Replacing the relay on an Arrow Springs / Milliron Tools ASC/5 and ASC/6 Temperature Controller

Start by unplugging the temperature controller from its electrical source. Unplug any device plugged into the temperature controller's electrical receptacle.

Remove the two top screws on the faceplate. Do not remove the two bottom ones. Remove one screw on each side, located at the top, center. Remove the two screws located on the bottom, in the back corners. Do not remove any other than these six screws. All other screws hold components to the housing. Remove the cover, which is a single piece of bent metal comprising the top and back panels.

Take clear pictures of the wiring from several angles for reference. It is very important that all wires that get removed from the old relay go onto the new relay in the exact same location they came from.

Do not remove the relay from the controller housing at this time. Remove the six wires from the old relay. This is easiest done using regular size needle nose pliers, approaching from the side of the wire. Using the pliers, grab onto the terminal where it is crimped onto the wire. Do not grab onto the wire or the part of the female terminal crimped to the wire that slides onto the male terminal on the relay. The terminals on the thin black and red wires are easy to remove, because they conduct low power and do not require as tight of a connection as a high-power connection does. The terminals on the thicker wires will be more difficult to remove, because they conduct a lot of power and must be very tight to conduct properly and not generate heat, which can damage the relay and wires. Wiggle the female terminal on the wire, by the crimp area, to aid it in sliding off of the male terminal on the relay. Note, the female terminal has rolled edges that grip onto the male terminal. If you wiggle the female terminal in the proper direction, it will slide off the male terminal without spreading the rolled edges open. If you wiggle in the wrong direction, the rolled edges will spread open and will then not be able to properly make a tight connection to the male terminal on the new relay without adjustment to the rolled edges.

There are two screws and nuts holding the relay in place. Loosen the screws only two turns. Wiggle the old relay out from between the screws. Put the new, approved relay in place, keeping the same orientation. Center between screws and tighten screws.

Replace all the terminals onto the new relay. The terminals on the thin black and red wires should fit snuggly. Wiggle them, you should not feel a click, indicating a loose connection. The thicker wires need to be very tight. This is very important. Using the pliers, connect them in the reverse order and manner they were removed. If connecting them is easier than taking them off was, remove the terminal and gently squeeze the rolled edge closed a small amount. Do not close it fully, as this will make connecting it to the male terminal very difficult. Do not squeeze the rolled edged closed while connected to the male terminal, as this tends to flare open the rolled edge, making it looser. Reconnect the terminal. Even if the connection is difficult to make, mysteriously, it can end up being not very tight. The connection must be tested. With your fingers, grab the terminal by the crimped area and pull. Pull very hard, just shy of hurting your fingers. If it comes off, it is too loose. Repeat the procedure to squeeze the rolled edges on the female terminal a little more closed and reconnect and test.

Reassemble the controller housing in the reverse order it was taken apart. 032522