

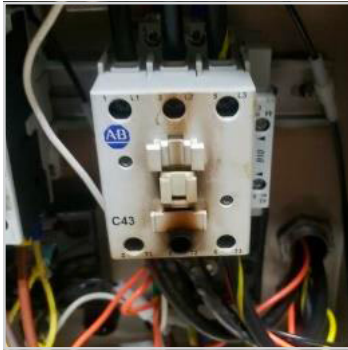


**American Dish Service**  
Manufacturers of Ware Washing Equipment

# TECHNICAL SUPPORT MATERIAL

## Control Circuit Fuse

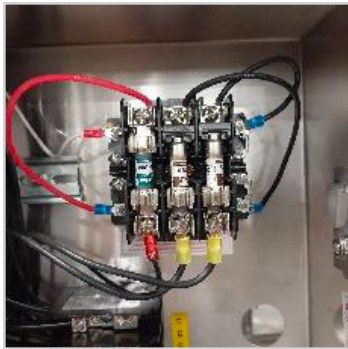
This is a **PROCEDURE** to help find an electrical short that causes the fuse to blow.



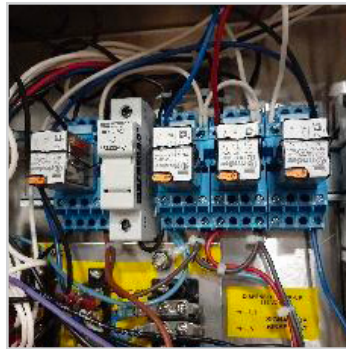
Control circuit fuse failure is the 2nd most common electrical failure for Conveyor and HT-25 models. The most common failure being not tightening electrical screw terminal connections after transporting the machine to the installation, which can cause burned connections.

Burn cause by loose connection on screw terminal, requires replacement of all burned parts—wires also.

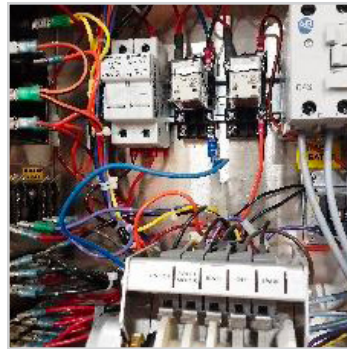
### Control circuit fuse locations in conveyors and HT machines



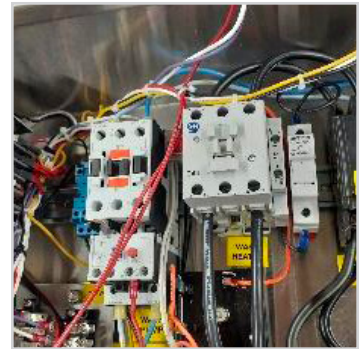
44 3ph, 1.6a fuse



66 3ph, 10a fuse



HT 4-wire 3ph, (2) 10a fuses



HT 5-wire 3 or 1ph, 10a fuse

**Warning:** do not use fuse greater than 1.6a on secondary of control transformer. 1 amp can be substituted if no 1.6a is available. Part number 291-9102, 1.6a secondary fuse (ADC-44 3-ph), Part number 391-9102, 10a control fuse all other models.

### STEP 1

Before troubleshooting the dishmachine, disconnect other electrical devices connected to the machine electrically such as booster, dispenser, hood fan kit, or other. **Have at least 5 extra control fuses on hand.**



Master switch with control light above



44 3ph transformer, left fuse 1a



All other control fuses, 10a

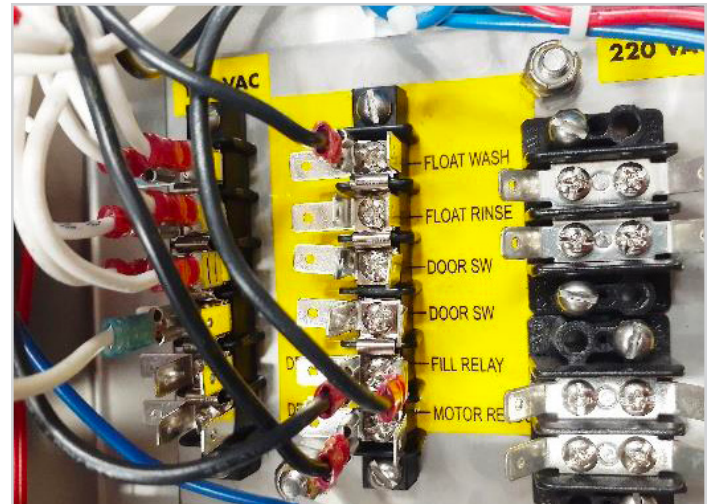


Put a new fuse in the control circuit and run one cycle. Note when the light turns off, if the fuse blows as soon as the machine turns on—it will likely be a bad water fill valve coil that is shorting the fuse out. If the light turns off when the final rinse BEGINS to spray, it is likely the final rinse water valve coil shorting out the fuse. Replace the coil of the water valve that shorted out the fuse. Now run another complete cycle to verify the problem is resolved.

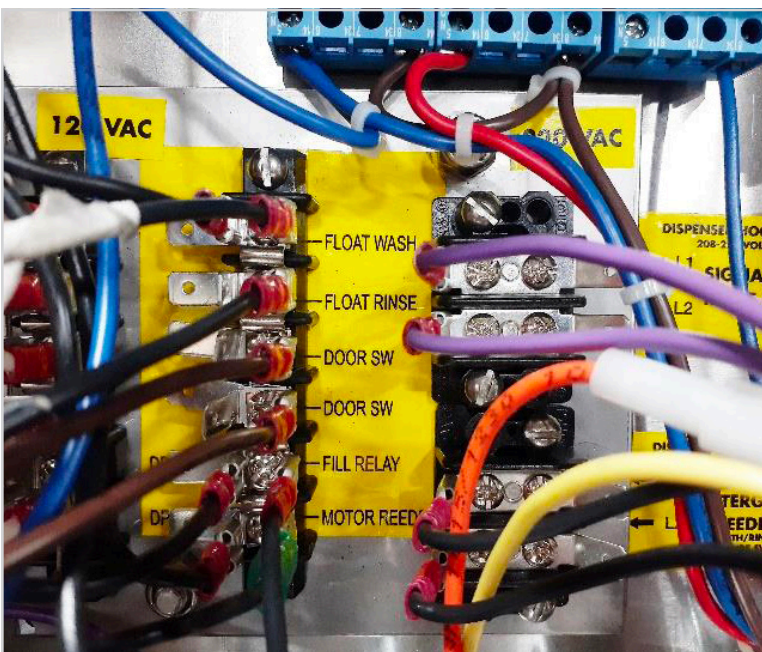
## STEP 2

If Step 1 did not reveal the faulty part and the fuse blows again, follow these next steps. For conveyors and HT control boxes, 70% of short circuits are caused by the water solenoid coils or the heater controls. The supply wires for these parts attach to the control circuit bus bar located on two terminal strips in the lower left-hand corner of each control box.

The left bus bar has all white wires and is the Neutral (common) bar, the center bus bar has black and brown wires attached and supplies switches, relays and coils (see yellow label). The top two terminals of the center bus bar, on the right, labeled “Float Wash” and “Float Rinse” supply water coils and heater coils.



## This is How the Bus Bars Will Look In the Machine

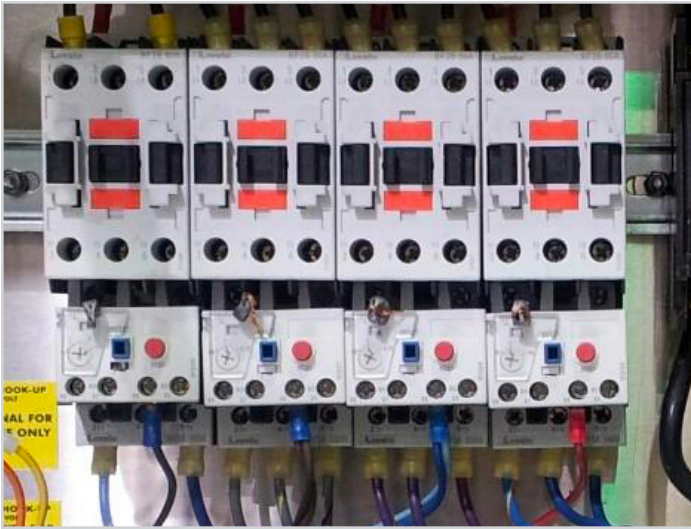


To find the circuit causing the short, remove the black wires for “Float Wash” and for “Float Rinse” from the black bus bar—avoid letting these wires make contact with live parts. Put a new appropriate fuse back in the secondary side of the transformer (1.6a) or in the fuse holder (10a) on all other models. Turn the machine on and run one cycle.

If the machine goes through a complete cycle without blowing the new fuse, put the “Float Rinse” black wire back on the second terminal down from the top and run another cycle. If the fuse blows during this second cycle, the bad parts are in the rinse heater circuit.

If it does not blow, put the “Float Wash” black wire back on the top terminal and run another complete cycle. If the fuse blows during this cycle, the bad parts are in the wash heater circuit.

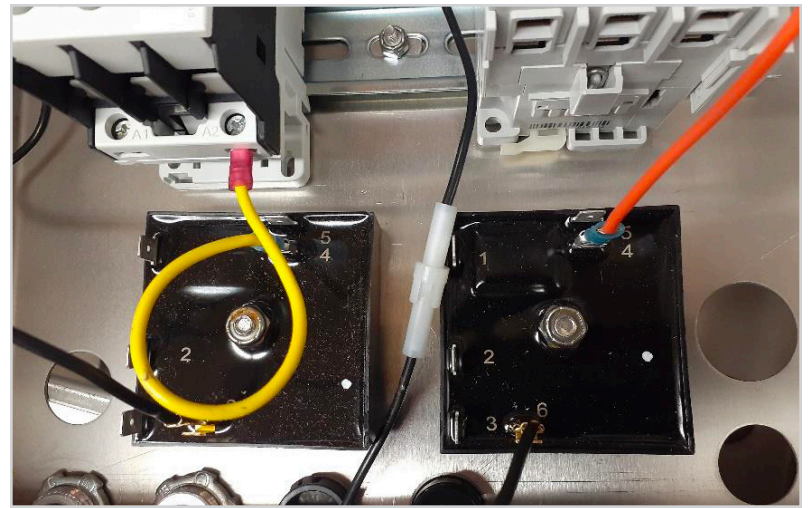
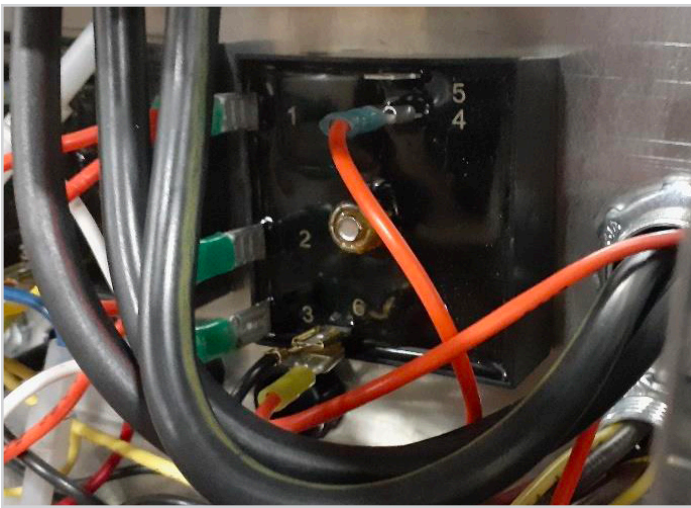
In a few cases, faulty motor contactor coils can short out the fuse, you can determine by watching which motor is running when the fuse trips and the control light shuts down. Replace the faulty contactor or motor and contactor as needed.



Motor contactors and overloads attached

### STEP 3

After determining which heater circuit is at fault, remove the control wires from the heater relay, terminals 1,2 and 6. Tape these wire because they are live. Put a new fuse in the control circuit and run a complete cycle. If the cycle now runs clean, replace that heater relay.



**Warning:** the heater relay is a solid-state device, it can become sympathetic to the second relay in conveyors. One relay can cause the second relay to short out or burn the timer. They should be replaced as a pair at the same time. If the machine is powered up before replacing both relays, it may result in having to replace them a second time. If there has been a long interval of running with a burned solid-state relay there may be damage to the contactor coils also. These have burned up the new heater relays in the past. **The solution to this problem in a conveyor is replacing the two solid-state relays and the two heater contactors at the same time. Do not power up the machine before all are installed. In an HT, it would be replacing just the heater relay and heater contactor.**

## Service Parts for Water Solenoids and Heater Control Circuits

### 291-3027 Heater Relay, all 120v control circuits

291-3032 Wash Heater Contactor, all 120v control circuits

291-3012 Thermostat

092-5017 Coil, Water Solenoid, 120v

291-3001 Contactor, Motor 120v

091-3008 Switch, Master

### HT-25 4-wire Service Parts

**291-3031 Heater Relay, HT 4-wire 230v control circuit**

**291-3043 Wash Heater Contactor, HT 4-wire 230v control circuit**

**092-5069 Coil, Water Solenoid, 230v**

**291-3033 Wash Motor Contactor, 230v**

## **American Dish Service**

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