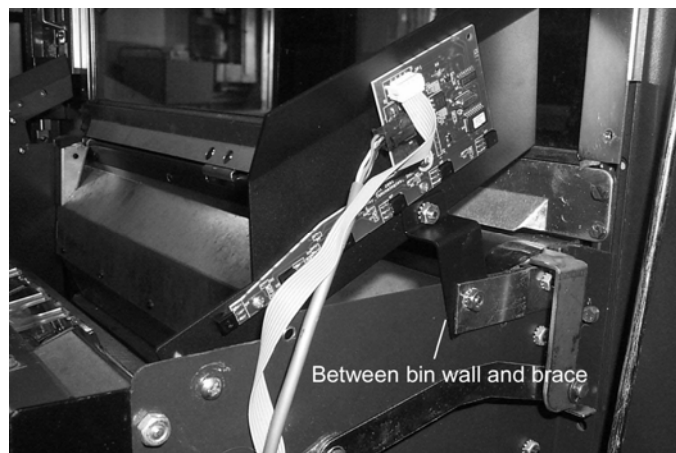


Figure 15

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Make sure the extension L-bracket is between the bin wall and brace.

Figure 16



Figure 17

15. Route the cable along top side of gum/mint dispenser and along hinge side of bin as shown in **Figures 18 and 19**.

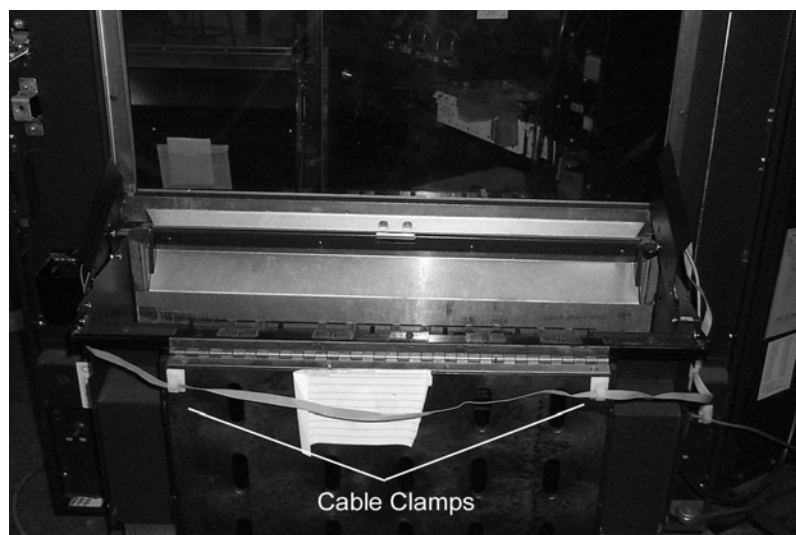


Figure 18

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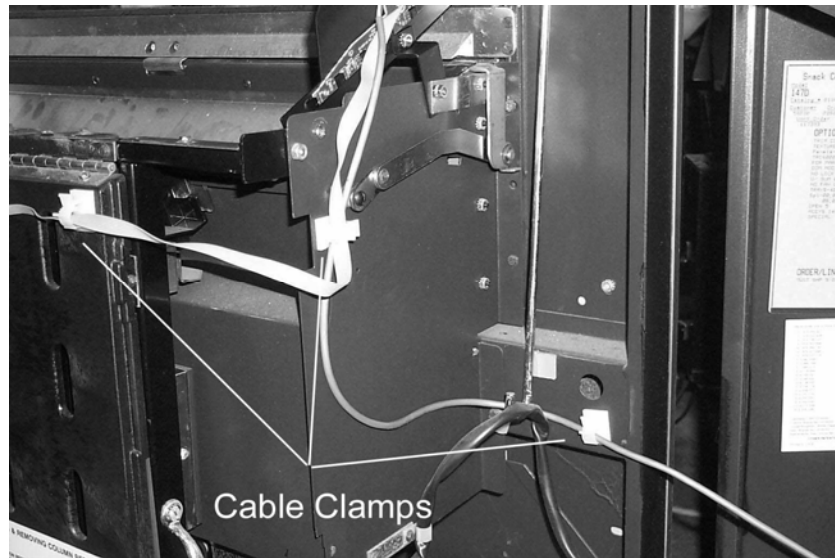


Figure 19

16. The long sensor to VMC cable can plug directly into **J5** near the center top of the VMC board. Make sure this cable is out of the way of the door's path so it can be closed completely.

17. DEX Connection:

- The kit supplied **05-0164-00** DEX connector bracket is installed above the VMC using two of the existing mounting standoffs and screws. See Figure 20. Once installed, plug the 4 pin connector into **J3** near the left top of the VMC.

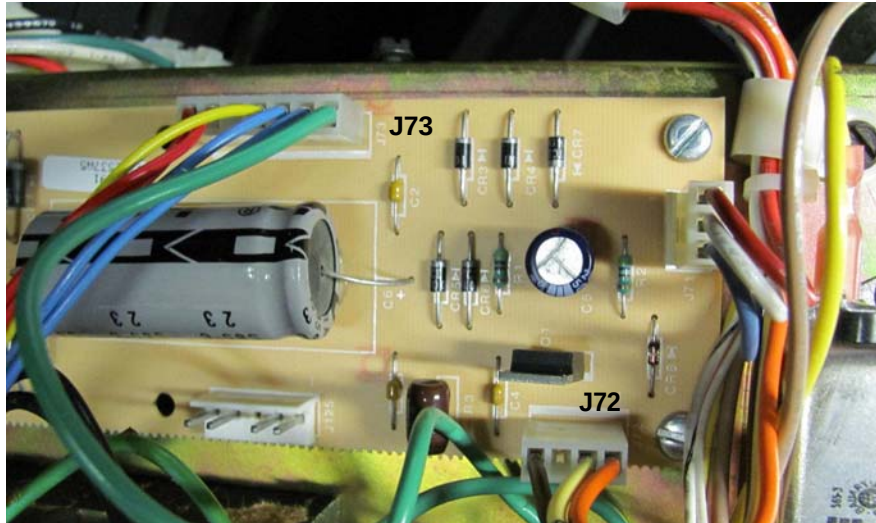


Figure 20

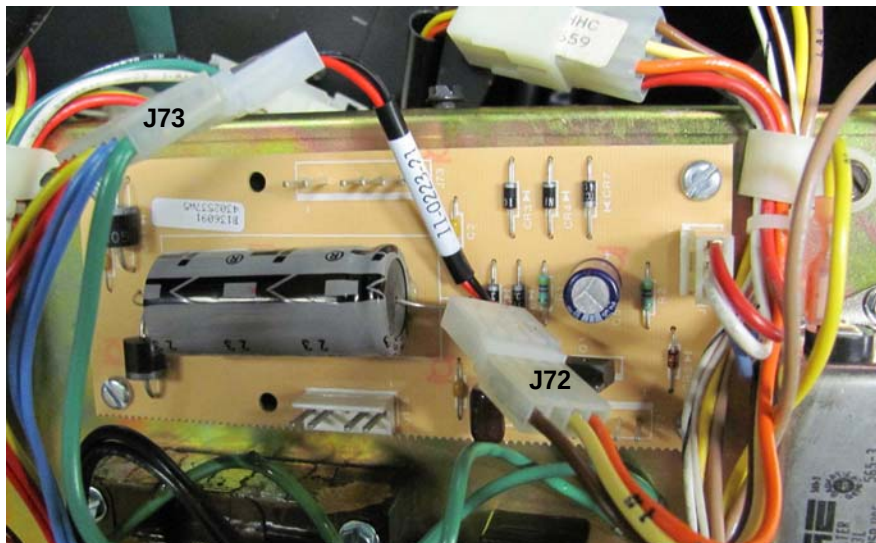
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18. MDB Power Supply Modification:

Unplug and remove the power control center from machine.
Remove the cover from the power control center.
Unplug cables to J72 and J73 from the power supply board.



Install cable, **11-0223-21**, as a jumper between connectors J72 and J73.



Replace cover and reinstall the power control center in machine.

19. The sliding bracket (with the boards mounted on) can now slide back into the machine **SLOWLY**. The front panel can be closed so that the display is facing towards the front. There should be a magnetic tab to keep this panel closed. Make sure all cables do not interfere. After the machine is powered up, the front door can now be closed and locked.